Hands On: Algebra • Even and Odd Numbers

Instructional Time: 1 day

Common Core Standard

CC.2.OA.3 Determine whether a group of objects (up to 20) has an odd or even number of members; write an equation to express an even number as a sum of two equal addends.

Lesson Objective

Classify numbers up to 20 as even or odd.

Essential Question

How are even numbers and odd numbers different?

Materials

- MathBoard
- connecting cubes
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Number Charts

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use ten frames to determine how even and odd numbers are different. As students work through Listen, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of pairs to develop sound mathematical practices by asking these questions.

- *What is the problem asking you to find?*
- *How can you use classroom objects to show this problem?*
- *How many cubes are in a pair?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to classify even and odd numbers. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 13, 16, 17 or 18–19

4 Summarize Approximately 5 min.

Essential Question

How are even numbers and odd numbers different?
Possible answer: Even numbers show pairs with no cubes left over.
Odd numbers show pairs with one cube left over.

Math Journal

Write two odd numbers and two even numbers. Explain how you know which numbers are even and which are odd.

Algebra • Represent Even Numbers

Instructional Time: 1 day

Common Core Standard

CC.2.OA.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2's; write an equation to express an even number as a sum of two equal addends.

Lesson Objective

Write equations with equal addends to represent even numbers.

Essential Question

Why can an even number be shown as the sum of two equal addends?

Materials

- MathBoard
- connecting cubes
- Math Journal
- *i*Tools: Counters

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to represent even and odd numbers by using pairs. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of equal groups to develop sound mathematical practices by asking these questions.

- *How can you use cubes to show pairs?*
- *How many pairs can you make with 6 cubes?*
- *How can you use pairs to show odd and even numbers?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RTI (Response to Intevention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to use equal groups to show addition. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 9–12 or 13–14

4 Summarize Approximately 5 min.

Essential Question

Why can an even number be shown as the sum of two equal addends?

Possible answer: Even numbers can be made into two equal groups, which can be written as the sum of two equal addends.

Math Journal

Draw or write to show that the number 18 is an even number.

Understand Place Value

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Lesson Objective

Use place value to describe the values of digits in 2-digit numbers.

Essential Question

How do you know the value of a digit?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use place value to model and write 2-digit numbers. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of whole numbers to develop sound mathematical practices by asking these questions.

- *How can you use 2 and 5 to make a new number?*
- *How can you use classroom objects to model this problem?*
- *How could you model this problem if Tyler had a number of baseball cards with 5 and 4?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these place value concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 16–18 or 19, 20, 22

4 Summarize Approximately 5 min.

Essential Question

How do you know the value of a digit?

Possible answer: by its place in a number

Math Journal

Draw a quick picture to show the number 76. Describe the value of each digit in this number.

Expanded Form

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Lesson Objective

Write 2-digit numbers in expanded form.

Essential Question

How do you describe a 2-digit number as tens and ones?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model numbers and represent the values of tens and ones. As students work through Listen, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of place value to develop sound mathematical practices by asking these questions.

- *What is the problem asking you to show?*
- *What is another way you can model the problem?*
- *How can you use what you know about place value to model the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand that two-digit numbers are composed of groups of tens and groups of ones. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 9, 10, 12 or 13–16

4 Summarize Approximately 5 min.

Essential Question

How do you describe a 2-digit number as tens and ones?

Possible answer: I can write a 2-digit number as the sum of the values of the tens digit and the ones digit.

Math Journal

Explain how you know the values of the digits in the number 58.

Different Ways to Write Numbers

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Lesson Objective

Write 2-digit numbers in word form, expanded form, and standard form.

Essential Question

What are different ways to write a 2-digit number?

Materials

- MathBoard
- HMH Mega Math
- Math Journal
- *i*Tools: Base-Ten Blocks
- Animated Math Models

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use place value to read and write whole numbers in different forms. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the components of 2-digit numbers to develop sound mathematical practices by asking these questions.

- *What is the problem asking you to model?*
- *How could you use cubes to model 53?*
- *What is the value of 5 in 53?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to express a given number in multiple ways. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 12, 15, 19–21

4 Summarize Approximately 5 min.

Essential Question

What are different ways to write a 2-digit number?

Possible answer: in word form, as tens and ones, as a 2-digit number, and as the sum of the values of the tens and ones digits

Math Journal

Write the number 63 in four different ways.

Algebra • Different Names for Numbers

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Lesson Objective

Apply place value concepts to find equivalent representations of numbers.

Essential Question

How can you show the value of a number in different ways?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- Animated Math Models
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model the same number multiple times by trading tens and ones blocks. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the value of the ones digit to develop sound mathematical practices by asking these questions.

- *What are some other ways to show 26?*
- *How can you make ones into tens?*
- *How many tens are in 26?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the concept of exchanging ones for tens and tens for ones. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 3, 4, 6 or 8–9, 11

4 Summarize Approximately 5 min.

Essential Question

How can you show the value of a number in different ways?

Possible answer: You can use blocks to show how to trade tens and ones. For example, you can show 25 with 25 ones, then trade 10 ones for 1 ten and show 25 as 1 ten 15 ones.

Math Journal

Draw quick pictures to show the number 38 in three different ways.

Problem Solving • Tens and Ones

Instructional Time: 1 day

Note: The instructional time for this lesson can also be 2 days. On Day 1, write Unlock the Problem on the board and allow students to discuss and solve amongst themselves before recording answers. Use the extra time on Day 2 to model and record the first Try Another Problem and draw the second Try Another Problem.

Common Core Standard

CC.2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Lesson Objective

Solve problems by finding different combinations of tens and ones to represent 2-digit numbers using the strategy *find a pattern*.

Essential Question

How does finding a pattern help you find all the ways to show a number with tens and ones?

Materials

- MathBoard
- *i*Tools: Base-Ten Blocks
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Unlock the Problem • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to find all the combinations of tens and ones that can be used to represent a number. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of substituting a ten for ten ones to develop sound mathematical practices by asking these questions.

- *What do you remember about tens and ones?*
- *What is another way to model this problem?*
- *How have you solved a problem like this one?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how tens and ones make up a 2-digit number. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5–7

4 Summarize Approximately 5 min.

Essential Question

How does finding a pattern help you find all the ways to show a number with tens and ones?

Possible answer: I can find a pattern so that I can list all the possible combinations of tens and ones.

Math Journal

Choose one of the problems on page 39. Describe how you organized the answers.

Counting Patterns Within 100

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s.

Lesson Objective

Extend counting sequences within 100, counting by 1s, 5s, and 10s.

Essential Question

How do you count by 1s, 5s, and 10s with numbers less than 100?

Materials

- MathBoard
- Math Journal
- HMH Mega Math
- *i*Tools: Number Charts

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to review counting numbers to 100. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of number sequence to develop sound mathematical practices by asking these questions.

- *What does the chart show?*
- *How do you know which number goes in a missing space in the chart?*
- *How did you find patterns in the chart?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand patterns of counting by ones, fives or tens. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 11–13 or 15–17

4 Summarize Approximately 5 min.

Essential Question

How do you count by 1s, 5s, and 10s with numbers less than 100?

Possible answer: You have to think about the number you are counting by and say the numbers that are that many more as you count on.

Math Journal

Count by 1s or 5s. Write the first five numbers you would count, starting at 15.

Counting Patterns Within 1,000

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s.

Lesson Objective

Extend counting sequences within 1,000, counting by 1s, 5s, 10s, and 100s.

Essential Question

How do you count by 1s, 5s, 10s, and 100s with numbers less than 1,000?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Number Charts

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to extend counting sequences with 3-digit numbers. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of various ways to count on to develop sound mathematical practices by asking these questions.

- *How is this chart different from other hundreds charts you have seen?*
- *What do you remember about how to find the missing numbers in a hundreds chart?*
- *What patterns do you see in the chart?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these counting strategies. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 8, 12, 13 or 15–17

4 Summarize Approximately 5 min.

Essential Question

How do you count by 1s, 5s, 10s, and 100s with numbers less than 1,000?

Possible answer: Look for a counting pattern to use. The next number will be greater than the one before it.

Math Journal

Count by fives from 135 to 175. Write these numbers and describe the pattern.

Group Tens as Hundreds

Instructional Time: 1 day

Common Core Standards

CC.2.NBT.1a Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: 100 can be thought of as a bundle of ten tens—called a "hundred."

CC.2.NBT.1b Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

Lesson Objective

Understand that each group of 10 tens is equivalent to 1 hundred.

Essential Question

How do you group tens as hundreds?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to count groups of tens to 100. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the relationship between ones and tens to develop sound mathematical practices by asking these questions.

- *What is the problem asking?*
- *What could you use to model the problem?*
- *How can you find out how many pennies are in 1 row?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these counting and grouping concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6–8 or 9–10

4 Summarize Approximately 5 min.

Essential Question

How do you group tens as hundreds?

Possible answer: I can count out 10 tens and group them together. Then I can count how many groups of 10 tens I have to know how many hundreds there are.

Math Journal

Ella has 50 stacks of ten pennies in each stack. Describe how to find how many pennies Ella has in all.

Explore 3-Digit Numbers

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

Lesson Objective

Write 3-digit numbers that are represented by groups of tens.

Essential Question

How do you write a 3-digit number for a group of tens?

Materials

- MathBoard
- *i*Tools: Base-Ten Blocks
- Math Journal
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model and count tens to make hundreds. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of different ways to model numbers to develop sound mathematical practices by asking these questions.

- *What is the problem asking you to find?*
- *What is another way to model this problem?*
- *How can you use what you know about ones and tens to show hundreds?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand 10 tens equal 1 one hundred. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5, 7 or 8–10

4 Summarize Approximately 5 min.

Essential Question

How do you write a 3-digit number for a group of tens?

Possible answer: Each group of 10 tens is counted and the number is written as the hundreds digit. The rest of the tens are written as the tens digit. A zero is written as the ones digit.

Math Journal

Draw or write to explain why 1 hundred 4 tens and 14 tens name the same amount.

Hands On: Model 3-Digit Numbers

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

Lesson Objective

Use concrete and pictorial models to represent 3-digit numbers.

Essential Question

How do you show a 3-digit number using blocks?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- *i*Tools: Base-Ten Blocks
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to show how many hundreds and tens make up a number. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding that 1 one hundred is composed of 10 tens to develop sound mathematical practices by asking these questions.

- *What do you remember about tens?*
- *What is another way you can model this problem?*
- *How can you check if your answer is correct?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the place value of each digit for 3-digit numbers. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6–8 or 9–11

4 Summarize Approximately 5 min.

Essential Question

How do you show a 3-digit number using blocks?

Possible answer: The digit in the hundreds place tells the number of hundreds blocks, the digit in the tens place tells the number of tens blocks, and the digit in the ones place tells the number of ones blocks.

Math Journal

Write a 3-digit number using the digits 2, 9, and 4. Draw a quick picture to show the value of your number.

Hundreds, Tens, and Ones

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones

Also CC.2.NBT.3

Lesson Objective

Apply place value concepts to write 3-digit numbers that are represented by pictorial models.

Essential Question

How do you write the 3-digit number that is shown by a set of blocks?

Materials

- MathBoard
- *i*Tools: Base-Ten Blocks
- Math Journal
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model and write 3-digit numbers as hundreds, tens, and ones. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of place value models to develop sound mathematical practices by asking these questions.

- *What objects could you use to model 243?*
- *How many tens will be in your quick picture?*
- *Is the value of 4 in 243 the same as in 423? How do you know?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to show 3-digit numbers with models and numerals. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5–7 or 8–9

4 Summarize Approximately 5 min.

Essential Question

How do you write the 3-digit number that is shown by a set of blocks?

Possible answer: First write the number of hundreds blocks, then the number of tens blocks, then the number of ones blocks, using these digits to write the numbers.

Math Journal

Write a number that has a zero in the tens place. Draw a quick picture for your number.

Place Value to 1,000

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

Lesson Objective

Use place value to describe the values of digits in numbers to 1,000.

Essential Question

How do you know the values of the digits in numbers?

Materials

- MathBoard
- Math Journal
- HMH Mega Math
- *i*Tools: Base-Ten Blocks
- Animated Math Models

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use place value and quick pictures to write and model 3-digit numbers. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of 3-digit whole numbers to develop sound mathematical practices by asking these questions.

- *What do you remember about ones, tens, and hundreds?*
- *How can you model 245 with blocks?*
- *How would your model change if there were 452 sheets of paper?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the value of each digit in a 3-digit number. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6, 7, 10 or 11–12

4 Summarize Approximately 5 min.

Essential Question

How do you know the values of the digits in numbers?

Possible answer: by looking at the places of the digits

Math Journal

What is the value of 5 in 756? Write and draw to explain how you know.

Number Names

Instructional Time: 1 day

Note: The instructional time for this lesson can also be 2 days. On Day 1, focus on Listen and Draw and Model and Draw to emphasize how to name and write in words the digits of a 3-digit number. Use the extra time on Day 2 to review On Your Own and spend extra time on Go Deeper.

Common Core Standard

CC.2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Lesson Objective

Read and write 3-digit numbers in word form.

Essential Question

How do you write 3-digit numbers using words?

Materials

- MathBoard
- *i*Tools: Base-Ten Blocks
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to write whole numbers using numerals and words. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the digits in whole numbers to develop sound mathematical practices by asking these questions.

- *What do you remember about how to complete a hundreds chart?*
- *What patterns can you find in this chart that will help you complete it?*
- *How could you use words to show a number with 6 tens and 4 ones?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to use words to represent whole numbers. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 16–19 or 21–22

4 Summarize Approximately 5 min.

Essential Question

How do you write 3-digit numbers using words?

Possible answer: First I start by using words to write the hundreds. Then I look at the tens digits and ones digits together and write the words for the number that those two digits form.

Math Journal

Write a 3-digit number using the digits 5, 9, and 2. Then write your number using words.

Different Forms of Numbers

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Lesson Objective

Write 3-digit numbers in expanded form and in standard form.

Essential Question

What are three ways to write a 3-digit number?

Materials

- MathBoard
- *i*Tools: Base-Ten Blocks
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to determine how many hundreds, tens, and ones make up a 3-digit number. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the various ways to model place value to develop sound mathematical practices by asking these questions.

- *What is the problem asking you to find?*
- *How can you model 426 using a drawing or blocks?*
- *How would the model for 341 look different from the model for 426?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the different ways to represent a number. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4–7

4 Summarize Approximately 5 min.

Essential Question

What are three ways to write a 3-digit number?

Possible answer: You can write a 3-digit number using digits, number names, and expanded form.

Math Journal

Draw a quick picture of 3 hundreds, 5 tens, and 7 ones. What number does your quick picture show? Write it in three different ways.

Algebra • Different Ways to Show Numbers

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Lesson Objective

Apply place value concepts to find equivalent representations of numbers.

Essential Question

How can you use blocks or quick pictures to show the value of a number in different ways?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use pictures to represent a number in two ways. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the equivalency of 10 ones to 1 ten to develop sound mathematical practices by asking these questions.

- *What strategy could you use to help find the answer?*
- *How can you model 35 with blocks?*
- *What do you think would happen if Mrs. Peabody got 10 more books?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the ways to show and record place value. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 3–7

4 Summarize Approximately 5 min.

Essential Question

How can you use blocks or quick pictures to show the value of a number in different ways?

Possible answer: You can regroup hundreds as tens, tens as hundreds, tens as ones, or ones as tens.

Math Journal

Draw quick pictures of two ways to show the number 326.

Count On and Count Back by 10 and 100

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

Lesson Objective

Identify 10 more, 10 less, 100 more, or 100 less than a given number.

Essential Question

How do you use place value to find 10 more, 10 less, 100 more, or 100 less than a 3-digit number?

Materials

- MathBoard
- Math Journal
- HMH Mega Math
- *i*Tools: Base-Ten Blocks
- *i*Tools: Number Charts

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model two 3-digit numbers and explain how they are different. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the meaning of each digit in a 3-digit number to develop sound mathematical practices by asking these questions.

- *What is the problem asking you to find?*
- *What is another way to model the problem?*
- *How is the number of girls different from the number of boys?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to compare whole numbers. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 17–19 or 20–22

4 Summarize Approximately 5 min.

Essential Question

How do you use place value to find 10 more, 10 less, 100 more, or 100 less than a 3-digit number?

Possible answer: When I find 10 more or 10 less, I look at the tens digit to see how it needs to change. When I find 100 more or 100 less, I look at the hundreds digit to see how it needs to change.

Math Journal

Choose any 3-digit number. Describe how to find the number that is 10 more.

Algebra • Number Patterns

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.8 Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.

Also CC.2.NBT.2

Lesson Objective

Extend number patterns by counting on by tens or hundreds.

Essential Question

How does place value help you identify and extend counting patterns?

Materials

- MathBoard
- Math Journal
- HMH Mega Math
- *i*Tools: Number Charts
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to identify counting patterns in a hundreds chart to solve problems. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of adding tens to develop sound mathematical practices by asking these questions.

- *What do you remember about hundreds charts?*
- *How can you use patterns in the hundreds chart to find the answer?*
- *How else can you model ten more or ten less?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to recognize and use counting patterns. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6, 9, 10 or 11–12

4 Summarize Approximately 5 min.

Essential Question

How does place value help you identify and extend counting patterns?

Possible answer: When I compare each place of the numbers in a pattern, I can see where the digits are changing. This helps me find the counting pattern and then extend it.

Math Journal

How can you tell when a pattern shows counting on by tens?

Problem Solving • Compare Numbers

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.4 Compare two three-digit numbers based on meaning of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Lesson Objective

Solve problems involving number comparisons by using the strategy *make a model*.

Essential Question

How can you make a model to solve a problem about comparing numbers?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Unlock the Problem • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to compare the values of two 3-digit numbers by modeling them. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of hundreds, tens, and ones to develop sound mathematical practices by asking these questions.

- *What should you do first to solve this problem?*
- *How could you use a hundreds chart to help you find the answer?*
- *How do you know that 217 is greater than 188?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to use place value to compare numbers. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5–9

4 Summarize Approximately 5 min.

Essential Question

How can you make a model to solve a problem about comparing numbers?

Possible answer: I can use blocks to show the values of the digits in the numbers, and then compare them.

Math Journal

Draw to show how you can use models to compare 345 and 391.

Algebra • Compare Numbers
Instructional Time: 1 day

Note: The instructional time for this lesson can also be 2 days. On Day 1, emphasize the Listen and Draw and Model and Draw sections to focus on comparing digits in order to compare whole numbers. Use the extra time on Day 2 to pay special attention to Extend the Math.

Common Core Standard
CC.2.NBT.4 Compare two three-digit numbers based on meaning of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Lesson Objective

Compare 3-digit numbers using the >, =, and < symbols.

Essential Question

How do you compare 3-digit numbers?

Materials

- MathBoard
- Math Journal
- HMH Mega Math
- *i*Tools: Base-Ten Blocks
- Animated Math Models

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use quick pictures to show 3-digit numbers and solve which number is greater. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of how to compare tens to develop sound mathematical practices by asking these questions.

- *What is the problem asking you to find?*
- *How can you use what you know about comparing numbers to find the answer?*
- *What other ways can you solve this problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to determine which of two numbers is more. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 11–14 or 16

4 Summarize Approximately 5 min.

Essential Question

How do you compare 3-digit numbers?

Possible answer: I use place value to compare the digits in the numbers, starting with the hundreds place until I find the greatest place value with different digits. The number with the greater digit in that place is the greater number.

Math Journal

Explain how comparing 645 and 738 is different from comparing 645 and 649.

Use Doubles Facts

Instructional Time: 1 day

Common Core Standard

CC.2.OA.2 Fluently add and subtract within 20 using mental strategies.

Lesson Objective

Use doubles facts as a strategy for finding sums for near doubles facts.

Essential Question

How can you use doubles facts to find sums for near doubles facts?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Counters

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to write and solve an addition sentence using equal addends. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of counting on to develop sound mathematical practices by asking these questions.

- *How are the groups you drew the same?*
- *What does the word "double" mean?*
- *Why is an addition sentence used to show the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to use doubles facts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 12, 14, 16 or 17–19

4 Summarize Approximately 5 min.

Essential Question

How can you use doubles facts to find sums for near doubles facts?

If I know the sum of a doubles fact, I find the sum for a near doubles fact by comparing the numbers being added and deciding if I need to add 1 or subtract 1 from the sum of the doubles fact.

Math Journal

Draw or write to show two ways to use a doubles fact to find 6 + 7.

Practice Addition Facts

Instructional Time: 1 day

Common Core Standard

CC.2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Lesson Objective

Recall sums for basic facts using properties and strategies.

Essential Question

What are some ways to remember sums?

Materials

- MathBoard
- Math Journal
- HMH Mega Math
- *i*Tools: Number Charts
- Animated Math Models

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model and solve adding the same addends in a different order to find the same sum. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of counting groups of objects to develop sound mathematical practices by asking these questions.

- *How do your drawings show that the two different addition sentences have the same sum?*
- *Why is the order of the groups in your first drawing different from the order of the groups in your second drawing?*
- *What is a good rule for addition sentences that have the same numbers added in different order?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these addend concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 22, 24, 25 or 26–28

4 Summarize Approximately 5 min.

Essential Question

What are some ways to remember sums?

Possible answer: I can count on by 1, 2, or 3; change the order of the addends; or use doubles facts. I also know that any number plus 0 equals that number.

Math Journal

Write or draw to explain a way to find each sum: 6 + 7, 8 + 4, 2 + 9.

Algebra • Make a Ten to Add

Instructional Time: 1 day

Common Core Standard

CC.2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Lesson Objective

Recall sums for addition facts using the make a ten strategy.

Essential Question

How is the make a ten strategy used to find sums?

Materials

- MathBoard
- Math Journal
- HMH Mega Math
- *i*Tools: Base-Ten Blocks
- Animated Math Models

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use ten frames to write addition sentences with various addends that make 10. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of ten frames to develop sound mathematical practices by asking these questions.

- *How do you know that the sums of the facts shown in the ten frames are the same?*
- *What would happen to the counters in the ten frames if you change the order of the numbers in the problems?*
- *Why are ten frames a good model for showing sums of ten?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these addition concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 15–18 or 19–21

4 Summarize Approximately 5 min.

Essential Question

How is the make a ten strategy used to find sums?

Possible answer: You break apart the lesser addend to make a ten. You add 10 plus the remaining part of the addend to find the sum.

Math Journal

Describe how you can use the make a ten strategy to find the sum of 7 + 9.

Algebra • Add 3 Addends

Instructional Time: 1 day

Common Core Standard

CC.2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Also CC.2.NBT.5

Lesson Objective

Find sums of three addends by applying the Commutative and Associative Properties of Addition.

Essential Question

How do you add three numbers?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Counters

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use different strategies to find sums of two addends. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of doubles facts and the order of addends to develop sound mathematical practices by asking these questions.

- *What strategies have you learned that might help you to find the sums of the addends?*
- *What do you remember about doubles facts?*
- *How can you use a ten frame to model 7 + 3?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to group numbers to help find the sum of three addends. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 15–18 or 19–21

4 Summarize Approximately 5 min.

Essential Question

How do you add three numbers?

Possible answer: You add any two addends first and then add the third addend to that sum.

Math Journal

Write or draw to explain two ways you can find the sum of 3 + 4 + 5.

Algebra • Relate Addition and Subtraction

Instructional Time: 1 day

Common Core Standard

CC.2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Lesson Objective

Use the inverse relationship of addition and subtraction to recall basic facts.

Essential Question

How are addition and subtraction related?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Counters

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students use bar models to solve addition and subtraction word problems. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of addition facts to develop sound mathematical practices by asking these questions.

- *Why is 8 the first number in the bar model?*
- *What is being taken away in the second problem?*
- *Why are bar models a good way to show related addition and subtraction facts?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how bar models show addition and subtraction facts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 22–25 or 27, 28

4 Summarize Approximately 5 min.

Essential Question

How are addition and subtraction related?

Possible answer: Addition and subtraction undo each other; related addition and subtraction facts have the same whole and parts.

Math Journal

Write a related subtraction fact for $3 + 9 = 12$. Explain how the two facts are related.

Practice Subtraction Facts

Instructional Time: 1 day

Common Core Standard

CC.2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Lesson Objective

Recall differences for basic facts using mental strategies.

Essential Question

What are some ways to remember differences?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Counters

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to determine the various addition and subtraction sentences that can be used to represent a problem and explain how they are related. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the relationships between addition and subtraction to develop sound mathematical practices by asking these questions.

- *What do you remember about related facts?*
- *What conclusions can you make based on the model?*
- *How can you use an addition fact to help you find a related subtraction fact?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these subtraction concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 21, 25, 34–36

4 Summarize Approximately 5 min.

Essential Question

What are some ways to remember differences?

Possible answer: I could use a related addition fact or count back by 1, 2, or 3.

Math Journal

Write or draw to explain two different ways to find the difference for 12 − 3.

Use Ten to Subtract

Instructional Time: 1 day

Common Core Standard

CC.2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Also CC.2.MD.6

Lesson Objective

Find differences on a number line to develop the mental strategy of decomposing to simplify facts.

Essential Question

How does getting to 10 in subtraction help when finding differences?

Materials

- MathBoard
- *i*Tools: Number Lines
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use number lines to help them find patterns with 10 to solve subtraction problems. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the tens and ones places to develop sound mathematical practices by asking these questions.

- *Why is subtraction used to represent the problems?*
- *What do the models show?*
- *What conclusions can you make about teen numbers?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to use 10 to help them subtract. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 11–14 or 15–18

4 Summarize Approximately 5 min.

Essential Question

How does getting to 10 in subtraction help when finding differences?

Possible answer: If I get to 10, then I can use a tens fact to find the difference.

Math Journal

Describe how to use a tens fact to find the difference for 15 − 8.

Algebra • Use Drawings to Represent Problems

Instructional Time: 1 day

Common Core Standard

CC.2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Lesson Objective

Use bar models to represent a variety of addition and subtraction situations.

Essential Question

How are bar models used to show addition and subtraction problems?

Materials

- MathBoard
- Animated Math Models
- Math Journal
- *i*Tools: Counters

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to show and write related addition and subtraction sentences by using bar models. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of addition and subtraction facts to develop sound mathematical practices by asking these questions.

- *Why is the whole shown in the same place on the models but in different places in the number sentences?*
- *What if Blake gave seven pennies instead of five pennies to his sister? How might the bar model change?*
- *What conclusion can you make from both models?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercise as a diagnostic assessment. If students answer the exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to complete bar models to represent related addition and subtraction sentences. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 3–4 or 5–6

4 Summarize Approximately 5 min.

Essential Question

How are bar models used to show addition and subtraction problems?

Possible answer: Bar models show the parts and whole that I know and help me know what is missing.

Math Journal

Explain how you decided how to label the bar model in Exercise 4 on page 151.

Algebra • Use Equations to Represent Problems

Instructional Time: 1 day

Common Core Standard

CC.2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Lesson Objective

Write equations to represent and solve a variety of addition and subtraction situations.

Essential Question

How are number sentences used to show addition and subtraction situations?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Counters

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to write an addition or subtraction word problem that can be solved using a given bar model. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of bar models to develop sound mathematical practices by asking these questions.

- *What does the number 15 in the bar model mean?*
- *How would your story change if the bar model showed two parts only instead of one part and the whole?*
- *How can you solve to find the missing part of the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the concept of unknown numbers in an equation. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 3, 6 or 7–8

4 Summarize Approximately 5 min.

Essential Question

How are number sentences used to show addition and subtraction situations?

Possible answer: Number sentences show what is happening in the situation.

Math Journal

Write a story problem for the addition sentence 7 + ☐ = 9. Solve the story problem.

Problem Solving • Equal Groups

Instructional Time: 1 day

Common Core Standard

CC.2.OA.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Lesson Objective

Solve problems involving equal groups by using the strategy *act it out*.

Essential Question

How can acting it out help when solving a problem about equal groups?

Materials

- MathBoard
- two-color counters
- Math Journal
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Unlock the Problem • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to find a sum by modeling a number separated into equal groups. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of counting skip to develop sound mathematical practices by asking these questions.

- *What does "equal groups" mean?*
- *What operation is shown by skip counting?*
- *How does drawing a picture help you to solve the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the concept of counting equal groups. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5, or 6–7

4 Summarize Approximately 5 min.

Essential Question

How can acting it out help when solving a problem about equal groups?

Possible answer: Acting it out helps me skip count the equal groups to find the total.

Math Journal

Draw 3 rows with 2 counters in each row. Write a word problem that can be acted out using these counters.

Algebra • Repeated Addition

Instructional Time: 1 day

Common Core Standard

CC.2.OA.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Lesson Objective

Write equations using repeated addition to find the total number of objects in arrays.

Essential Question

How can you write an addition sentence for problems with equal groups?

Materials

- MathBoard
- two-color counters
- Math Journal
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to make a model showing addition of equal groups. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of multiple addends to develop sound mathematical practices by asking these questions.

- *Why does your drawing show equal groups?*
- *How are skip counting and repeated addition alike?*
- *What if Clayton had 4 rows of trading cards instead of 3 rows? How would your picture be different?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these repeated addition concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5, 8 or 9–11

4 Summarize Approximately 5 min.

Essential Question

How can you write an addition sentence for problems with equal groups?

Possible answer: I count the number of items in a row and the number of rows. I write an addition sentence by repeating the number of items in a row the same number of times as there are rows.

Math Journal

Explain how to write an addition sentence for a picture of 4 rows with 3 items in each row.

Break Apart Ones to Add

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.

Also CC.2.NBT.5

Lesson Objective

Find a sum by breaking apart a 1-digit addend to make a 2-digit addend a multiple of 10.

Essential Question

How does breaking apart a number make it easier to add?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- *i*Tools: Base-Ten Blocks
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model an addition problem by breaking apart and putting together numbers to make tens. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of trading ones blocks and tens blocks to develop sound mathematical practices by asking these questions.

- *What addition fact shows how you made tens with the base-ten blocks?*
- *Why did you trade 10 ones for 1 ten?*
- *How does your drawing support your work?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how making groups of 10 can help with addition. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 15–20 or 23

4 Summarize Approximately 5 min.

Essential Question

How does breaking apart a number make it easier to add? *Possible answer: When you break apart a number, you add some of the ones to the greater addend to make another ten. It is easier to add when one of the addends is a tens number.*

Math Journal

Explain how you would find the sum of 46 + 7.

Use Compensation

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.

Also CC.2.NBT.5

Lesson Objective

Use compensation to develop flexible thinking for 2-digit addition.

Essential Question

How can you make an addend a ten to help solve an addition problem?

Materials

- MathBoard
- *i*Tools: Base-Ten Blocks
- Math Journal
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model addition using quick pictures and break apart numbers to make tens to solve. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of counting on by tens to develop sound mathematical practices by asking these questions.

- *What is the problem asking?*
- *Why are quick pictures a good model for the problem?*
- *Why does the number of ones stay the same?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to make a ten by breaking apart an addend. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5, 6, 8 or 9–10

4 Summarize Approximately 5 min.

Essential Question

How can you make an addend a ten to help solve an addition problem?

Possible answer: I can take ones from one addend to make the other addend a tens number.

Math Journal

Explain why you would make one of the addends a tens number when solving an addition problem.

Break Apart Addends as Tens and Ones

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.

Also CC.2.NBT.5

Lesson Objective

Apply place-value concepts when using a break-apart strategy for 2-digit addition.

Essential Question

How do you break apart addends to add tens and then add ones?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use place value to determine the value of each digit and then write the values as an addition problem. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of tens and ones to develop sound mathematical practices by asking these questions.

- *How can you use models to find the value of each digit?*
- *What pattern do you see in the tens and ones numbers?*
- *How would your answer change if you wrote the number 29 instead of 25?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to find sums by breaking apart addends. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6–7 or 8–9

4 Summarize Approximately 5 min.

Essential Question

How do you break apart addends to add tens and then add ones?

Possible answer: You write each addend as the sum of its tens and ones. You find the sum of the tens and the sum of the ones. Then you find the total sum.

Math Journal

Explain how to break apart the addends to find the sum of 25 + 16.

Model Regrouping for Addition

Instructional Time: 1 day

Common Core Standards

CC.2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.

CC.2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.

Lesson Objective

Model 2-digit addition with regrouping.

Essential Question

When do you regroup in addition?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use base-ten blocks to model 2-digit addition by breaking apart addends to make 10. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the strategy "make a ten" to develop sound mathematical practices by asking these questions.

- *What do you remember about showing ten in a ten frame?*
- *What addition sentence can you write to show how you made a ten?*
- *How does your model support your answer?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand this regrouping concept. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 8, 9, 10 or 11–12

4 Summarize Approximately 5 min.

Essential Question

When do you regroup in addition?

Possible answer: You regroup when you have 10 or more ones in all.

Math Journal

Suppose you are adding 43 and 28. Will you regroup? Explain.

Model and Record 2-Digit Addition

Instructional Time: 1 day

Note: The instructional time for this lesson can also be 2 days. On Day 1, have students use Listen and Draw, Model and Draw, and Share and Show to emphasize the concepts of modeling and regrouping 2-digit addition problems. Have students use the extra time on Day 2 to review On Your Own and spend additional time on Go Deeper.

Common Core Standard

CC.2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.

Also CC.2.NBT.9

Lesson Objective

Draw quick pictures and record 2-digit addition using the standard algorithm.

Essential Question

How do you record 2-digit addition?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use base-ten blocks and regrouping to solve 2-digit addition problems . As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of regrouping to develop sound mathematical practices by asking these questions.

- *What do you remember about regrouping ones to make tens?*
- *What is another way to solve the problem?*
- *What strategy did you use for finding the sum of the tens and ones?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to show regrouping with 1 ten in standard algorithms. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6–8 or 9, 10

4 Summarize Approximately 5 min.

Essential Question

How do you record 2-digit addition?

Possible answer: If there are 10 or more ones, I write a regrouped ten in the Tens column. Then I write the total number of ones and tens.

Math Journal

Explain why you should record a 1 in the Tens column when you regroup in an addition problem.

2-Digit Addition

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Also CC.2.NBT.6, CC.2.NBT.9

Lesson Objective

Record 2-digit addition using the standard algorithm.

Essential Question

How do you record the steps when adding 2-digit numbers?

Materials

- MathBoard
- Math Journal
- HMH Mega Math
- *i*Tools: Base-Ten Blocks
- Animated Math Models

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use models to represent 2-digit addition and explain when regrouping is needed. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of adding 2-digit numbers to develop sound mathematical practices by asking these questions.

- *What is another way to model the problem?*
- *Why did you regroup in the first problem but not the second?*
- *How did the number of tens change after you regrouped?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to record ones and tens after regrouping. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 13, 14, 15 or 16, 17

4 Summarize Approximately 5 min.

Essential Question

How do you record the steps when adding 2-digit numbers?

Possible answer: First I add the ones. If there are 10 or more ones, I regroup 10 ones as 1 ten, record the regrouped ten, and then record the remaining ones in the sum. Then I add the tens and record the tens digit in the sum.

Math Journal

On page 195, how is Exercise 7 different from Exercise 8? Explain.

Practice 2-Digit Addition

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Also CC.2.NBT.7

Lesson Objective

Practice 2-digit addition with and without regrouping.

Essential Question

How do you record the steps when adding 2-digit numbers?

Materials

- MathBoard
- Animated Math Models
- Math Journal
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model 2-digit addition problems and describe their strategies. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of addition methods to develop sound mathematical practices by asking these questions.

- *How is this problem similar to other problems you have solved?*
- *What was the first step in the strategy you used?*
- *Why did you not need to regroup the ones?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to regroup tens as hundreds. Select exercises based on students' depth of understanding.
The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 11–13, 16

4 Summarize Approximately 5 min.

Essential Question

How do you record the steps when adding 2-digit numbers?

Possible answer: First I add the ones. If there are 10 or more ones, I regroup, record the regrouped ten, and record the remaining ones in the sum. Then I add the tens. If there are 10 or more tens, I regroup and write the hundreds and tens digits in the sum.

Math Journal

Describe how you regroup when you find the sum of 64 + 43.

Rewrite 2-Digit Addition

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Also CC.2.NBT.6

Lesson Objective

Rewrite horizontal addition problems vertically in the standard algorithm format.

Essential Question

What are two different ways to write addition problems?

Materials

- MathBoard
- Animated Math Models
- Math Journal
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to practice re-writing addition problems vertically. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of 2-digit addition to develop sound mathematical practices by asking these questions.

- *How do you add the numbers in the problem?*
- *In the second problem, why is there a number in the ones column only?*
- *How can you use the doubles strategy to add the digits in the third problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to construct vertical addition problems. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 12, 13, 21 or 22-23

4 Summarize Approximately 5 min.

Essential Question

What are two different ways to write addition problems?

Possible answer: I can write the addends across from each other in a row, or I can write the addends one above the other in a column.

Math Journal

Explain what can happen if you line up the digits incorrectly when you rewrite addition problems.

Problem Solving • Addition

Instructional Time: 1 day

Common Core Standard

CC.2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Also CC.2.NBT.5

Lesson Objective

Solve problems involving 2-digit addition by using the strategy *draw a diagram*.

Essential Question

How can drawing a diagram help when solving addition problems?

Materials

- MathBoard
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Unlock the Problem • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use drawings to find a missing addend. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of modeling addition to develop sound mathematical practices by asking these questions.

- *What operation can you use to solve the problem?*
- *How does the bar model help you to solve the problem?*
- *What strategy did you use to find the missing part?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these concepts of addition. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6, 7, 8

4 Summarize Approximately 5 min.

Essential Question

How can drawing a diagram help when solving addition problems?

Possible answer: The diagram helps me organize the information. I can see what I know and what I need to find.

Math Journal

Look at Exercise 7. Describe what a bar model for this problem would look like.

Algebra • Write Equations to Represent Addition

Instructional Time: 1 day

Common Core Standard

CC.2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Also CC.2.NBT.5

Lesson Objective

Represent addition situations with number sentences using a symbol for the unknown number.

Essential Question

How do you write a number sentence to represent a problem?

Materials

- MathBoard
- Math Journal
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use an appropriate strategy to solve an addition problem. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of various addition strategies to develop sound mathematical practices by asking these questions.

- *Which operation did you use to solve the problem? Why?*
- *Why did you decide to use the strategy you chose?*
- *What is another way to solve the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to represent addition situations use number sentences to show. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 3, 4, 5 or 6-7

4 Summarize Approximately 5 min.

Essential Question

How do you write a number sentence to represent a problem?

Possible answer: I need the problem to see what information I have and what I need to find. I write a number sentence, drawing a box for the missing number. Then I solve for the missing number.

Math Journal

Explain how you decided what number sentence to write for one of the problems on page 211.

Algebra • Find Sums for 3 Addends

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.

Lesson Objective

Find sums of three 2-digit numbers.

Essential Question

What are some ways to add 3 numbers?

Materials

- MathBoard
- Animated Math Models
- Math Journal
- *i*Tools: Counters

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model addition problems with three addends. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the order of addends in addition problems to develop sound mathematical practices by asking these questions.

- *What is the first problem asking?*
- *What strategy did you use to solve the problem?*
- *How can you use a model to help solve the problems?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to regroup ones and tens with three addends using the standard algorithm. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 16, 20, 21 or 22, 23

4 Summarize Approximately 5 min.

Essential Question

What are some ways to add 3 numbers?

Possible answer: I choose two ones digits to add first, then add the third ones digit to that sum. Then I add the tens the same way.

Math Journal

Describe how you would find the sum of 24, 36, and 13.

Algebra • Find Sums for 4 Addends

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.

Lesson Objective

Find sums of four 2-digit numbers.

Essential Question

What are some ways to add 4 numbers?

Materials

- MathBoard
- Animated Math Models
- Math Journal
- *i*Tools: Counters

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to review solving addition problems with three addends by making a model. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of regrouping as an addition strategy to develop sound mathematical practices by asking these questions.

- *How is the first problem similar to a problem you have had before? How is it different?*
- *What strategy did you use to add the ones?*
- *What do you remember about regrouping tens as ones?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these addition concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 11, 16, 18 or 19, 20

4 Summarize Approximately 5 min.

Essential Question

What are some ways to add 4 numbers?

Possible answer: I can start by using make a ten, or doubles or near doubles facts; finding a sum I know; or starting from the top and continuing to add all the digits.

Math Journal

Describe two different strategies you could use to add 16 + 35 + 24 + 14.

Algebra • Break Apart Ones to Subtract

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Lesson Objective

Break apart a 1-digit subtrahend to subtract it from a 2-digit number.

Essential Question

How does breaking apart a number make subtracting easier?

Materials

- MathBoard
- Math Journal
- *i*Tools: Number Lines

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to find two possible addends for each sum given. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of addends to develop sound mathematical practices by asking these questions.

- *What do you remember about subtraction?*
- *How can you use blocks to model ones? How would you model 7?*
- *How can you check that you chose the right addends?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to subtract in two steps. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 12, 15, 16 or 17, 18

4 Summarize Approximately 5 min.

Essential Question

How does breaking apart a number make subtracting easier?

Possible answer: When you break apart a number, you can subtract some of the ones to get to a tens number and then subtract the remaining ones to find the difference.

Math Journal

Draw a number line and show how to find the difference for 24 − 6 using the break apart method in this lesson.

Algebra • Break Apart Numbers to Subtract

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Lesson Objective

Break apart a 2-digit subtrahend to subtract it from a 2-digit number.

Essential Question

How does breaking apart a number make subtracting easier?

Materials

- MathBoard
- Math Journal
- *i*Tools: Number Lines

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model a subtraction problem on a number line in order to show breaking apart the number being subtracted. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of breaking apart to develop sound mathematical practices by asking these questions.

- *What do you remember about breaking apart numbers?*
- *What is the problem asking?*
- *What other ways can you model the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these subtraction concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 10, 12, 13 or 14, 15

4 Summarize Approximately 5 min.

Essential Question

How does breaking apart a number make subtracting easier?

Possible answer: Breaking apart a number breaks it into smaller, easier problems so I can do the subtraction in my head.

Math Journal

Draw a number line and show how to find the difference for 36 − 17 using the break apart method in this lesson.

Model Regrouping for Subtraction

Instructional Time: 1 day

Note: The instructional time for this lesson can also be 2 days. On Day 1 give students base-ten blocks and have them try to solve Share and Show problems by first using physical models and then by drawing on the Student Edition page. Use the extra time on Day 2 to explore Go Deeper and have students use the given digits to create 2-digit subtraction problems with regrouping. Use students' examples to practice the break apart strategy and have them compare strategies.

Common Core Standards

CC.2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.

CC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Lesson Objective

Model 2-digit subtraction with regrouping.

Essential Question

When do you regroup in subtraction?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model regrouping in a subtraction problem by trading tens blocks for ones blocks. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of regrouping in addition to develop sound mathematical practices by asking these questions.

- *What is the problem asking?*
- *How can you use a number line to model this problem?*
- *How would your model be different if Michelle had 28 butterflies?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand breaking apart tens to show more ones. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 9, 10 or 11, 12

4 Summarize Approximately 5 min.

Essential Question

When do you regroup in subtraction?

Possible answer: When you subtract 2-digit numbers, you regroup 1 ten as 10 ones when there are not enough ones to subtract from.

Math Journal

Draw a quick picture for 37. Draw to show how you would subtract 19 from 37. Write to explain what you did.

Model and Record 2-Digit Subtraction

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Also CC.2.NBT.9

Lesson Objective

Draw quick pictures and record 2-digit subtraction using the standard algorithm.

Essential Question

How do you record 2-digit subtraction?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use blocks to model subtraction and determine if regrouping is needed. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of subtracting 2-digit numbers to develop sound mathematical practices by asking these questions.

- *Should you add or subtract to solve this problem?*
- *How do you know?*
- *What is another way to model the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand regrouping in subtraction using the standard algorithm. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5, 6, 7 or 9, 10

4 Summarize Approximately 5 min.

Essential Question

How do you record 2-digit subtraction?

Possible answer: If there are not enough ones to subtract from, I record regrouping 1 ten as 10 ones. I subtract the ones and then I subtract the tens, recording these numbers in the difference.

Math Journal

Draw a quick picture to show the number 24. Then draw a quick picture to show 24 after you have regrouped 1 ten as 10 ones. Explain how both pictures show the same number, 24.

2-Digit Subtraction

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Also CC.2.NBT.9

Lesson Objective

Record 2-digit subtraction using the standard algorithm.

Essential Question

How do you record the steps when subtracting 2-digit numbers?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model subtraction problems and explain how they know when to regroup. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of subtraction strategies to develop sound mathematical practices by asking these questions.

- *What do you remember about subtracting a 1-digit number from a 2-digit number?*
- *How is subtracting a 2-digit number like subtracting a 1-digit number?*
- *What is another way to model this problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these regrouping concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 16, 17, 18 or 19, 20

4 Summarize Approximately 5 min.

Essential Question

How do you record the steps when subtracting 2-digit numbers?

Possible answer: If there are not enough ones to subtract from, I mark the top number to show one less ten in the Tens column and 10 more ones in the Ones column. Then I subtract the ones and then the tens, and write the difference.

Math Journal

Write a few sentences about different ways to show subtraction for a problem like 32 − 15.

Practice 2-Digit Subtraction

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Lesson Objective

Practice 2-digit subtraction with and without regrouping.

Essential Question

How do you record the steps when subtracting 2-digit numbers?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to solve a subtraction problem using a strategy of their choice. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of subtraction to develop sound mathematical practices by asking these questions.

- *What is the problem asking?*
- *Have you solved a problem similar to this one?*
- *What is another way to solve the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to solve subtraction problems. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 7, 9, 10 14, or 16

4 Summarize Approximately 5 min.

Essential Question

How do you record the steps when subtracting 2-digit numbers?

Possible answer: If there are not enough ones to subtract from, I mark the top number to show one less ten in the Tens column and 10 more ones in the Ones column. Then I subtract the ones and then the tens, and write the difference.

Math Journal

Draw and write to explain how these two problems are different: 35 − 15 = ____ and 42 − 26 = ____.

Rewrite 2-Digit Subtraction

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Lesson Objective

Rewrite horizontal subtraction problems vertically in the standard algorithm format.

Essential Question

What are two different ways to write subtraction problems?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to write subtraction problems in vertical format after hearing a verbal word problem. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the standard algorithm to develop sound mathematical practices by asking these questions.

- *What ways have you seen to write a subtraction problem?*
- *What do you remember about how to model subtraction?*
- *What could you use to help you solve this problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to align tens and ones columns in subtraction problems. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 13, 20, 21 or 22, 23

4 Summarize Approximately 5 min.

Essential Question

What are two different ways to write subtraction problems?

Possible answer: I can write the numbers and symbols in a row or up and down in a column.

Math Journal

Is it easier to subtract when the numbers are written above and below each other? Explain your answer.

Add to Find Differences

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Lesson Objective

Use addition to find differences.

Essential Question

How can you use addition to solve subtraction problems?

Materials

- MathBoard
- Math Journal
- *i*Tools: Number Lines

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model and write subtraction and addition sentences. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of number sentences to develop sound mathematical practices by asking these questions.

- *What information do you need from this problem?*
- *How can you model this problem using blocks?*
- *How does your drawing support your work?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how addition and subtraction are related. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5, 8 or 9, 10

4 Summarize Approximately 5 min.

Essential Question

How can you use addition to solve subtraction problems?

Possible answer: I count up to the next tens number. Then I count up more ones to get to the number that was being subtracted from. I add the two numbers together to find the difference for the problem.

Math Journal

Explain how a number line can be used to find the difference for 34 − 28.

Problem Solving • Subtraction

Instructional Time: 1 day

Common Core Standard

CC.2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Also CC.2.NBT.5

Lesson Objective

Solve problems involving 2-digit subtraction by using the strategy *draw a diagram*.

Essential Question

How can drawing a diagram help when solving subtraction problems?

Materials

- MathBoard
- Math Journal
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Unlock the Problem • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use a bar model and number sentence to represent and solve a subtraction problem. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the relationship between addition and subtraction to develop sound mathematical practices by asking these questions.

- *What do you remember about ways to solve subtraction problems?*
- *What is another way to solve this problem?*
- *How can you check that your answer is correct?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to find a solution for a missing number. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6, 7, 8

4 Summarize Approximately 5 min.

Essential Question

How can drawing a diagram help when solving subtraction problems?

Possible answer: Drawing a diagram helps me organize the information. I can see what I know and what I need to find.

Math Journal

Explain how bar models show a problem in a different way.

Algebra • Write Equations to Represent Subtraction

Instructional Time: 1 day

Common Core Standard

CC.2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Also CC.2.NBT.5

Lesson Objective

Represent subtraction situations with number sentences using a symbol for the unknown number.

Essential Question

How do you write a number sentence to represent a problem?

Materials

- MathBoard
- Math Journal
- *i*Tools: Base-Ten Blocks
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use a model of their choice to represent a subtraction problem and then write a number sentence for the problem. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of subtraction strategies to develop sound mathematical practices by asking these questions.

- *What do you remember about writing number sentences?*
- *What could you use to help you solve this problem?*
- *What words in the problem tell you that you should subtract?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the concept of missing numbers in a number sentence. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5 or 6, 7

4 Summarize Approximately 5 min.

Essential Question

How do you write a number sentence to represent a problem?

Possible answer: After I read the problem, I can use what I know to fill in parts of a number sentence. Then I can solve for the missing number.

Math Journal

Describe different ways that you can show a story problem. Use one of the problems in this lesson as your example.

Solve Multistep Problems

Instructional Time: 1 day

Common Core Standard

CC.2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Also CC.2.NBT.5

Lesson Objective

Analyze word problems to determine what operations to use to solve multistep problems.

Essential Question

How do you decide what steps to do to solve a problem?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to complete bar models for word problems and decide which operation they used to solve. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of addition and subtraction to develop sound mathematical practices by asking these questions.

- *What is this problem asking?*
- *How can you write a number sentence to show this problem?*
- *How can you use what you know about subtraction to help solve the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these two-step addition and subtraction concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 2, 4 or 5, 6

4 Summarize Approximately 5 min.

Essential Question

How do you decide what steps to do to solve a problem?

Possible answer: I need to see if there is something that I need to find out first. Then I need to choose operations that match with the actions in the problem.

Math Journal

Choose one of the problems on page 271. Describe how you decided what steps were needed to solve that problem.

Draw to Represent 3-Digit Addition

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Lesson Objective

Draw quick pictures to represent 3-digit addition.

Essential Question

How do you draw quick pictures to show adding 3-digit numbers?

Materials

- MathBoard
- Math Journal
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use a place value chart to model 2-digit addition. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of place value to develop sound mathematical practices by asking these questions.

- *What do you remember about hundreds, tens, and ones?*
- *What is the problem asking?*
- *How can you model adding 3-digit numbers with blocks?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to use models to show addition with ones, tens, and hundreds. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5 or 7–8

4 Summarize Approximately 5 min.

Essential Question

How do you draw quick pictures to show adding 3-digit numbers?

Possible answer: I draw the hundreds, tens, and ones in each number. Then I count how many hundreds, tens, and ones there are in all.

Math Journal

Draw quick pictures and write to tell how you would add 342 and 416.

Break Apart 3-Digit Addends

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Lesson Objective

Apply place value concepts when using a break apart strategy for 3-digit addition.

Essential Question

How do you break apart addends to add hundreds, tens, and then ones?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to determine the value of each digit in a 3-digit number and show the number in different forms. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the hundreds, tens, and ones digits to develop sound mathematical practices by asking these questions.

- *What do you remember about place value?*
- *What is another way to model this number?*
- *How would your model change if you switched the 5 and the 8 to make 285?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand breaking apart addends to find the sum. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5, 7 or 8–9

4 Summarize Approximately 5 min.

Essential Question

How do you break apart addends to add hundreds, tens, and then ones?

Possible answer: You write each addend as the sum of the values of its hundreds digit, its tens digit, and its ones digit. You find the sums of the hundreds, the tens, and the ones of the two numbers. Then you find the total sum.

Math Journal

Draw quick pictures and write to explain how to break apart addends to find the sum of 324 + 231.

3-Digit Addition: Regroup Ones

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Lesson Objective

Record 3-digit addition using the standard algorithm with possible regrouping of ones.

Essential Question

When do you regroup ones in addition?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to solve addition problems using base-ten blocks. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of regrouping to develop sound mathematical practices by asking these questions.

- *What do you remember about regrouping in addition problems?*
- *What is the problem asking?*
- *What other strategy could you use to solve the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand regrouping ones in a 3-digit number. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 7, 9, 10 or 11, 12

4 Summarize Approximately 5 min.

Essential Question

When do you regroup ones in addition?

Possible answer: When there are 10 or more ones, I regroup 10 ones as 1 ten.

Math Journal

Find the sum of 136 + 212. Explain why you did or did not regroup.

3-Digit Addition: Regroup Tens

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Lesson Objective

Record 3-digit addition using the standard algorithm with possible regrouping of tens.

Essential Question

When do you regroup tens in addition?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use base-ten blocks to model 3-digit addition and discuss how they solved the problem. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of how to regroup ones to develop sound mathematical practices by asking these questions.

- *What do you remember about regrouping ones?*
- *How can you write an equation to represent the problem?*
- *What is another story you can tell using these numbers?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand when to regroup tens. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 13, 14, 15 or 16–17

4 Summarize Approximately 5 min.

Essential Question

When do you regroup tens in addition?

Possible answer: When there are 10 or more tens, I regroup 10 tens as 1 hundred.

Math Journal

Find the sum of 362 + 265. Explain why you did or did not regroup.

Addition: Regroup Ones and Tens

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Lesson Objective

Record 3-digit addition using the standard algorithm with possible regrouping of both ones and tens.

Essential Question

How do you know when to regroup in addition?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model and write equations for 3-digit addition problems with regrouping. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of modeling and adding whole numbers to develop sound mathematical practices by asking these questions.

- *What is the problem asking?*
- *How can you use what you know about regrouping to solve this problem?*
- *What is another way to model the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to regroup both tens and ones. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 8, 10, 15, 16–18

4 Summarize Approximately 5 min.

Essential Question

How do you know when to regroup in addition?

Possible answer: I regroup in addition when there are 10 or more ones or when there are 10 or more tens.

Math Journal

Write an addition problem for 275 plus 249 and find the sum. Then draw quick pictures to check your work.

Problem Solving • 3-Digit Subtraction

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Lesson Objective

Solve problems involving 3-digit subtraction by using the strategy *make a model*.

Essential Question

How can making a model help when solving subtraction problems?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- *i*Tools: Base-Ten Blocks
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Unlock the Problem • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to describe the steps they used to model and solve a subtraction word problem. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of drawing models to develop sound mathematical practices by asking these questions.

- *How can you use what you know about addition to solve subtraction problems?*
- *How can you write an equation to show this problem?*
- *How can you check that your answer is correct?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to use different subtraction strategies. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 7, 8

4 Summarize Approximately 5 min.

Essential Question

How can making a model help when solving subtraction problems?

Possible answer: You can use blocks to model the action in a problem.

Math Journal

Draw quick pictures to show how to subtract 314 from 546.

3-Digit Subtraction: Regroup Tens

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Lesson Objective

Record 3-digit subtraction using the standard algorithm with possible regrouping of tens.

Essential Question

When do you regroup tens in subtraction?

Materials

- MathBoard
- base-ten blocks
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use a place value chart to show subtraction of 3-digit numbers. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of hundreds, tens, and ones to develop sound mathematical practices by asking these questions.

- *What do you remember about regrouping in subtraction problems?*
- *What is another way to model this problem?*
- *How can you check that your answer is correct?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand regrouping tens to subtract. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5, 8, 9 or 11–12

4 Summarize Approximately 5 min.

Essential Question

When do you regroup tens in subtraction?

Possible answer: I regroup 1 ten as 10 ones when there are not enough ones to subtract from.

Math Journal

Choose one exercise in the bottom row of page 307. Draw quick pictures to check your work.

3-Digit Subtraction: Regroup Hundreds

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Lesson Objective

Record 3-digit subtraction using the standard algorithm with possible regrouping of hundreds.

Essential Question

When do you regroup hundreds in subtraction?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to draw pictures to model regrouping tens when subtracting 3-digit numbers. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of regrouping tens as ones to develop sound mathematical practices by asking these questions.

- *How can you use what you know about regrouping tens to regroup hundreds?*
- *What number sentence can you write to show this problem?*
- *What is another situation that could be shown by your drawing?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how regrouping hundreds is like regrouping tens and ones in subtraction problems. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5, 9, 10 or 11–12

4 Summarize Approximately 5 min.

Essential Question

When do you regroup hundreds in subtraction?

Possible answer: I regroup 1 hundred as 10 tens when there are not enough tens to subtract from.

Math Journal

Write the subtraction problem for 838 − 462 and find the difference. Then draw quick pictures to check your difference.

Subtraction: Regroup Hundreds and Tens

Instructional Time: 1 day

Note: The instructional time for this lesson can also be 2 days. On Day give students base-ten blocks to model Share and Show problems and then have them draw quick pictures of their models on the board. Have students compare their models and ask students what other strategies they could use before solving using the standard algorithm on the Student Edition page. On Day use the extra time to complete the Extend the Math Activity and have students check their answers to subtraction problems by using addition. Discuss how addition and subtraction are related.

Common Core Standard

CC.2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Lesson Objective

Record 3-digit subtraction using the standard algorithm with possible regrouping of both hundreds and tens.

Essential Question

How do you know when to regroup in subtraction?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use the standard algorithm to subtract with 3-digit numbers and then model the subtraction problem using pictures. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of showing regrouping with different strategies to develop sound mathematical practices by asking these questions.

- *What do you remember about regrouping and subtraction?*
- *What is the problem asking?*
- *What did you do first to solve the problem? Why?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to regroup more than once in a subtraction problem. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 8, 13, 16–18 or 19

4 Summarize Approximately 10 min.

Essential Question

How do you know when to regroup in subtraction?

Regrouping with Zeros

Instructional Time: 1 day

Common Core Standard

CC.2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Lesson Objective

Record subtraction using the standard algorithm when there are zeros in the minuend.

Essential Question

How do you regroup when there are zeros in the number you start with?

Materials

- MathBoard
- Math Journal
- *i*Tools: Base-Ten Blocks

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to choose a strategy for solving a subtraction problem in which the number being subtracted from has a zero in the tens place. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of 100 as 10 tens to develop sound mathematical practices by asking these questions.

- *How can you regroup 1 ten into ones?*
- *Should you add or subtract? How do you know?*
- *What is another way to model the problem?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to regroup hundreds as tens. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6, 10, 13–14 or 15–16

4 Summarize Approximately 5 min.

Essential Question

How do you regroup when there are zeros in the number you start with?

Possible answer: If there is a zero in the tens place of a 3-digit number, and you need to regroup to have more ones in the ones place, you first regroup 1 hundred as 10 tens.

Math Journal

Write the subtraction problem 604 – 357. Describe how you will subtract to find the difference.

Dimes, Nickels, and Pennies

Instructional Time: 1 day

Common Core Standard

CC.2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

Lesson Objective

Find the total values of collections of dimes, nickels, and pennies.

Essential Question

How do you find the total value of a group of dimes, nickels, and pennies?

Materials

- MathBoard
- play coins (dimes, nickels, pennies)
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Measurement

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to identify and sort dimes, nickels, and pennies and discuss their values. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of number patterns to develop sound mathematical practices by asking these questions.

- *What strategy can you use to count the value of the coins in each circle?*
- *How would you show 20 cents using pennies, nickels, and dimes?*
- *How can you use base-ten models to show the values of the coins?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to find the value of a group of coins. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5, 6 or 9–11

4 Summarize Approximately 5 min.

Essential Question

How do you find the total value of a group of dimes, nickels, and pennies?

Possible answer: I begin with the dimes and count on by 10s for dimes, 5s for nickels, and 1s for pennies.

Math Journal

Draw 3 dimes, 1 nickel, and 2 pennies. Describe how to count on to find the total value of this group of coins.

Quarters

Instructional Time: 1 day

Common Core Standard

CC.2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

Lesson Objective

Find the total values of collections of quarters, dimes, nickels, and pennies.

Essential Question

How do you find the total value of a group of coins?

Materials

- MathBoard
- play coins (quarters, dimes, nickels, pennies)
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Measurement

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to recognize and draw quarters as well as dimes, nickels, and pennies in groups and compare the coins' values. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of adding whole numbers to develop sound mathematical practices by asking these questions.

- *What pattern can you use to count and find the value of nickels, dimes, and pennies?*
- *How many nickels have the same value as one quarter?*
- *What number sentence can you write to show that the value of 2 nickels is equal to the value of 1 dime?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the value of a quarter. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6, 7, 8 or 9–12

4 Summarize Approximately 5 min.

Essential Question

How do you find the total value of a group of coins?

Possible answer: I start with the coin that has the greatest value and count on by the values of the coins.

Math Journal

Draw 1 quarter, 1 dime, and 4 pennies. Describe how to count to find the total value of this group of coins.

Count Collections

Instructional Time: 1 day

Common Core Standard

CC.2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

Lesson Objective

Order coins in a collection by value and then find the total value.

Essential Question

How do you order coins to help find the total value of a group of coins?

Materials

- MathBoard
- play coins (pennies, nickels, dimes, quarters)
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Measurement

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to arrange a set of coins in order of greatest value to least value. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of counting whole numbers to develop sound mathematical practices by asking these questions.

- *How can you use place-value models to show the value of each type of coin?*
- *What would happen if you ordered the coins by size? Would they also be ordered by value?*
- *What happens to the number of coins when you trade pennies for nickels?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the concept of counting money. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5, 6, 8 or 9–11

4 Summarize Approximately 5 min.

Essential Question

How do you order coins to help find the total value of a group of coins?

Possible answer: I order coins from the greatest value to the least value.

Math Journal

Draw 2 dimes, 1 nickel, and 2 quarters. Describe how to order and then count to find the total value of the coins.

Hands On • Show Amounts in Two Ways

Instructional Time: 1 day

Common Core Standard

CC.2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

Lesson Objective

Represent money amounts less than a dollar using two different combinations of coins.

Essential Question

How do you choose coins to show a money amount in different ways?

Materials

- MathBoard
- play coins (pennies, nickels, dimes, quarters)
- Math Journal
- *i*Tools: Measurement
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to model the value of money using different coin combinations. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of identifying the value of a group of coins to develop sound mathematical practices by asking these questions.

- *What are you asked to do?*
- *How can you use the fewest number of coins to show 27 cents?*
- *How would your drawing change if you had to include a quarter in the coins you use?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to show money amounts in different ways. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 3–6 or 7, 8

4 Summarize Approximately 5 min.

Essential Question

How do you choose coins to show a money amount in different ways?

Possible answer: I start with one of the coins of greater value and count out more coins until I get to the total amount. Then I make coin trades to show the amount in different ways.

Math Journal

Draw coins in two ways to show 57¢. Describe how you chose the coins for each way.

One Dollar

Instructional Time: 1 day

Common Core Standard

CC.2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

Lesson Objective

Show one dollar in a variety of ways.

Essential Question

How can you show the value of one dollar with coins?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Measurement

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to recognize equal amounts made from different types of coins. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of each coin's value to develop sound mathematical practices by asking these questions.

- *How many dimes would it take to show 40 cents?*
- *What conclusions can you make from your drawings?*
- *What happens to the number of coins in the box when you draw pennies to show 40 cents?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the concept of one dollar being the same as 100 cents. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4–7

4 Summarize Approximately 5 min.

Essential Question

How can you show the value of one dollar with coins?

Possible answer: There are many ways to show one dollar with a group of coins, but each way has to have a total value of 100 cents.

Math Journal

Draw coins to show one way to make $1.00 using only nickels and quarters.

Amounts Greater Than $1

Instructional Time: 1 day

Common Core Standard

CC.2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

Lesson Objective

Find and record the total value for money amounts greater than $1.

Essential Question

How do you show money amounts greater than one dollar?

Materials

- MathBoard
- Math Journal
- *i*Tools: Measurement

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to find the value of a set of coins including quarters, dimes, nickels, and pennies. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of adding money amounts to develop sound mathematical practices by asking these questions.

- *Why is it easier to count the coins from greatest to least value?*
- *What is another way to model the value of the coins in the coin bank?*
- *How do you know that the value of the coins in the coin bank is less than $1?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to use a dollar sign and decimal point to show a value of more than 100 cents. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 6 or 7, 8

4 Summarize Approximately 5 min.

Essential Question

How do you show money amounts greater than one dollar?

Possible answer: First, I count the money. I keep track of how many cents more than one dollar there are. Then I write the amount with a dollar sign and decimal point. The decimal point goes after the dollar amount and before the cents.

Math Journal

Write about how to use the dollar sign and decimal point to show the total value of 5 quarters.

Problem Solving • Money

Instructional Time: 1 day

Common Core Standard

CC.2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

Lesson Objective

Solve word problems involving money by using the strategy *act it out*.

Essential Question

How does acting it out help when solving problems about money?

Materials

- MathBoard
- play coins
- play bills
- Math Journal
- *i*Tools: Measurement
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Unlock the Problem • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to determine the value of a group of coins and one dollar bills to solve a word problem. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of counting on from greatest value to least value to develop sound mathematical practices by asking these questions.

- *What did you do first? Why?*
- *What do you remember about counting money?*
- *What other coin and dollar-bill combination could Kendra have used to give the clerk the same amount of money?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to use play coins and bills to act out a word problem. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 7, 8

4 Summarize Approximately 5 min.

Essential Question

How does acting it out help when solving problems about money?

Possible answer: Acting it out can help me see the money. Then I can count on to find the total value.

Math Journal

Write or draw to explain how you would find the total value of two $1 bills and 3 quarters.

Time to the Hour and Half Hour

Instructional Time: 1 day

Common Core Standard

CC.2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Lesson Objective

Tell and write time to the hour and half hour.

Essential Question

How do you tell time to the hour and half hour on a clock?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Measurement

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to draw the hour hand on an analog clock to show times. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the hour hand of a clock to develop sound mathematical practices by asking these questions.

- *What are you asked to do?*
- *What does the hour hand show?*
- *How did you decide where to draw the hour hand to show 3 o'clock?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to read the minute hand on an analog clock. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 10, 11, 12 or 13

4 Summarize Approximately 5 min.

Essential Question

How do you tell time to the hour and half hour on a clock?

Possible answer: For the time to the hour, the hour hand points to the hour and the minute hand points to the 12. For time to the half hour, the hour hand points halfway between the hour and the next hour, and the minute hand points to the 6.

Math Journal

Draw a clock to show the time as 2:30. Describe how you decided where the clock hands should point.

Time to 5 Minutes

Instructional Time: 1 day

Common Core Standard

CC.2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using A.M. and P.M.

Lesson Objective

Tell and write time to the nearest five minutes.

Essential Question

How do you tell and show time to five minutes?

Materials

- MathBoard
- Math Journal
- *i*Tools: Measurement
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to draw the hour and minute hand on a clock to show time to the hour or half hour. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of minutes in an hour to develop sound mathematical practices by asking these questions.

- *How would the hands on the first clock change if Sofia went to music at 10 o'clock instead of 10:30?*
- *What does the number 30 mean in the time 11:30?*
- *Which time is earlier: 10:30 or 11 o'clock? Explain.*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to count by fives using the numbers on the clock face. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 13, 14, 15 or 17

4 Summarize Approximately 5 min.

Essential Question

How do you tell and show time to five minutes?

Possible answer: The hour is the number that the hour hand is pointing to or has just passed. Then I count by fives for each number past the 12 on the clock face until I get to the number that the minute hand points to.

Math Journal

Draw a clock showing 2:50. Explain how you know where the clock hands point.

Practice Telling Time

Instructional Time: 1 day

Common Core Standard

CC.2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using A.M. and P.M.

Lesson Objective

Practice telling time to the nearest five minutes.

Essential Question

What are the different ways you can read the time on a clock?

Materials

- MathBoard
- Math Journal
- *i*Tools: Measurement
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to write the time shown on an analog clock and match those times to activities in a word problem. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of reading the hour hand and minutes hand on a clock to develop sound mathematical practices by asking these questions.

- *What do you remember about the position of the hour hand at 30 minutes after the hour?*
- *What pattern can you use to count the minutes as the minute hand moves from one number to the next on an analog clock?*
- *Why does the 9 on an analog clock represent 45 minutes after the hour?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the different ways to write and say the time. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 8, 12, 13 or 17, 18

4 Summarize Approximately 5 min.

Essential Question

What are the different ways you can read the time on a clock?

Possible answer: I can read 15 minutes after the hour as quarter past the hour. I can read times of 30 minutes after the hour as half past the hour.

Math Journal

Write the time 8:30. Then write this time in two other ways, using words.

A.M. and P.M.

Instructional Time: 1 day

Common Core Standard

CC.2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using A.M. and P.M.

Lesson Objective

Tell and write time using A.M. and P.M.

Essential Question

How do you use A.M. and P.M. to describe times?

Materials

- MathBoard
- Math Journal
- *i*Tools: Measurement

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to think about activities that they do in the mornings and evenings and write the time for each activity on an analog and digital clock. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the numbers on a clock to develop sound mathematical practices by asking these questions.

- *What do you remember about the position of the minute hand when it shows minutes after the hour?*
- *What is a situation that can show the importance of using A.M. and P.M. to describe time?*
- *What happens when the hour hand passes 12 on an analog clock?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the concept of A.M. and P.M. times. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 7, 9, 10 or 11, 12

4 Summarize Approximately 5 min.

Essential Question

How do you use A.M. and P.M. to describe times?

Possible answer: I use A.M. for times that are after midnight and before noon. I use P.M. for times that are after noon and before midnight.

Math Journal

List two school activities that you do in the morning and two school activities that you do in the afternoon. Write times for these activities, using A.M. and P.M.

Hands On • Measure with Inch Models

Instructional Time: 1 day

Common Core Standard

CC.2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Lesson Objective

Use concrete models to measure the lengths of objects in inches.

Essential Question

How can you use inch models to measure length?

Materials

- MathBoard
- color tiles
- Math Journal
- Animated Math Models
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use tiles to measure the length of objects. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of mesurement to develop sound mathematical practices by asking these questions.

- *What are you asked to do?*
- *What would happen to the number of tiles if the green chenille stick was longer?*
- *What other tools might be good to measure the length of an object?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to measure length in inches by using tiles. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 7, 9, 10 or 11–13

4 Summarize Approximately 5 min.

Essential Question

How can you use inch models to measure length?

Possible answer: I can put the inch models side by side below an object to measure the length of the object.

Math Journal

Describe how you would find an object that is about 8 inches long.

Hands On • Make and Use a Ruler

Instructional Time: 1 day

Common Core Standard

CC.2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks and measuring tapes.

Lesson Objective

Make an inch ruler and use it to measure the lengths of objects.

Essential Question

Why is using a ruler similar to using a row of color tiles to measure length?

Materials

- MathBoard
- color tiles
- color pencils or crayons
- paper strips (8 inches)
- Math Journal
- Animated Math Models
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to show a given length using tiles. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of what an inch is to develop sound mathematical practices by asking these questions.

- *What is an inch?*
- *Why are tiles good models to show lengths?*
- *How are tiles like a ruler?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to measure length. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5, 6, 7 or 9–10

4 Summarize Approximately 5 min.

Essential Question

Why is using a ruler similar to using a row of color tiles to measure length?

Possible answer: I can find the number of inches being measured with the inch sections on a ruler or with the row of color tiles.

Math Journal

Would you rather use color tiles or your ruler to measure the length of an object? Explain your choice.

Estimate Lengths in Inches

Instructional Time: 1 day

Common Core Standard

CC.2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.

Lesson Objective

Estimate the lengths of objects by mentally partitioning the lengths into inches.

Essential Question

How do you estimate the lengths of objects in inches?

Materials

- MathBoard
- rulers children made in Lesson 8.2
- Math Journal
- Animated Math Models
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use their rulers to measure classroom objects. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of measuring length to develop sound mathematical practices by asking these questions.

- *What does measuring an object tell you about the object?*
- *How can you tell which object is the longest?*
- *What is the first thing you do when you measure an object?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the concept of estimating length. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5–7 or 8, 9

4 Summarize Approximately 5 min.

Essential Question

How do you estimate the lengths of objects in inches?

Possible answer: I can think about an object that is about 1 inch long and think about how many 1-inch parts there are in the length of the object that I am estimating.

Math Journal

Describe a way that someone could estimate the length of a book.

Hands On • Measure with an Inch Ruler

Instructional Time: 1 day

Common Core Standard

CC.2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Lesson Objective

Measure the lengths of objects to the nearest inch using an inch ruler.

Essential Question

How do you use an inch ruler to measure lengths?

Materials

- MathBoard
- rulers children made in Lesson 8.2
- inch rulers
- Math Journal
- Animated Math Models
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use the length of an object they have drawn to help them draw another, longer object. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of length by asking these questions.

- *What do you remember about how to measure the length of an object?*
- *What rule can you use to describe the lengths of the caterpillars you drew?*
- *How do you know that the last caterpillar you drew is the longest?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to measure to the nearest inch. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6, 8, 10 or 13–14

4 Summarize Approximately 5 min.

Essential Question

How do you use an inch ruler to measure lengths?

Possible answer: I line up the left end of the object with the zero mark on the ruler. Then I find the inch mark that is closest to the other end of the object.

Math Journal

Compare the ruler you made to an inch ruler. Describe how they are alike and how they are different.

Problem Solving • Add and Subtract in Inches

Instructional Time: 1 day

Common Core Standards

CC.2.MD.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

CC.2.MD.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the number 0, 1, 2, …, and represent whole-number sums and differences within 100 on a number line diagram.

Lesson Objective

Solve addition and subtraction problems involving the lengths of objects by using the strategy *draw a diagram*.

Essential Question

How can drawing a diagram help when solving problems about length?

Materials

- MathBoard
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Unlock the Problem • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use a diagram to relate addition and subtraction problems about length. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of addition and subtraction to develop sound mathematical practices by asking these questions.

- *What did you do first? Why?*
- *Why did you choose that operation for your number sentence?*
- *If Ann removed 6 inches of paper clips from the chain instead of 9 inches, how would your answer change?*

3 Practice

Share and Show Approximately 20 min.

Use the checked exercise as a diagnostic assessment. If students answer the exercise incorrectly, see RtI (Response to Intervention).

Have students work on exercise 4 based on their depth of understanding. The exercise requires higher order thinking skills and critical reasoning, making it especially rich.

4 Summarize Approximately 5 min.

Essential Question

How can drawing a diagram help when solving problems about length?

Possible answer: Drawing a diagram helps me decide whether to add or subtract to solve the problem.

Math Journal

Describe how you could draw a diagram for a problem about finding the total length for two strings, 15 inches long and 7 inches long.

Hands On • Measure in Inches and Feet

Instructional Time: 1 day

Common Core Standard

CC.2.MD.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

Lesson Objective

Measure the lengths of objects in both inches and feet to explore the inverse relationship between size and number of units.

Essential Question

Why is measuring in feet different from measuring in inches?

Materials

- MathBoard
- sheets of paper
- large paper clips
- inch rulers
- Math Journal
- Animated Math Models
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to compare and analyze different units of measure. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of what a foot is to develop sound mathematical practices by asking these questions.

- *Why would you want to use different-sized units to measure different objects?*
- *Why do you end up with different numbers when measuring different-sized units?*
- *Which unit do you think is better for measuring the distance between people? Why?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand measuring to the nearest foot and inch. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6, 7, 8 or 9–10

4 Summarize Approximately 5 min.

Essential Question

Why is measuring in feet different from measuring in inches?

Possible answer: Feet are longer than inches, so it takes fewer feet than inches to measure the length of an object.

Math Journal

Would you measure the length of a jump rope in inches or in feet? Explain your choice.

Estimate Lengths in Feet

Instructional Time: 1 day

Note: The instructional time for this lesson can also be 2 days. On Day 1 use the extra time to have students practice estimating the length of, then measuring additional classroom objects. Encourage students to work with partners to find the lengths of the window, the classroom, and the closet.

On Day 2 use the extra time to complete the Extend the Math activity. Have students write a summary of the activity. Encourage them to describe their findings.

Common Core Standard

CC.2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.

Lesson Objective

Estimate the lengths of objects in feet.

Essential Question

How do you estimate the lengths of objects in feet?

Materials

- MathBoard
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to identify then draw objects that have the same length.

As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of estimating length in inches to develop sound mathematical practices by asking these questions.

- *What do you remember about estimating the lengths of objects in inches?*
- *How is the activity like measuring an object? How is it different?*
- *How would you find objects that are shorter than an inch ruler?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to estimate length in feet. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5, 6 or 7–8

4 Summarize Approximately 5 min.

Essential Question

How do you estimate the lengths of objects in feet?

Possible answer: A 12-inch ruler is about 1 foot. I can look at an object and think of how many 12-inch rulers it would take to match its length.

Math Journal

Choose an object that is a few feet long. Explain how to estimate its length in feet.

Choose a Tool

Instructional Time: 1 day

Common Core Standard

CC.2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Lesson Objective

Select appropriate tools for measuring different lengths.

Essential Question

How do you choose a measuring tool to use when measuring lengths?

Materials

- MathBoard
- 1-yard pieces of yarn
- inch rulers
- yardsticks
- measuring tapes
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to measure and compare distances. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of measuring objects to develop sound mathematical practices by asking these questions.

- *How is measuring distance like measuring the length of an object?*
- *How does the length of yarn compare with the other objects of measure you have used?*
- *Why would you need a longer object to measure distance?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand these measurement concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4–5 or 6–7

4 Summarize Approximately 5 min.

Essential Question

How do you choose a measuring tool to use when measuring lengths?

Possible answer: I look at the length or distance I need to measure. If it is curved, I use a measuring tape. If it is straight and short, I use an inch ruler. If it is straight and long, I use a yardstick.

Math Journal

Describe how you would use a yardstick to measure the length of a rug.

Display Measurement Data

Instructional Time: 1 day

Common Core Standard

CC.2.MD.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

Lesson Objective

Measure the lengths of objects and use a line plot to display the measurement data.

Essential Question

How can a line plot be used to show measurement data?

Materials

- MathBoard
- inch rulers
- Math Journal
- Animated Math Models
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to measure strings of various lengths. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of measuring with an inch ruler to develop sound mathematical practices by asking these questions.

- *Why do you use inches instead of a larger unit of measure to measure the lengths of the strings?*
- *How do you compare objects of different lengths?*
- *What do you do if the length of an object ends between two numbers on an inch ruler?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to interpret and represent data on a line plot. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5 or 6–7

4 Summarize Approximately 5 min.

Essential Question

How can a line plot be used to show measurement data?

Possible answer: Above the number labels along the line plot, I can draw Xs to show how many objects are each length.

Math Journal

Describe how you made a line plot in this lesson.

Hands On • Measure with a Centimeter Model

Instructional Time: 1 day

Common Core Standard

CC.2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Lesson Objective

Use a concrete model to measure the lengths of objects in centimeters.

Essential Question

How do you use a centimeter model to measure the lengths of objects?

Materials

- MathBoard
- base-ten unit cubes
- Math Journal
- Animated Math Models
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to measure length using objects. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of measurement to develop sound mathematical practices by asking these questions.

- *What is the problem asking?*
- *Why are cubes a good tool for measurement?*
- *How would the number of cubes you need change if the first string was longer?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to use unit cubes to measure length. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5, 6, 8 or 9

4 Summarize Approximately 5 min.

Essential Question

How do you use a centimeter model to measure the lengths of objects?

Possible answer: I line up the left edge of a cube under the left end of the object, make marks for the cube lengths along the entire length of the object, and then count the spaces.

Math Journal

Write about using a unit cube to measure lengths in this lesson.

Estimate Lengths in Centimeters

Instructional Time: 1 day

Common Core Standard

CC.2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.

Lesson Objective

Estimate lengths of objects in centimeters by comparing them to known lengths.

Essential Question

How do you use known lengths to estimate unknown lengths?

Materials

- MathBoard
- classroom objects
- 10-centimeter strips of paper
- Math Journal
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to estimate the length of objects. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of measurement to develop sound mathematical practices by asking these questions.

- *How is using the strip to measure like measuring with cubes? How is it different?*
- *What other tools can you use to measure?*
- *Why did you decide to measure the objects you chose?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the concept of estimating length. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5, 6 or 9

4 Summarize Approximately 5 min.

Essential Question

How do you use known lengths to estimate unknown lengths?

Possible answer: I can relate the known length to the unknown length, and use that comparison to help make a reasonable estimate.

Math Journal

Choose one exercise on page 439. Describe how you decided which estimate was the best choice.

Hands On • Measure with a Centimeter Ruler

Instructional Time: 1 day

Common Core Standard

CC.2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Lesson Objective

Measure lengths of objects to the nearest centimeter using a centimeter ruler.

Essential Question

How do you use a centimeter ruler to measure lengths?

Materials

- MathBoard
- small classroom objects
- base-ten unit cubes
- centimeter rulers
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Number Lines

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to measure in centimeters. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of measurement to develop sound mathematical practices by asking these questions.

- *How is using cubes to measure like using strips or a ruler?*
- *If you use the same number of cubes to measure two different objects, what can you tell about the objects?*
- *What other objects can you use to measure?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to use a ruler to measure to the nearest centimeter. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 6, 8 or 9

4 Summarize Approximately 5 min.

Essential Question

How do you use a centimeter ruler to measure lengths?

Possible answer: I line up the left edge of the object with the zero mark on the ruler. Then I find the centimeter mark that is closest to the other end of the object.

Math Journal

Measure the length of the top of your desk in centimeters. Describe how you found the length.

Problem Solving • Add and Subtract Lengths

Instructional Time: 1 day

Common Core Standards

CC.2.MD.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, …, and represent whole-number sums and differences within 100 on a number line diagram.

CC.2.MD.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

Lesson Objective

Solve problems involving adding and subtracting lengths by using the strategy *draw a diagram*.

Essential Question

How can drawing a diagram help when solving problems about lengths?

Materials

- MathBoard
- Math Journal
- *i*Tools: Number Lines

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Unlock the Problem • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to draw a diagram to help solve a problem. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of subtraction to develop sound mathematical practices by asking these questions.

- *What do you remember about subtraction?*
- *How can you tell that you need to subtract?*
- *What is another way you could model this problem?*

3 Practice

Share and Show Approximately 20 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

4 Summarize Approximately 5 min.

Essential Question

How can drawing a diagram help when solving problems about lengths?

Possible answer: Drawing a diagram helps me decide whether to add or subtract to solve the problem.

Math Journal

Describe how you could draw a diagram for a problem about finding the total length of two ribbons, 13 centimeters long and 5 centimeters long.

Hands On • Centimeters and Meters

Instructional Time: 1 day

Common Core Standard

CC.2.MD.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

Lesson Objective

Measure the lengths of objects in both centimeters and meters to explore the inverse relationship between size and number of units.

Essential Question

How is measuring in meters different from measuring in centimeters?

Materials

- MathBoard
- 1-meter pieces of yarn
- sheets of paper
- centimeter rulers
- meter sticks
- masking tape
- Math Journal
- Animated Math Models
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to measure distances using different tools. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of measuring distances to develop sound mathematical practices by asking these questions.

- *How is using the yarn to measure like other tools you've used to measure?*
- *What tools could you use to measure large objects or long distances?*
- *How is using the paper to measure different from using the yarn?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to measure and record lengths in centimeters and meters. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5, 6, 7 or 8

4 Summarize Approximately 5 min.

Essential Question

How is measuring in meters different from measuring in centimeters?

Possible answer: It takes fewer meters than centimeters to measure an object because a meter is longer than a centimeter.

Math Journal

Would you measure the length of a bench in centimeters or meters? Explain your choice.

Estimate Lengths in Meters

Instructional Time: 1 day

Common Core Standard

CC.2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.

Lesson Objective

Estimate the lengths of objects in meters.

Essential Question

How do you estimate the lengths of objects in meters?

Materials

- MathBoard
- centimeter rulers
- Math Journal
- Animated Math Models
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to estimate lengths. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of measurement to develop sound mathematical practices by asking these questions.

- *What do you remember about centimeters?*
- *What tools can you use to measure in centimeters?*
- *How can you tell if an object is more or less than 10 centimeters long?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand estimating length in meters. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5, 6 or 8

4 Summarize Approximately 5 min.

Essential Question

How do you estimate the lengths of objects in meters?

Possible answer: I think about the length of a meter and then think about how many meters it will take to match the length of the object I am estimating.

Math Journal

Choose one object from page 455. Describe how you estimated its length.

Hands On • Measure and Compare Lengths

Instructional Time: 1 day

Common Core Standard

CC.2.MD.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Lesson Objective

Measure and then find the difference in the lengths of two objects.

Essential Question

How do you find the difference between the lengths of two objects?

Materials

- MathBoard
- centimeter rulers
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Number Lines

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use centimeter rulers to measure length. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of measuring to develop sound mathematical practices by asking these questions.

- *How can you tell if one object is longer than another?*
- *What happens if you don't line up the edge of the ruler with the edge of an object?*
- *If you measure an object more than once, will the length be the same every time? How do you know?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to measure objects and compare their lengths. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5 or 7

4 Summarize Approximately 5 min.

Essential Question

How do you find the difference between the lengths of two objects?

Possible answer: First, I find the length of each object. Then I write a subtraction sentence to find the difference between the two lengths.

Math Journal

Suppose the lengths of two strings are 10 centimeters and 17 centimeters. Describe how the lengths of these two strings compare.

Collect Data

Instructional Time: 1 day

Common Core Standard

CC.2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Lesson Objective

Collect data in a survey and record that data in a tally chart.

Essential Question

How do you use a tally chart to record data from a survey?

Materials

- MathBoard
- connecting cubes (blue, red, green)
- small opaque bags
- Math Journal
- Animated Math Models

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to collect and record information about colors of cubes. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of counting by fives to develop sound mathematical practices by asking these questions.

- *What do you remember about counting by fives?*
- *How can grouping tally marks by five help you count?*
- *How can tally marks help you keep track of how many cubes you pull from the bag?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the concept of recording data. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 8, 10, 12 or 13.

4 Summarize Approximately 5 min.

Essential Question

How do you use a tally chart to record data from a survey?

Possible answer: You can use a tally mark to record each choice for the survey question.

Math Journal

Explain how you would take a survey to find your classmates' favorite shirt colors.

Read Picture Graphs

Instructional Time: 1 day

Common Core Standard

CC.2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Lesson Objective

Interpret data in picture graphs and use that information to solve problems.

Essential Question

How do you use a picture graph to show data?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Graphs

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use a tally chart to solve a problem. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of reading tally marks to develop sound mathematical practices by asking these questions.

- *What do you remember about how to read tally marks?*
- *How can you tell that more children chose one hobby over another?*
- *What other questions could you ask your classmates in order to make a tally chart?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to read picture graphs. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5, 6 or 8

4 Summarize Approximately 5 min.

Essential Question

How do you use a picture graph to show data?

Possible answer: A picture graph has pictures to show data. It has a key that tells how many each picture stands for. I can compare the data in the rows.

Math Journal

Write a few sentences to describe the different parts of a picture graph.

Make Picture Graphs

Instructional Time: 1 day

Common Core Standard

CC.2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Lesson Objective

Make picture graphs to represent data.

Essential Question

How do you make a picture graph to show data in a tally chart?

Materials

- MathBoard
- connecting cubes (blue, red, green, orange)
- small opaque bags
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Graphs

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to record information in a picture graph. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of picture graphs to develop sound mathematical practices by asking these questions.

- *How is a picture graph like a tally chart?*
- *What are some other kinds of data that you could show in a picture graph?*
- *How can you find which color cube was pulled the most times?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to complete a picture graph. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6, 8, 9

4 Summarize Approximately 15 min.

Essential Question

How do you make a picture graph to show data in a tally chart?

Possible answer: I draw one picture (or symbol) in each row of the picture graph to stand for each tally mark in each row of the tally chart.

Math Journal

Look at the picture graph on page 479. Write about the information shown in this graph.

Read Bar Graphs

Instructional Time: 1 day

Common Core Standard

CC.2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Lesson Objective

Interpret data in bar graphs and use that information to solve problems.

Essential Question

How is a bar graph used to show data?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Graphs

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use a picture graph to solve a problem. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of interpreting data to develop sound mathematical practices by asking these questions.

- *What other kind of data could you use a picture graph like this one to show?*
- *How can you find the number of trucks two of the children saw?*
- *Why is this a good way to show this kind of data?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to interpret information on a bar graph. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 6, 8 or 11, 12

4 Summarize Approximately 5 min.

Essential Question

How is a bar graph used to show data?

Possible answer: A bar graph shows data with bars. The number on the graph that the end of a bar lines up with shows the number the bar stands for.

Math Journal

Look at the bar graph on page 484. Write about the information shown in this graph.

Make Bar Graphs

Instructional Time: 1 day

Common Core Standard

CC.2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Lesson Objective

Make bar graphs to represent data.

Essential Question

How do you make a bar graph to show data?

Materials

- MathBoard
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Graphs

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use a bar graph to solve a problem. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of interpreting data on a bar graph to develop sound mathematical practices by asking these questions.

- *What is the problem asking?*
- *How is the bar graph like other graphs you have seen?*
- *Which writing tool has the greatest number?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to make a bar graph. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 6 or 7, 9

4 Summarize Approximately 5 min.

Essential Question

How do you make a bar graph to show data?

Possible answer: You write a title, labels, and numbers on a grid. Then you make bars that are appropriate lengths or heights to show the data.

Math Journal

Look at the bar graph on page 487. Describe how you shaded bars to show the data.

Problem Solving • Display Data

Instructional Time: 1 day

Common Core Standard

CC.2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Lesson Objective

Solve problems involving data by using the strategy *make a graph*.

Essential Question

How does making a bar graph help when solving problems about data?

Materials

- MathBoard
- Math Journal
- HMH Mega Math
- *i*Tools: Graphs

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Unlock the Problem • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to make a bar graph to solve a problem. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of interpreting bar graphs to develop sound mathematical practices by asking these questions.

- *What kinds of information can you show in a bar graph?*
- *How do you know how long to make each bar?*
- *Why is a bar graph the best way to show this data?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to interpret data in graphs. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 4, 5

4 Summarize Approximately 5 min.

Essential Question

How does making a bar graph help when solving problems about data?

Possible answer: When I make a bar graph, I can compare the bars to see how the data change.

Math Journal

Write a few sentences to describe what you did in this lesson.

Three-Dimensional Shapes

Instructional Time: 1 day

Common Core Standard

CC.2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Lesson Objective

Identify three-dimensional shapes.

Essential Question

What objects match three-dimensional shapes?

Materials

- MathBoard
- set of three-dimensional shapes
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Geometry

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to associate real-life objects with three-dimensional shapes. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the the attributes of plane figures and three-dimensional shapes to develop sound mathematical practices by asking these questions.

- *How are the shapes different from drawings of flat shapes?*
- *What do you remember about how to describe plane figures?*
- *Why do you think these shapes are also called "solid shapes"?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they can identify the different types of three-dimensional shapes. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 5, 7 or 8, 9

4 Summarize Approximately 5 min.

Essential Question

What objects match three-dimensional shapes?

Possible answer: A soccer ball is a sphere. A shoebox is a rectangular prism. A soup can is a cylinder.

Math Journal

Describe one way that a cube and a cylinder are alike. Describe one way that they are different.

Attributes of Three-Dimensional Shapes

Instructional Time: 1 day

Common Core Standard

CC.2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Lesson Objective

Identify and describe three-dimensional shapes according to the number of faces, edges, and vertices.

Essential Question

How would you describe the faces of a rectangular prism and the faces of a cube?

Materials

- MathBoard
- straightedge (e.g. ruler)
- Dot Paper (*see eTeacher Resources*)
- three-dimensional shapes (cube and rectangular prism)
- Math Journal
- HMH Mega Math
- *i*Tools: Geometry

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to identify solid figures according to their attributes. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of shapes and their attributes to develop sound mathematical practices by asking these questions.

- *How does a cone differ from a cylinder?*
- *What makes the sphere different from the other shapes on the page?*
- *How do you think each object might move along a flat surface?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they can identify the faces of three-dimensional shapes. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 3, 4, 5 or 6

4 Summarize Approximately 5 min.

Essential Question

How would you describe the faces of a rectangular prism and the faces of a cube?

Possible answer: All the faces of a rectangular prism are rectangles. All the faces of a cube are squares.

Math Journal

Describe a cube. Use the words *faces, edges,* and *vertices* in your description.

Two-Dimensional Shapes

Instructional Time: 1 day

Common Core Standard

CC.2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Lesson Objective

Name 3-, 4-, 5-, and 6-sided shapes according to the number of sides and vertices.

Essential Question

What shapes can you name just by knowing the number of sides and vertices?

Materials

- MathBoard
- rulers
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Geometry

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to draw shapes based on given attributes. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the attributes of two-dimensional figures to develop sound mathematical practices by asking these questions.

- *Why would you not draw a rectangle in the top box?*
- *Why can you draw different shapes in the second box?*
- *Does changing the size of a shape affect the number of sides it has?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to identify plane figures by their attributes. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 10, 11, 12 or 15

4 Summarize Approximately 5 min.

Essential Question

What shapes can you name just by knowing the number of sides and vertices?

Possible answer: triangle: 3 sides and 3 vertices; quadrilateral: 4 sides and 4 vertices; pentagon: 5 sides and 5 vertices; hexagon: 6 sides and 6 vertices.

Math Journal

Draw and label a pentagon and a quadrilateral.

Angles in Two-Dimensional Shapes

Instructional Time: 1 day

Common Core Standard

CC.2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Lesson Objective

Identify angles in two-dimensional shapes.

Essential Question

How do you find and count angles in two-dimensional shapes?

Materials

- MathBoard
- straightedge (e.g. ruler)
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to find angles in triangles. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of attributes of two-dimensional shapes to develop sound mathematical practices by asking these questions.

- *How are triangles and rectangles alike? How are they different?*
- *What do you remember about describing a shape by its sides and vertices?*
- *How can you tell whether a shape is a rectangle?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to identify angles in plane figures. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 9, 10 or 11, 12

4 Summarize Approximately 5 min.

Essential Question

How do you find and count angles in two-dimensional shapes?

Possible answer: First I find where 2 sides meet and circle the angle. I continue until I have circled all the angles. Then I count the circles.

Math Journal

Draw a two-dimensional shape with 4 angles. Circle the angles. Write the name of the two-dimensional shape you drew.

Sort Two-Dimensional Shapes

Instructional Time: 1 day

Common Core Standard

CC.2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Lesson Objective

Sort two-dimensional shapes according to their attributes.

Essential Question

How do you use the number of sides and angles to sort two-dimensional shapes?

Materials

- MathBoard
- pattern blocks
- red, blue, and green crayons
- Math Journal
- Animated Math Models
- HMH Mega Math
- *i*Tools: Geometry

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use pattern blocks to create a shape. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the attributes of a trapezoid to develop sound mathematical practices by asking these questions.

- *What are you asked to do?*
- *What did you discover about the relationship between the rhombus and the triangle?*
- *How are the rhombus and the trapezoid alike?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the process of sorting shapes. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 8, 9 or 10, 11

4 Summarize Approximately 5 min.

Essential Question

How do you use the number of sides and angles to sort two-dimensional shapes?

Possible answer: You can count the sides and angles of each shape to sort them and follow a rule.

Math Journal

Think about the rule *Shapes that have more than 3 angles.* Draw three shapes that match this rule.

Hands On • Partition Rectangles

Instructional Time: 1 day

Common Core Standard

CC.2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Also CC.2.OA.4

Lesson Objective

Partition rectangles into equal-size squares and find the total number of these squares.

Essential Question

How do you find the total number of same-size squares that will cover a rectangle?

Materials

- MathBoard
- color tiles
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to use tiles to draw a two-dimensional shape. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of different ways to arrange tiles to make shapes to develop sound mathematical practices by asking these questions.

- *What is the shape of the tiles?*
- *What types of shapes can you use the tiles to make?*
- *Why is the total number of sides for the tiles used different from the number of sides in the shape created?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own • Independent Practice

Students can begin independent practice once they understand finding the number of tiles it takes to cover different shapes. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 3, 4, 5

4 Summarize Approximately 5 min.

Essential Question

How do you find the total number of same-size squares that will cover a rectangle?

Possible answer: First, I use tiles to cover the rectangle. Then I trace each tile on the rectangle and count the number of tiles I used.

Math Journal

Look at Exercise 3 on page 531. Is there a different-shaped rectangle that you could cover with 6 tiles? Explain.

Equal Parts

Instructional Time: 1 day

Common Core Standard

CC.2.G.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of,* etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Lesson Objective

Identify and name equal parts circles and rectangles as halves, thirds, or fourths.

Essential Question

What are halves, thirds, and fourths of a whole?

Materials

- MathBoard
- pattern blocks
- red and blue crayons
- Math Journal
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to make a shape using combinations of different shapes. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of the different ways to make a hexagon by asking these questions.

- *What are you asked to do?*
- *Of which shape can you use the fewest to make the hexagon?*
- *Why do you think it is possible to use several different shapes to make the hexagon?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand the concept of equal parts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 7, 10, 13 or 17

4 Summarize Approximately 5 min.

Essential Question

What are halves, thirds, and fourths of a whole?

Possible answer: They are equal parts of a whole. Halves are two equal parts. Thirds are three equal parts. Fourths are four equal parts.

Math Journal

Look at the shapes in Exercise 16. Describe the shapes that you did not color or draw an X on.

Show Equal Parts of a Whole

Instructional Time: 1 day

Common Core Standard

CC.2.G.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of,* etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Lesson Objective

Partition shapes to show halves, thirds, or fourths.

Essential Question

How do you know if a shape shows halves, thirds, or fourths?

Materials

- MathBoard
- Math Journal
- HMH Mega Math

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to identify shapes that show equal parts. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of equal parts to develop sound mathematical practices by asking these questions.

- *What do you remember about halves, thirds, and fourths?*
- *How can you tell if a shape is divided into equal parts?*
- *How would the sizes of the parts change if the circle was divided into fourths?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to draw lines to show equal parts of a whole. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 13, 14, 16 or 17, 18

4 Summarize Approximately 5 min.

Essential Question

How do you know if a shape shows halves, thirds, or fourths?

Possible answer: If a shape has 2 equal parts, it shows halves. If it has 3 equal parts, it shows thirds. If it has 4 equal parts, it shows fourths.

Math Journal

Draw three rectangles. Then draw to show halves, thirds, and fourths. Write about each whole that you have drawn.

Describe Equal Parts

Instructional Time: 1 day

Common Core Standard

CC.2.G.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Lesson Objective

Identify and describe one equal part as a half of, a third of, or a fourth of a whole.

Essential Question

How do you find a half of, a third of, or a fourth of a whole?

Materials

- MathBoard
- green and red crayons
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Listen and Draw • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to correctly identify shapes that are divided into fourths and halves. As students work through Listen and Draw, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of equal parts to develop sound mathematical practices by asking these questions.

- *What happens to a shape when you cut it into fourths?*
- *How can you use equal parts to describe a shape?*
- *If two circles of different sizes are each cut into thirds, how will the parts of the circles compare?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to show and describe an equal part of a whole. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 7, 10, 13 or 17

4 Summarize Approximately 5 min.

Essential Question

How do you find a half of, a third of, or a fourth of a whole?

Possible answer: For a half of a shape, I divided the shape into 2 equal parts and shaded 1 part. For a third of a shape, I divided the shape into 3 equal parts and shaded 1 part. For a fourth of a shape, I divided the shape into 4 equal parts and shaded 1 part.

Math Journal

Draw pictures to show a third of a whole and a fourth of a whole. Label each picture.

Problem Solving • Equal Shares

Instructional Time: 1 day

Common Core Standard

CC.2.G.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of,* etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Lesson Objective

Solve problems involving wholes divided into equal shares by using the strategy *draw a diagram*.

Essential Question

How can drawing a diagram help when solving problems about equal shares?

Materials

- MathBoard
- Math Journal

1 Engage Approximately 5 min.

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk Approximately 20 min.

Unlock the Problem • Activity to Build Conceptual Understanding

Remember, this is the core instruction for this lesson, in which conceptual development is key. The goal of this activity is for students to draw to show fourths in two different ways. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.

Build on students' understanding of equal shares to develop sound mathematical practices by asking these questions.

- *What do you remember about dividing a shape into fourths?*
- *How else can you show fourths on the square?*
- *How do you know that you have divided the squares into fourths?*

3 Practice

Share and Show Approximately 10 min.

Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, see RtI (Response to Intervention).

On Your Own Approximately 10 min.

Students can begin independent practice once they understand how to find equal shares to solve a problem. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich.

Exercises 7, 8

4 Summarize Approximately 5 min.

Essential Question

How can drawing a diagram help when solving problems about equal shares?

Possible answer: I can draw to divide a shape in different ways to show halves, thirds, or fourths.

Math Journal

Draw and write to explain how you can divide a rectangle into thirds in two different ways.