Math Intermediate 3 Sampler

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G = Geometry
M = Measurement
DAP = Data Analysis and Probability
PS = Problem Solving
CM = Communication
RP = Reasoning and Proof
C = Connections
R = Representation

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LESSON 35

• Measuring to the Nearest Quarter Inch

Texas Essential Knowledge and Skills

(3.10) locate and name points on a number line using fractions, including halves and fourths

(3.14)(A) identify the mathematics in everyday situations

(3.14)(D) use tools such as manipulatives to solve problems

Power Up

facts

Power Up 35

jump start

Count up by 3s from 0 to 30.
Count up by 9s from 0 to 90.

Write a fact family using the numbers 8, 2, and 10.

Write "five hundred forty" using digits.

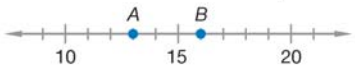
mental math

a. Number Sense: 18 + 9

b. Estimation: Is $12 closer to $10 or $20?

c. Money: $1.00 − $0.10

d. Number Line: What number does point *B* stand for?



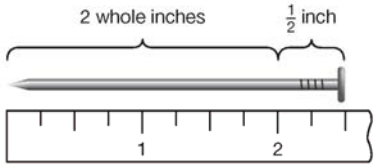
problem solving

Mai has four coins that are worth 22¢ altogether. What are the coins?

New Concept

In this lesson we will draw an inch ruler and divide it into half inches and quarter inches. Then we will use the ruler to measure.

In the last lesson we measured objects to the nearest inch. The length of most objects is between inch marks. We can name these measures with the number of whole inches plus the fraction of an inch.



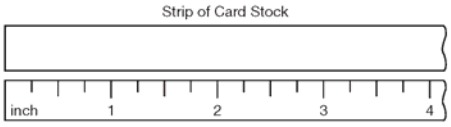
The nail measures 2 whole inches plus $\frac{1}{2}$ inch. We say the nail is $2\frac{1}{2}$ inches long.

Activity

Inch Ruler

Materials: inch ruler, pencil, strip of card stock about 6 inches long

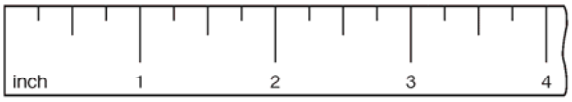
You will make your own ruler. You need a strip of card stock about 6 inches long, a pencil, and a ruler. Lay the strip of card stock sideways on your desk. Lay the ruler on top of it so that you can read the number of inches. Match the left end of the ruler to the left end of the strip. Then slide the ruler toward you a little bit so that you can mark on the strip.



Step 1: At each inch mark on your ruler, make a mark on the strip of paper. The inch marks should all be the same size. Then number the marks as they are numbered on your ruler. When you are done, the strip of paper should look like this.

Step 2: Now set the ruler aside and use just your pencil and the strip of paper. Find the halfway point between the inch marks and make the half-inch marks. The half-inch marks should be shorter than the inch marks.

Step 3: We will make one more set of marks on the ruler. Find the halfway point between each pair of marks and make the quarter-inch marks. These are the shortest marks.



Save this ruler as a bookmark. We will use it for measuring. First we will use it for counting.

- Point to the marks on the ruler as you count by half-inches. Counting by half-inches is like counting by half-dollars.
- Point to the marks on the ruler as you count by quarter-inches (fourths of an inch). Counting by quarter-inches is like counting by quarters with money.

Analyze Justin measured the lengths of 3 pieces of ribbon. The red ribbon was $2\frac{1}{2}$ inches long, the blue ribbon was $\frac{1}{2}$ inch long, and the white ribbon was $3\frac{3}{4}$ inches long. Write the colors of ribbon in order from shortest length to longest length.

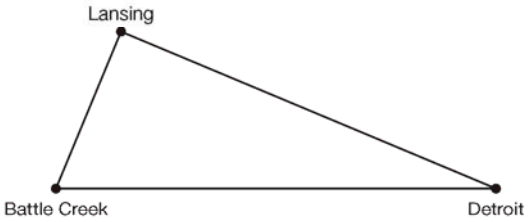
Example

Use your ruler to find the distance between Danbury and Waterbury on the map in inches.

We place the 0 inch mark of the ruler at the dot for Danbury. The dot for Waterbury is at the mark halfway between 2 inches and 3 inches. So the distance between the towns on the map is **$2\frac{1}{2}$ in.**

Lesson Practice

Use the ruler you made and this map to find the distance in inches between the cities on this map.



a. From Battle Creek to Detroit

b. From Battle Creek to Lansing

c. From Detroit to Lansing

d. Use your ruler to draw a segment that is $1\frac{1}{2}$ inches long.

Written Practice

Distributed and Integrated

(20, 26) **1.** All stuffed animals were on sale for $5.00 off the regular price. The regular price of a stuffed lion was $9.99. What was the sale price of the lion?

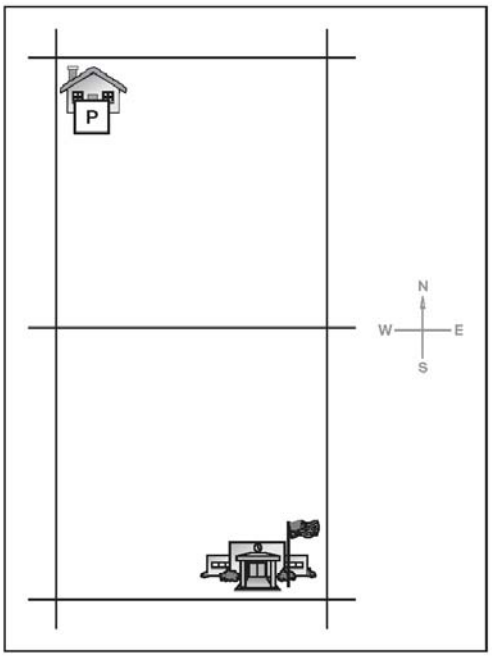
(18, 22) **2.** Alison bought a stuffed animal on sale for $4.99. Sales tax was $0.35. What was the total price, including sales tax?

(17) **3.** **Interpret** The table below shows the height in inches of four students. Write the names of the students in order from shortest to tallest.

Student	Height
Lindsay	72
Iva	59
Chad	66
Nash	76

(15) **4.** Round $26 to the nearest ten dollars.

5. (31) This map shows that Paula lives 3 blocks from school. Describe a way to go to Paula's house from school.



6. (34) **a.** One foot is equal to how many inches?

b. Two feet is equal to how many inches?

7. (35) **Represent** Use a ruler to draw a line segment that is $2\frac{1}{4}$ inches long.

What are the next four numbers in each sequence?

8. (2) 9, 18, 27, ____, ____, ____, ____, ...

9. (2) 33, 44, 55, ____, ____, ____, ____, ...

Add or subtract, as shown:

10. (21, 24) 64¢ + 46¢ + $1.00

11. (26) $4.58 − $2.50

12. (16) $649 + $350

13. (28) 100 − 33

14. (10) 9 + 8 + 7

15. (19) $625 − $175

16. (9, 24) Find the missing addend: 10 + 15 + ☐ = 75

17. (14, 25) **Analyze** Sarah paid for a 58¢ item with three quarters. What is the fewest number of coins she should get back in change?

18. (32) A mile is 1,760 yards. Use words to write that number.

19. (33) To what number is the arrow pointing?

20. (31) **Represent** Draw a picture of this story. Then answer the question with a complete sentence.

Simpson walked 3 yards south, then 2 yards west, then 3 yards south, then 4 yards east, then 6 yards north. In which direction and how far should Simpson walk to return to where he started?

LESSON 60

• Equal Groups Stories, Part I

Texas Essential Knowledge and Skills

- **(3.4)(A)** apply multiplication facts through 12 by 12 using objects
- **(3.14)(A)** identify the mathematics in everyday situations
- **(3.15)(B)** relate informal language to mathematical language
- **(3.14)(D)** use tools such as technology to solve problems

Power Up

facts

Power Up 60

jump start

Count up by 8s from 0 to 80.
Count down by 25s from 200 to 0.

Write two multiplication facts using the numbers 4, 5, and 20.

Draw a $5\frac{1}{4}$-inch segment on your worksheet. Record the length next to the segment.

mental math

a. Time: A decade is 10 years. How many years are in 5 decades?

b. Number Sense: What is another way to write 10 + 10 + 10 + 10? What is the total?

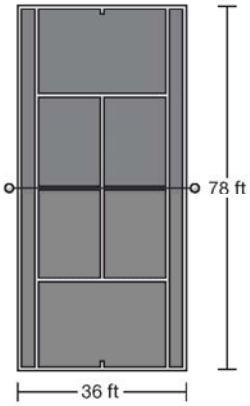
c. Money: Jamie took one dollar to the book fair. She bought a bookmark for 35¢. How much change did she receive?

d. Patterns: What number is missing from the pattern shown below?

56	50	44	38	____

problem solving

The width of the rectangular tennis court is 36 feet, as shown in the diagram. The length of the court is 78 feet. What is the perimeter of the tennis court?



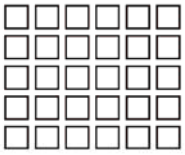
New Concept

Visit www.SaxonMath.com/Int3Activities for a calculator activity.

Stories about equal groups have a multiplication pattern. Here is an example of an equal groups story.

The teacher arranged the desks into 5 rows with 6 desks in each row. How many desks were there in all?

In this story, 5 is the number of groups, and 6 is the number in each group. Multiplying the number of groups times the number in each group gives us the total.



number of groups $\times$ number in each group $=$ total

$$5 \times 6 = 30$$

There are 30 desks in all.

Example

There are 5 school days in each week. How many schools days are in 7 weeks?

We often see the word "each" in equal groups stories. In this story, 5 is the number in each group, and 7 is the number of groups.

number of groups × number in each group = total

$$7 \times 5 = 35$$

There are **35 school days** in 7 weeks without holidays.

Generalize Look at the factors in the example. What counting pattern would help you find the product?

Lesson Practice

Write an equal groups number sentence for each story.

a. There are 3 feet in each yard. How many feet long is a rope 5 yards long?

b. There are 12 eggs in each dozen. How many eggs is 2 dozen?

c. Cory earns $9 each hour for helping a painter. How much money does Cory earn in 5 hours?

Written Practice

Distributed and Integrated

Formulate Write an equal groups number sentence for problems **1–4** and then answer the questions.

(60) **1.** Max is in class for 6 hours each day. How many hours is Max in class in 5 days?

(60) **2.** Sherry saw 5 stop signs on the way to school. Each sign had 8 sides. How many sides were on all 5 stop signs?

(60) **3.** The teacher arranged the desks in 7 rows with 5 desks in each row. How many desks were there in all?

(60) **4.** Each movie ticket cost $8. Danielle's mom bought 5 tickets. What was the total price of the tickets?

5. (57) Tamara arranged dimes in an array.

What multiplication fact is illustrated by the array?

6. (25) What is the value of the coins shown in problem **4?**

7. (55) Find each product on a multiplication table.

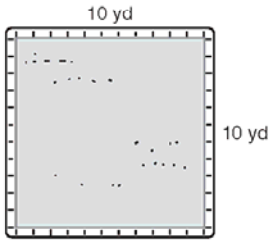
a. 8×4 **b.** 4×6 **c.** 8×6

8. (54) Write this addition as a multiplication and find the total.

4 mi + 4 mi + 4 mi + 4 mi + 4 mi + 4 mi

9. (29) **Analyze** What fraction of a dollar is $0.10?

10. (58) A square lawn that is 10 yards on each side has a narrow sidewalk around it. Cici walked around the lawn. What is the perimeter of the lawn?



11. (56) Find each product.

a. 9×2

b. 9×5

c. 9×10

12. (55) Find each product using a multiplication table.

a. 6×6 **b.** 7×7 **c.** 8×8

Add or subtract, as shown:

13. (16) $897 + $75

14. (3) 1 hour − 1 minute

15. (21, 24) 56¢ + 48¢ + 79¢

16. (26) $6.50 − $5.75

17. (2, 35) **Conclude** Find the next three numbers in this sequence:

$1, 1\frac{1}{2}, 2, 2\frac{1}{2}, 3, \_\_\_\_, \_\_\_\_, \_\_\_\_, \ldots$

18. (9) Find the missing addend: $1 + 2 + 3 + 4 + m = 10$

19. (25) How much money is 5 quarters, 6 dimes, 3 nickels, and 4 pennies?

20. (52) Use your ruler to find the length and width of this rectangle.

Early Finishers

Real-World Connection

The Crosbys are driving to the North Carolina coast for a long weekend vacation. The distance from their house to the coast is 562 miles. The Crosbys drove 248 miles before lunch. After lunch they drove 197 miles and then stopped for an afternoon break. How many more miles do they need to travel to reach the North Carolina coast? Write number sentences to show your answer.

LESSON 106

• Estimating Area, Part 1

Texas Essential Knowledge and Skills

(3.6)(A) identify/extend geometric patterns to solve problems

(3.11)(C) use pictorial models of square units to determine the area of two-dimensional surfaces

Power Up

facts

Power Up 106

jump start

Count up by 4s from 0 to 48 and then back down to 0.
Count up by 8s from 0 to 96 and then back down to 0.

A board game costs $13.50. A small jigsaw puzzle costs $6.15. Write a number sentence to estimate how much they cost altogether.

Draw a $3\frac{3}{4}$-inch segment on your worksheet. Then make it $\frac{3}{4}$ inch longer. What is the total length of the segment?

mental math

a. **Number Sense:** 25×3

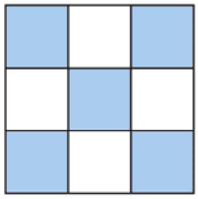
b. **Money:** $13.40 − $1.99

c. **Measurement:** Patrick jogged 700 meters and then walked 190 meters. How many meters did Patrick jog and walk altogether?

d. **Estimation:** Use compatible numbers to estimate 47×4.

problem solving

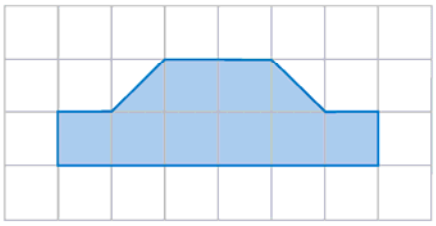
This checkerboard pattern has 9 squares altogether. Five of the squares are dark and 4 of the squares are light.



Find the number of dark squares and light squares in a checkerboard pattern that has 16 squares altogether.

New Concept

A grid of squares can help us estimate the area of a shape. Below we show a figure on a centimeter grid. Each square on the grid is one square centimeter. We can count squares to find the area of the figure.

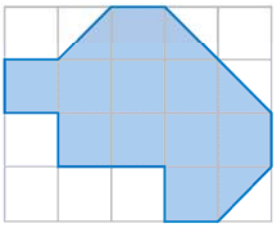


We count 8 whole squares and 2 half squares in the figure. The 2 half squares together equal 1 whole square. So the area of the figure is 9 square centimeters.

Example 1

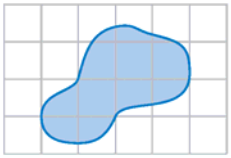
In this diagram each square equals one square foot. What is the area of the figure on the grid?

We count 10 whole squares and 4 half squares. The 4 half squares together equal 2 whole squares. So we add 10 whole squares and 2 whole squares and get 12 whole squares. The area is **12 square feet.**



= 1 square foot

Shapes do not always have straight edges or fit exactly onto grids. Monica drew this shape on a piece of centimeter grid paper:

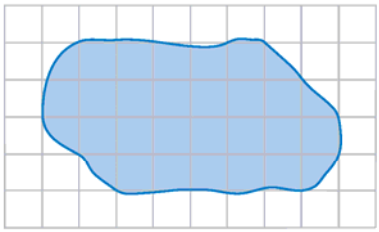


= 1 square centimeter

If a square is fully or mostly shaded, we count it as one whole square. If a square is about half shaded, we count it as a half square. If a square is only barely shaded, we do not count it. We see 5 squares that are whole or almost whole and 4 squares that are about half shaded. The area of Monica's shape is about 7 square centimeters.

Example 2

In this diagram, each square equals one square meter. Estimate the area of the surface of the pond.

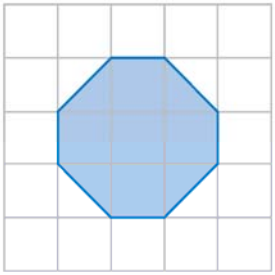


= 1 square meter

To estimate the area, we count each nearly whole square in the figure as a whole square. We count each nearly half square as a half square. We do not count a square if only a small part is in the figure. Altogether, we count 24 whole squares and 6 half squares. The 6 half squares together equal 3 whole squares. The area of the pond is about **27 square meters.**

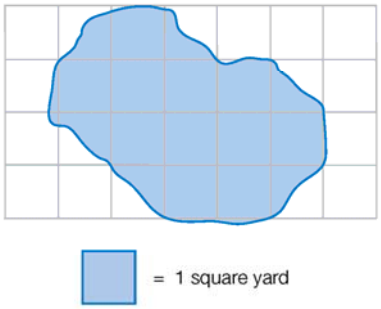
Lesson Practice

a. Find the area of this figure:



= 1 square inch

b. Estimate the area of this figure:



= 1 square yard

Written Practice

Distributed and Integrated

1. (34) Robert carried the football and gained 11 yards, making a first down. How many feet is 11 yards?

2. (101) $72 \div 3$

3. (97) 575×3

4. (2) Find the next three numbers in this sequence.

… 600, 700, 800, ____, ____, ____, …

5. (76) **Connect** Write a multiplication fact that shows the number of inches in 8 feet.

6. (35) What length is halfway between $1\frac{1}{2}$ inches and 2 inches?

7. (93) Estimate the product of 487 and 3.

8. (16, 30) **a.** Estimate the sum of $608 and $487.

b. Calculate the sum of $608 and $487.

9. (55) If $11 \times 12 = 132$, then what does 12×11 equal?

10. (32) Which digit is in the thousands place in each of these numbers?

a. 23,478 **b.** 375,129

11. (75) **Represent** Draw a picture of a cube. A cube has how many vertices?

12. (11) A common year is 365 days. Write 365 in expanded form.

13. (58, 63) Draw a rectangle that is 2 cm long and 1 cm wide.

a. What is the perimeter of the rectangle?

b. What is the area of the rectangle?

14. (100) Multiply:

a. $7 \times \$1.45$ **b.** $4 \times \$0.45$

15. (86) Find each quotient.

a. $16 \div 2$ **b.** $36 \div 6$ **c.** $24 \div 3$

16. (97) 173×7

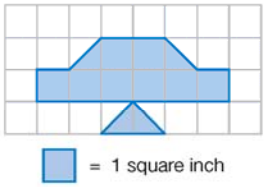
17. (LRF) 322×8

18. (91) 500×7

19. (2) Find the next three numbers in this sequence:

200, 225, 250, ____, ____, ____, ...

20. (106) **Analyze** Find the area of the figure at right.



Early Finishers
Real-World Connection

Leon asked his brother to find out how many dollars he has in his pocket by solving a riddle. The first clue is that he has less than $30. The other clues are that the sum of the digits is four, and half of the total amount is an odd number of dollars. How much money does Leon have in his pocket?