

## Understand Place Value

### 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?

**Vocabulary** digits

## 1 ENGAGE



**Access Prior Knowledge** With children, count aloud to find how many children are in the room.

- **How is this number written?** Check children's answers.

Have a volunteer write the number on the board.

Have children line up in groups of ten and single children (as applicable) to represent the tens and ones in the number. Count the groups by tens and then count on by ones until all children have been counted.

## 2 TEACH and TALK



Animated Math Models

### Listen and Draw



**Materials** base-ten blocks

Read the following problem aloud.

*Tyler collects baseball cards. The number of cards that he has is written with a 2 and a 5. How many cards might he have?*

In the workspace at the top of the page, ask children to write the number of cards Tyler might have and choose a way to describe the number. Discuss the different ways children chose to show their numbers. Check for children's general understanding of numbers.

Have children repeat the activity for the other possible number of cards in the workspace at the bottom of the page.

- **How are the two numbers you wrote alike?** Possible answer: They both have a 2 and a 5. **How are they different?** Possible answer: The 2 and the 5 have different values in the numbers.

Show children a model of the number 25 using base-ten blocks. Draw a quick picture to represent the number 25. Discuss how both the blocks and the pictures can be used to represent the numbers.

- **How do the blocks and the quick picture help you visualize 25?** The blocks and the pictures make it easier to see the tens and the ones that make up the number.
- **Can you also model 52 with blocks and quick pictures?** Yes

Have children model 52 using blocks and quick pictures.

- **How are the models for 52 different from the models for 25?** The models for 52 show 3 more tens and 3 fewer ones than the model for 25.

Some children may be able to distinguish the numbers without using base-ten blocks, drawing a picture, or using other types of manipulatives. Stress that even if they can get the answer quickly, it is important to know how to show their work as they solve problems.

Use **Math Talk** to focus on children's understanding of place value in 2-digit numbers.

Ask:

- **What does a digit represent when it is in the ones place?** the number of ones
- **What does a digit represent when it is in the tens place?** the number of tens
- **Can the same digit ever be in both the tens place and the ones place?** yes
- **What value do the digits in 55 represent?** 5 tens and 5 ones

Name \_\_\_\_\_

## Understand Place Value

**Essential Question** How do you know the value of a digit?

**COMMON CORE STANDARD** CC.2.NBT.3  
Understand place value.

### Listen and Draw



Write the numbers. Then choose a way to show the numbers. **Check children's work.**

Tens	Ones

**Children's answers should include 52 and 25. Order of answers may vary.**

Tens	Ones

**Math Talk: Possible answer:** When the 5 is in the ones place, its value is 5, or 5 ones. When the 5 is in the tens place, its value is 50, or 5 tens.

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**FOR THE TEACHER** • Read the following problem. Have children write the numbers and describe how they chose to represent them. Tyler collects baseball cards. The number of cards that he has is written with a 2 and a 5. How many cards might he have?

#### Math Talk

**Explain** why the value of 5 is different in the two numbers.



MATHEMATICAL PRACTICES

## ▶ Model and Draw



Work through the model with children. Briefly discuss how digits are used to write numbers, such as 64.

- What do the blocks show? 6 tens and 4 ones
- Suppose the model showed 6 tens blocks and no ones blocks. What digits would you use in the tens place and ones place to write that number? Explain. Possible answer: I would use a 6 in the tens place and a 0 in the ones place. The number is 60.

### MATHEMATICAL PRACTICES

What is the difference between first and one?

## 3 PRACTICE



### ▶ Share and Show • Guided Practice

Exercises 1–6 connect to the learning model.

- In Exercise 1, how do you know what place each digit is in? Possible answer: The tens digit is to the left of the ones digit.

You may wish to ask children to also circle the blocks in each exercise that show the value of the red digit.

Encourage children to share with a partner the way they solved one of the problems. Ask them to talk through the problem by indicating what the digits in the number represent, what the counting cubes stand for, and which value corresponds to the red digit.

Use Exercises 5 and 6 for **Quick Check**. Children should use their MathBoards to show their answers to these exercises.



## Quick Check



If

a child misses Exercises 5 and 6

Then

**Differentiate Instruction** with

- RtI Tier 1 Activity, p. 21B
- Reteach 1.3
- ★ Soar to Success Math 2.18



## COMMON ERRORS

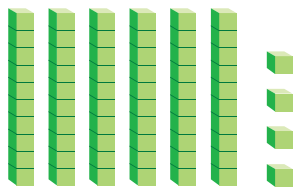
**Error** Children may not circle the correct value for a tens digit.

**Example** In Exercise 2, children circle “5” because there are 5 tens blocks.

**Springboard to Learning** Review with children that there are 10 ones in each ten, so the value of each tens block is 10. Have them count by tens five times as they point to each tens block in Exercise 2.

## Model and Draw

0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 are **digits**.  
In a 2-digit number, you know the value of a digit by its place.



64

Tens	Ones
6	4

6 tens    4 ones

The digit **6** is in the tens place. It tells you there are 6 tens, or 60.

The digit **4** is in the ones place. It tells you there are 4 ones, or 4.



## Share and Show



Circle the value of the red digit.

1.            26

60            6

2.            58

5            50

3.            40

40            4

4.            73

30            3

5.            24

2            20

6.            61

1            10

## ► On Your Own • Independent Practice

If children answer Exercises 5 and 6 correctly, assign exercises 7–18.

Encourage children to answer Exercises 7–15 on their own, but offer guidance if needed. Start by asking:

- **Is the red digit in the tens place or the ones place? How many tens or ones are shown in the model?**

If children need further guidance, encourage them to draw their own quick pictures for the 2-digit number.

**H.O.T. Problem** Exercises 16–18 require children to use higher-order thinking skills. They first think about how many blocks are needed to model the number. Then they draw quick pictures to complete the model to show the number.

- **How many tens and ones are shown in the model?** Possible answer: 1 ten and 1 one
- **How many tens and ones do you need to model the number correctly?** Possible answer: 4 tens and 7 ones
- **How many more tens and ones do you need to draw to correct the model?** Possible answer: 3 tens and 6 ones

Have children repeat the process for the remaining exercises.

## Go Deeper

MATHEMATICAL PRACTICES

To extend their thinking, ask children to draw quick pictures and write the numbers for all 2-digit numbers that have a 3 in the ones place.

Then have them draw quick pictures and write the numbers for all 2-digit numbers that have a 3 in the tens place.

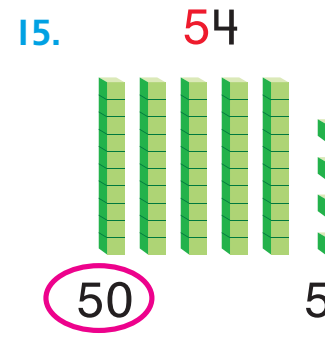
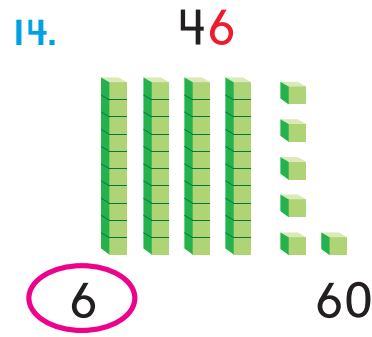
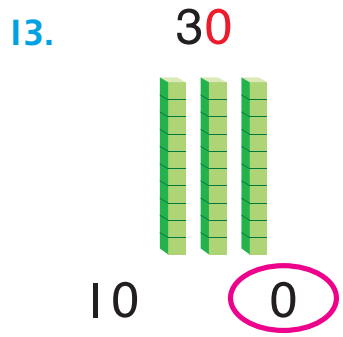
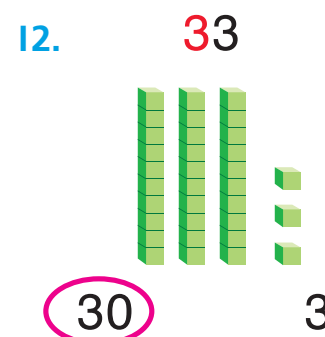
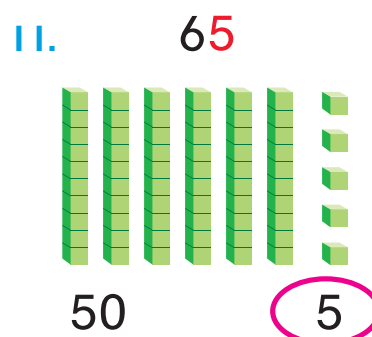
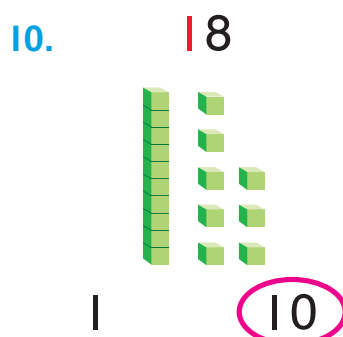
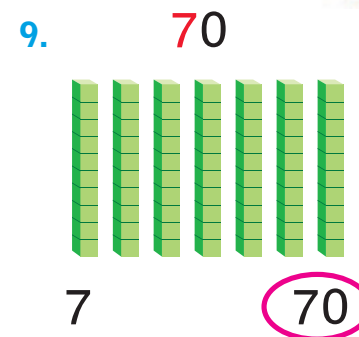
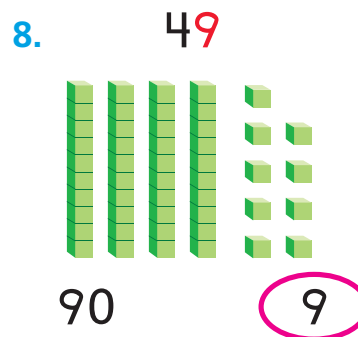
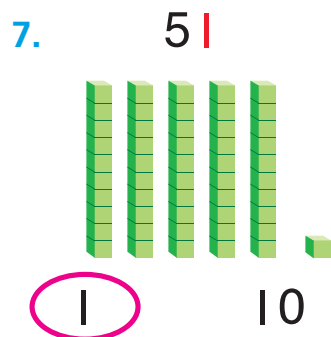
Encourage children to communicate mathematical ideas by discussing or writing about any patterns they see in the two groups of numbers.

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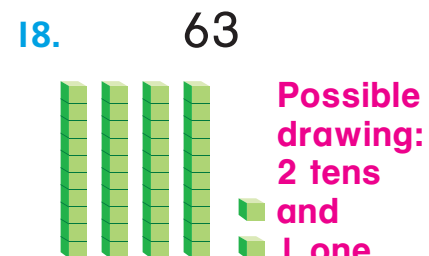
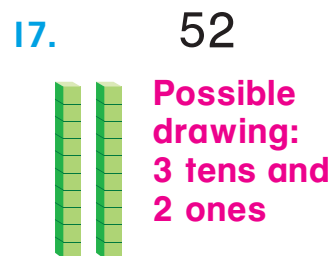
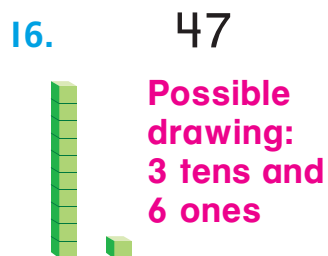


## On Your Own

Circle the value of the red digit.



**H.O.T.** Look at the digits of the numbers.  
Draw quick pictures for the missing blocks.



## ► Problem Solving

MATHEMATICAL PRACTICES

**Unlock the Problem** For Exercises 19–21, you may want to suggest that children draw a quick picture that would match the clues before deciding what digits to write in the place-value positions of that number.

**H.O.T. Problem** Exercise 22 requires children to use higher-order thinking skills. Children can write pairs of numbers that have a sum of 6, and then use the other clues to determine the tens digit and ones digit. The problem requires higher order thinking because children have to eliminate numbers that do not fit the other clues. Break down the problem into manageable steps for children by asking specific questions about each step.

- **What digits are even numbers?** 2, 4, 6, 8
- **What digits could be in the tens place and why?** 2 because it's less than 4, 6, and 8; 4 because it's less than 6 and 8; and 6 because it's less than 8
- **What digits can be added together for a sum of 6?** only 2 and 4

Guide children to see that since 2 and 4 are the only numbers that fit all the clues, the number must be 24.

## ★ Test Prep Coach

Test Prep Coach helps teachers to identify common errors that children can make.

In Exercise 23, if children selected:

- 4, they chose the tens digit.
- 9, they added the two digits in the number.
- 50, they thought the 5 was in the tens place.

4

## SUMMARIZE

MATHEMATICAL PRACTICES

### 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.

## PROBLEM SOLVING



Write the 2-digit number that matches the clues.

19. My number has 8 tens.  
The digit in the ones place is greater than the digit in the tens place.


My number is 89.

20. In my number, the digit in the ones place is double the digit in the tens place.  
The sum of the digits is 3.


My number is 12.

21. My number has the same digit in the ones place and in the tens place.  
The digit is less than 6.  
The digit is greater than 4.

My number is 55.

22.  In my number, both digits are even numbers.  
The digit in the tens place is less than the digit in the ones place.  
The sum of the digits is 6.

My number is 24.

23.  **Test Prep** Henry has 45 crayons.  
What is the value of the digit 5 in this number?

- 4
- 5
- 9
- 50



**TAKE HOME ACTIVITY** • Write the number 56. Have your child tell you which digit is in the tens place, which digit is in the ones place, and the value of each digit.

**FOR EXTRA PRACTICE:**  
Standards Practice Book, p. P21

**FOR MORE PRACTICE:**  
Standards Practice Book, pp. P7–P8



## Hands On: Algebra • Even and Odd Numbers

### 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 2s; 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?

**Vocabulary** even, odd

## 1 ENGAGE



**Access Prior Knowledge** On the board, write the following word groups:

pair of shoes pair of socks pair of mittens

- **How are a pair of shoes, a pair of socks, and a pair of mittens alike?** Possible answer: They all name a pair of things, or two things.
- **What are some other things that are bought in pairs?** Possible answers: earrings, skates

## 2 TEACH and TALK



Animated Math Models

### Listen

REAL WORLD

**Materials** connecting cubes

Discuss with children that the term *pair* means “a set of two.” Then read the problem below.

*Beca has 8 toy cars. Can she arrange her cars in pairs on a shelf?*

Ask children to count out 8 connecting cubes to represent the number of cars Beca has.

Show children how to arrange pairs of cubes on the top ten frame by placing vertical pairs of cubes on the ten frame from left to right.

- **What is a pair of cubes?** a set of two cubes
- **Show me a pair of cubes.** Children hold up two cubes.
- **Can you arrange all 8 cubes in pairs?** yes
- **How many pairs are there in 8?** 4 pairs; Beca can arrange her 8 toy cars in 4 pairs.

Have each child remove his or her 8 cubes from the top ten frame. Then repeat the activity for 7 cubes.

- **Can you arrange all 7 cubes in pairs?**  
**Explain.** No, you can make 3 pairs and there is one cube left over.

After children remove the 7 cubes, have them take 10 cubes and place vertical pairs of cubes in the top ten frame.

- **How many pairs did you put on the ten frame?** 5 pairs
- **Are all the cubes in pairs?** yes

Finally, have children use both ten frames to show 13 cubes. Children should determine that all 13 cubes cannot be arranged in pairs.

- **Why is a ten frame a useful tool for solving these problems?** Each column of the ten frame is made up of 2 squares. Since there are 2 in a pair, by filling columns of the ten frame I can see how many pairs make up a number and if there are any singles left over.

In addition to using a ten frame and connecting cubes, make children aware that they could also solve these problems by drawing a picture. Ask children if they can arrange 9 objects in pairs. Have them draw 9 objects, choosing a method for grouping them into pairs. Have children share their drawings and explain their method for solving the problem.

Some children may be able to solve the problems without using manipulatives or drawings. Stress that even if they can get the answer quickly, it is important to know how to show their work as they solve problems.

Use **Math Talk** to focus on children’s understanding of how some numbers are shown with pairs of cubes with no singles left, but other numbers are shown with pairs and have one single left. Encourage children to discuss how models look different in these two cases.

Ask:

- **In what other ways could you arrange the number in pairs beside using a ten frame?**  
Possible answer: arranging objects in pairs; drawing objects in rows of two; drawing objects and circling pairs
- **For all the models you named, how would you be able to tell whether or not the number could be made up of all pairs?** by looking to see whether or not there are any singles left over after the pairs are made

Name \_\_\_\_\_

**Algebra • Even and Odd Numbers**

**Essential Question** How are even numbers and odd numbers different?

**COMMON CORE STANDARD CC.2.OA.3**

Work with equal groups of objects to gain foundations for multiplication.



Use  to show each number. **Check children's models.**



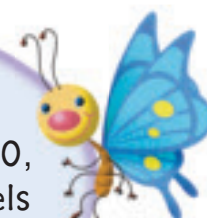
**Math Talk: Possible answer: When you make pairs for 7, there is one extra cube left. When you make pairs for 10, there are no extra cubes left.**



**FOR THE TEACHER** • Read the following problem. Beca has 8 toy cars. Can she arrange her cars in pairs on a shelf? Have children set pairs of cubes vertically on the ten frames. Continue the activity for the numbers 7 and 10.

**Math Talk**

When you make pairs for 7 and for 10, how are these models different? **Explain.**



**MATHEMATICAL PRACTICES**

### ▶ Model and Draw

Work through the examples in the model with children. Point out that vertical pairs of cubes are put on the ten frame, moving from left to right.

- **Look at just the full ten frame for both 12 and 15. Is 10 always an even number?**  
**Explain.** Yes; Possible explanation: 10 is even because it has 5 pairs of cubes with none left over.
- **How does the ones digit help you tell whether 12 and 15 are odd or even?** Possible answer: If the ones digit shows pairs with no cubes left over, the number is even. If the ones digit shows pairs with a cube left over, the number is odd.

### ! COMMON ERRORS

**Error** Children may correctly pair cubes, but then forget whether the numbers that pair with no extras are even or odd.

**Example** In Exercise 4, children know that one cube is left over, but say that 9 is even.

**Springboard to Learning** Have children draw a diagram pairing cubes for 2 and 3. Have them label the diagram for 2 with *even* and the diagram for 3 with *odd*. Suggest that they use these diagrams to help them remember which numbers are even and which are odd.

## 3 PRACTICE

### ▶ Share and Show • Guided Practice

Exercises 1–10 connect to the learning model.

- **In Exercise 4, can you put all 9 cubes in pairs?** **Explain.** No; there are 4 pairs and one cube is left over.

Encourage children to volunteer to share with a partner the way they solved one of the problems. Ask them to talk through the problem by indicating how they modeled the problem on the ten frame and how they determined whether the ten frame showed an even or odd number.

Use Exercises 9 and 10 for **Quick Check**. Children should use their MathBoards to show their answers to these exercises.



### Quick Check



**If** → a child misses Exercises 9 and 10

**Then** → **Differentiate Instruction** with

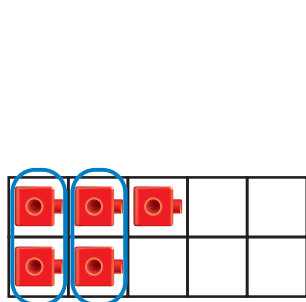
- RtI Tier 1 Activity, p. 13B
- Reteach 1.1
- ★ Soar to Success Math 27.11

## Model and Draw

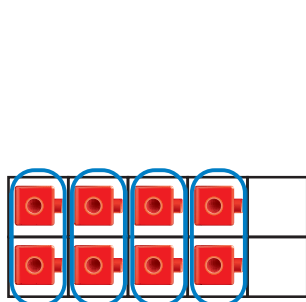
Count out cubes for each number. Make pairs.

**Even** numbers show pairs with no cubes left over.

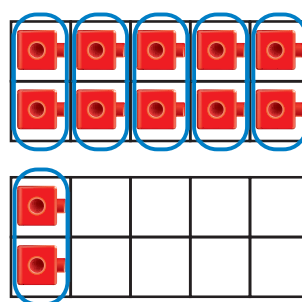
**Odd** numbers show pairs with one cube left over.



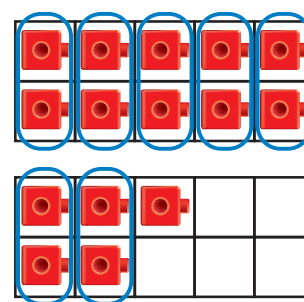
5 odd



8 even



12 even



15 odd

## Share and Show



Use cubes. Count out the number of cubes. Make pairs. Then write **even** or **odd**.



1. 6 even

2. 3 odd

3. 2 even

4. 9 odd

5. 4 even

6. 10 even

7. 7 odd

8. 13 odd

9. 11 odd

10. 14 even

## ► On Your Own • Independent Practice

If children answered Exercises 9 and 10 correctly, assign Exercises 11–17. Have children shade in the ten frames in the same way that they placed cubes on the ten frames at the beginning of the lesson, by shading in vertical pairs on the ten frames, moving from left to right.

Encourage children to answer Exercises 11–16 on their own, but offer guidance if needed.

Start by asking:

- **How many squares do you shade in? In what order do you shade the squares? How does your picture tell if the number is even or odd?**

This line of questioning will fit any of the problems. Tell children that they do not need to spend time filling in each square perfectly. They simply need to make a mark in each appropriate square. Remind them to fill the frames by columns, starting on the left side of the top ten frame.

**Explain** Exercise 17 requires children to communicate mathematical ideas by explaining how they know that two numbers are even numbers.

- **What does it mean if a number is even?** *It can be divided into pairs with none left over.*
- **What method could you use to tell whether each number is even?** *Possible answers: shade in squares on a ten frame; use cubes in a ten frame; draw a picture of a number organized into pairs*

- **Why did you decide to use that method?** *Accept all reasonable responses.*
- **How does your method tell you whether or not the number is even?** *If there is nothing left over after I make pairs, the number is even.*
- **Can two numbers that come next to each other, like 5 and 6, both be even?** *no Why not? If one number has pairs with none left over, then one more than that number would have one left over.*

## Go Deeper

MATHEMATICAL PRACTICES

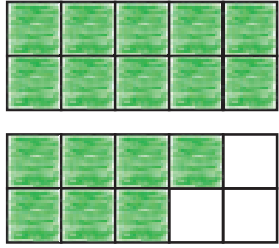
To extend their thinking, encourage children to explain how they know if a number is an odd number. Discuss their explanations and have them give examples to justify their explanations. One possible explanation you may wish to discuss involves counting by twos. Help children see that when they count by twos all the numbers they count are even numbers and all the numbers they do not count are odd numbers. For example, 11 is odd because when they count 2, 4, 6, 8, 10, 12, 11 is not counted.

Name \_\_\_\_\_

## On Your Own

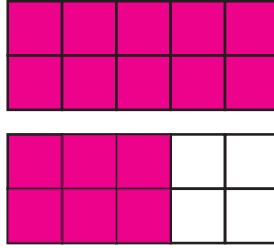
Shade in the ten frames to show the number.  
Circle **even** or **odd**. Possible shading is shown.

11. 17



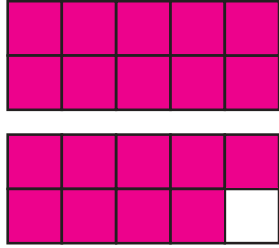
even **odd**

12. 16



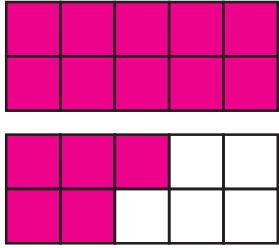
**even** odd

13. 19



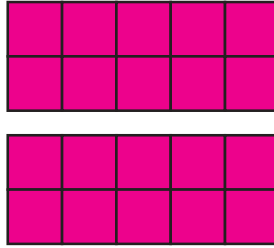
even **odd**

14. 15



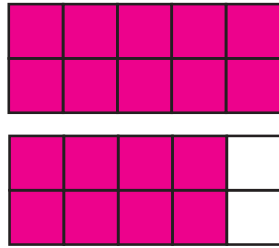
even **odd**

15. 20



**even** odd

16. 18

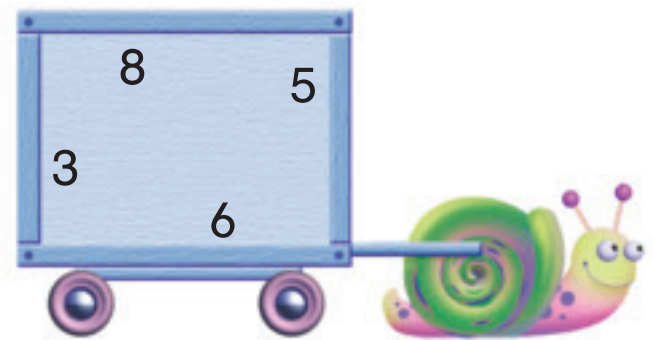


**even** odd

17. Which two numbers in the box are even numbers?

8 and 6

**Explain** how you know that they are even numbers.



**Check explanations for reasonableness. Children may describe how the numbers can be shown as several pairs without an extra left over.**

## ▶ Problem Solving

MATHEMATICAL PRACTICES

**Unlock the Problem** In Exercise 18, children analyze groups of three numbers to determine whether they are even or odd numbers.

**H.O.T. Problem** For Exercise 19, you may wish to have several children explain how they decided where to write the numbers in the diagram. The problem requires higher order thinking because children have to choose among multiple strategies to determine whether each number is even or odd. Help children access prior knowledge needed to solve the problem by asking questions such as the following:

- **If you skip a number when you're counting by twos, what do you know about it?** *It must be odd.*
- **If a number is 1 more or 1 less than an even number, what do you know about it?** *It must be odd.*
- **If a number is twice as much as an even number, what do you know about it?** *It must be even.*

Tell children that they can use the numbers that are already identified as odd or even in the boxes as a starting point for determining whether the additional numbers are odd or even. Allow students to use a model of their choice to help them solve the problem if necessary.

## ★ Test Prep Coach

Test Prep Coach helps teachers to identify common errors that children can make.

In Exercise 20, if children selected:

- **8 girls and 12 boys**, they chose even numbers for girls and boys.
- **9 girls and 8 boys**, they confused even and odd.
- **11 girls and 9 boys**, they chose odd numbers for girls and boys.

4

## SUMMARIZE

MATHEMATICAL PRACTICES

### 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

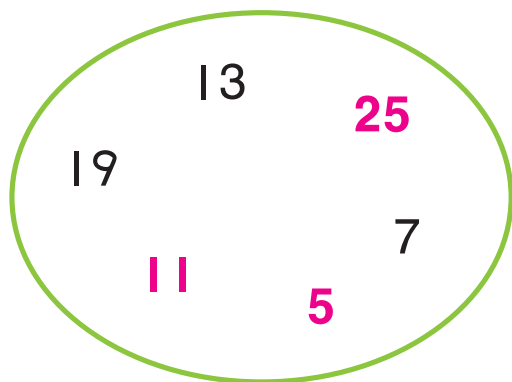
**Write two odd numbers and two even numbers. Explain how you know which numbers are even and which are odd.**

## PROBLEM SOLVING

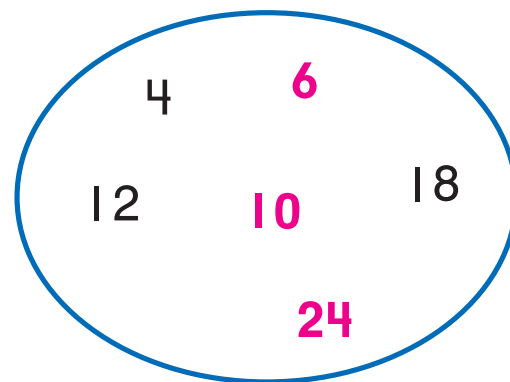



18. Fill in the blanks to describe the groups of numbers.  
Write **even** or **odd**.

\_\_\_\_\_ **odd** \_\_\_\_\_ numbers




\_\_\_\_\_ **even** \_\_\_\_\_ numbers



19.  Write each of the following numbers inside the loop that it belongs in.

**5**      **6**      **10**      **11**      **24**      **25**

20.  **Test Prep** There are an even number of girls and an odd number of boys in Gina's class. Which of these choices could tell about her class?

- 8 girls and 12 boys
- 9 girls and 8 boys
- 10 girls and 7 boys
- 11 girls and 9 boys



**TAKE HOME ACTIVITY** • Have your child show you a number, such as 9, using small objects and explain why the number is even or odd.

**FOR EXTRA PRACTICE:**  
Standards Practice Book, p. P21

**FOR MORE PRACTICE:**  
Standards Practice Book, pp. P3–P4



## Problem Solving • Tens and Ones

### 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?

## 1 ENGAGE

**Materials** *iTools*: Base-Ten Blocks

**Access Prior Knowledge** Use base-ten blocks in *iTools* to represent 43.

- Draw a quick picture to show the number 43 using 4 tens. How many ones do you need? 3 ones

Use the “Line Up” and “Regroup” features of the *iTools* activity to demonstrate to children how 10 ones can be exchanged for 1 ten.

- Trade 1 tens block for 10 ones blocks. How many tens and ones do you have now? 3 tens and 13 ones

Remind children that when exchanging tens and ones in a number, the value of the number is the same.

## 2 TEACH and TALK

### ► Unlock the Problem

After reading the problem with children, work through the Problem Solving Graphic Organizer together. Discuss what children need to find and what information they need to use. Guide children to see that it is helpful to find a pattern to list all the different ways to show 32.

- How is the second row in the list different from the first row? Explain. Possible answer: The first row has 3 boxes of 10 pencils, and the second row has 2 boxes of 10 pencils. To show a different way to buy the pencils, 1 ten was traded for 10 ones.
- Finding a pattern is useful in solving this problem because the pattern helps you organize the information in the problem. You can keep track of the groups you have made to be sure you have found all the possible ways Gail can buy the pencils.

Have children draw a quick picture of each way to show 32 in the boxes on the right. Then have children complete the chart with the rest of the ways to show 32. Discuss the pattern in the chart with children. Each row in the chart has 1 fewer ten and 10 more ones than the row above.

- How many different ways to make 32 do the chart and quick pictures show? 4 ways
- What happens to the number of boxes and the number of pencils as you move down the chart? The number of boxes decreases by 1, but the number of pencils increases by 10.
- How do the quick pictures help you understand the number of boxes and the number of pencils? The tens marks in the quick pictures represent the boxes of pencils. The ones marks in the quick pictures represent the pencils.

Make students aware that they could also solve the problem by using base-ten blocks. Have them use the base-ten blocks to model 32 as 3 tens and 2 ones. Then have them model 32 as 2 tens and 12 ones. Continue until they have modeled all the ways to show 32. Ask them to count the total number of ways.

Some children may be able to solve the problem without drawing quick pictures or using other types of manipulatives. Stress that even if they can get the answer quickly, it is important to know how to show their work as they solve problems.

Name \_\_\_\_\_

**Problem Solving • Tens and Ones**

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

**COMMON CORE STANDARD** CC.2.NBT.3  
Understand place value.

Gail needs to buy 32 pencils. She can buy single pencils or boxes of 10 pencils. What are the different ways Gail can buy 32 pencils?



**What do I need to find?**

ways she can buy  
32 pencils

**What information do I need to use?**

She can buy single pencils  
or boxes of 10 pencils.

**Show how to solve the problem. Check children's drawings.**

Draw quick pictures for 32. Complete the chart.

Boxes of 10 pencils	Single pencils
3	2
2	12
1	<b>22</b>
0	<b>32</b>


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**HOME CONNECTION** • Your child found a pattern in the different combinations of tens and ones. Using a pattern helps to make an organized list.

## Try Another Problem

MATHEMATICAL PRACTICES

Use questions to guide children through the first problem.

- **What do you need to find?** *all the different ways Sara can pack the crayons*
- **What information do you need to use?** *Sara has 36 crayons. She can pack the crayons in boxes of 10 crayons or as single crayons.*
- **How can you find a pattern to help you solve the problem?** *Possible answer: I can find a pattern to organize the groups of tens and ones that can be made. That way, I have a list of my answers.*
- **How do you know you listed all the ways Sara can pack the crayons?** *Possible answer: I started with 3 groups of ten and 6 ones, just like the values of the digits in the number 36. Then I kept trading 1 ten for 10 ones, and recorded the groups each time. I did this until I had no more tens to trade.*
- **How many different ways can Sara pack the crayons?** *4 different ways* **How do you know?** *Possible answer: I started with a quick picture of 3 tens and 6 ones, and recorded that way in the list. I kept trading 1 ten for 10 ones and recording the groups until I did not have any more tens. I did all of the trades that could be done, then I counted the number of ways on my list.*

Repeat with a similar discussion for the second problem.

Children may wish to draw quick pictures on their MathBoards to help them solve these problems. Children should list the ways of organizing tens and ones in ascending or descending order. This will help children see the pattern and make sure that they have listed all the options.

Encourage children to discuss how they would use manipulatives to solve the problem. Ask:

- **What manipulatives can be used to model this problem?** *Possible answer: base-ten blocks, quick pictures, counters, paper clips, crayons*
- **Which manipulative do you think would be best to use for this problem?** *Possible answer: Quick pictures are the best to use because they are easy to make and they show the tens and the ones very clearly.*
- **Why do we use manipulatives in problems like this one?** *Possible answer: They make it easier to find the pattern in the problem.*

Use **MathTalk** to focus on children's understanding of how to recognize a pattern.



### COMMON ERRORS

**Error** When children find a pattern, they may not include all the possibilities.

**Example** In Exercise 2, they list just one or two ways to have groups of tens and ones.

**Springboard to Learning** Have children draw quick pictures to represent the given number and record the number of tens and ones in the list. Then have them cross out 1 ten and draw 10 ones (to model trading 1 ten for 10 ones) and record the new number of tens and ones in the list. Have children continue in this manner until there are no more tens to trade.

## Try Another Problem

Find a pattern to solve. **Order of answers may vary.**

- What do I need to find?
- What information do I need to use?

1. Sara is putting away a pile of 36 crayons. She can pack them in boxes of 10 crayons or as single crayons. What are all of the different ways Sara can pack the crayons?

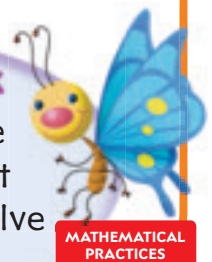
Boxes of 10 crayons	Single crayons
3	6
2	16
1	26
0	36

2. Mr. Winter is putting away 48 chairs. He can put away the chairs in stacks of 10 or as single chairs. What are all of the different ways Mr. Winter can put away the chairs?

Stacks of 10 chairs	Single chairs
4	8
3	18
2	28
1	38
0	48

**Math Talk:** Possible answer: Each time the number of stacks of ten chairs was one fewer, the number of single chairs was ten greater.

**Math Talk**  
Describe the pattern that helped you solve Exercise 2.



# 3 PRACTICE

## ► Share and Show • Guided Practice

Exercises 3–5 connect to the learning model. Encourage children to find a pattern and complete the list to solve each problem.

After children solve each problem, have volunteers share their solutions with the class. Encourage their classmates to ask questions such as the following:

- How did you know what to put in the list to solve the problem?
- How can finding a pattern in the list help you to complete the chart?

Encourage children to volunteer to share with a partner the way they solved one of the problems. Ask them to talk through the problem by indicating how they knew which tens and ones to start with, how they traded tens for ones, whether they used a manipulative to solve the problem, and how they found the pattern.

Use Exercises 3 and 4 for **Quick Check**. Children should use their MathBoards to show their answers to these exercises.



### Quick Check



RtI

If

→ a child misses Exercises 3 and 4

Then

→ **Differentiate Instruction** with

- RtI Tier 1 Activity, p. 37B

- Reteach 1.7



→ Soar to Success Math 2.19

Name \_\_\_\_\_

## Share and Show



Find a pattern to solve. **Order of answers may vary.**

3. Philip is putting 25 markers into a bag. He can put the markers in the bag as bundles of 10 or as single markers. What are all of the different ways Philip can put the markers in the bag?

Bundles of 10 markers	Single markers
2	5
1	15
0	25

4. Stickers are sold in packs of 10 stickers or as single stickers. Miss Allen wants to buy 43 stickers. What are all of the different ways she can buy the stickers?

Packs of 10 stickers	Single stickers
4	3
3	13
2	23
1	33
0	43

5. Devin is sorting his 29 baseball cards. He can pack them in boxes of 10 cards or as single cards. What are all of the different ways Devin can sort the cards?

Boxes of 10 cards	Single cards
2	9
1	19
0	29

## ► On Your Own • Independent Practice

Encourage children to find a pattern to solve Exercise 6.

Encourage children to solve Exercise 6 on their own, but offer guidance if needed. Start by asking:

- **How many tens are there? How many ones? Make a quick picture for each group.**

This line of questioning should guide children toward trading tens for ones for each group until they find the pattern. If they prefer to use another manipulative, let them choose an option.

**H.O.T. Problem** In Exercise 7, children solve for a missing addend.

- **How many marbles does Zack have now?** 10
- **Can you draw Zack’s marbles as a set of ones?** Yes
- **How many marbles did Zack start with?** 6
- **Can you use the picture to find how many marbles Olivia gave Zack?** Yes

Have children draw the 10 marbles. Have them cross out Zack’s 6 marbles. Have them circle the ones that are left to find Olivia’s marbles. Have them write the addition sentence to show 10.

## ★ Test Prep Coach

Test Prep Coach helps teachers to identify common errors that children can make.

In Exercise 8, if children selected:

- **4 boxes of 10 cars and 2 single cars**, they confused the place value of the digits.
- **1 box of 10 cars and 24 single cars**, they do not understand that a box of 10 cars increases the total number of cars by 10.
- **3 boxes of 10 cars and 14 single cars**, they do not understand the problem.

## 4 SUMMARIZE



### 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.


### On Your Own

Solve. Write or draw to explain.

6. Mr. Link needs 30 cups. He can buy them in packs of 10 cups or as single cups. What are all of the different ways he can buy the cups?  
**Order of answers may vary.**




Packs of 10 cups	Single cups
3	0
2	10
1	20
0	30

7.  Zack has 6 marbles. Olivia gives him some more. Now he has 10 marbles. How many marbles did Olivia give him?



4 marbles

8.  **Test Prep** Lee can pack her toy cars in boxes of 10 cars or as single cars. Which of these is a way that she can pack her 24 toy cars?

- 4 boxes of 10 cars and 2 single cars
- 1 box of 10 cars and 24 single cars
- 3 boxes of 10 cars and 14 single cars
- 2 boxes of 10 cars and 4 single cars



**TAKE HOME ACTIVITY** • Have your child explain how he or she solved one problem on this page.

**FOR EXTRA PRACTICE:**  
 Standards Practice Book, p. P22

**FOR MORE PRACTICE:**  
 Standards Practice Book, pp. P15–P16