Chapter 12

Name _____

Length, Area, and Capacity

How Many Steps?

You need
- index card

Walk in a straight line from the front of the room to the back.

STEP 1 Counting your steps

How many steps did you take? _____ steps

Did you take big steps or small steps? _____

Write the number of steps on a card. Then switch cards with a partner. How many steps did your partner take? _____ steps

STEP 2 Comparing steps

Compare your card with your partner's card.

Did you take the same number of steps? _____

Who took more steps? _____

Do you think your partner took big steps or small steps? Why?

_____

_____

STEP 3 Thinking About It

Why could the number of steps be different?

_____

_____

Investigation

School-Home Connection

Dear Family,

Today we started Chapter 12 in ***Think Math!*** In this chapter, I will measure length with nonstandard units such as paper clips, and standard units such as inches and centimeters. I will also find the area of different figures by counting the number of square units a figure covers, and compare the capacity of various containers. There are NOTES on the Lesson Activity Book pages to explain what I am learning every day.

Here are some activities for us to do together at home. These activities will help me understand length and capacity.

Love,

_____

Family Fun

Find That Length!

Play the game *Find that Length!* with your child.

- Use index cards or slips of paper to create 12 Length Cards. Each card should include a length of 1 to 12 inches.

- Mix the cards and place them face down in a pile.
- The first player picks a card and tries to find an item in the home that is about that length. The player uses an inch ruler to measure the item to the nearest whole inch.
- If the length is about the same as that on the card, the player scores 5 points. If not, the player finds the difference between the length of the object and the length on the card. The other player gets that many points.
- The card is returned to the bottom of the deck.
- Players take turns. The first player to score 25 points wins!

Capacity in the Kitchen

Work with your child to compare the capacities of common containers.

- Show your child three clean, empty containers of various sizes and shapes. Tell your child that you will work together to see how much each container holds.
- Label the containers A, B, and C by writing each letter on a self-stick note.
- Using a paper cup as a measuring tool, find the capacity of each container. Fill the cup with water, dried beans, or rice to determine how many cupfuls each container holds.
- Count the number of cups aloud as you and your child fill each container. Have your child write down the total number of cups it takes to fill each container.

Chapter 12
Lesson 1

Name _____ Date _____

Measuring Length with Nonstandard Units

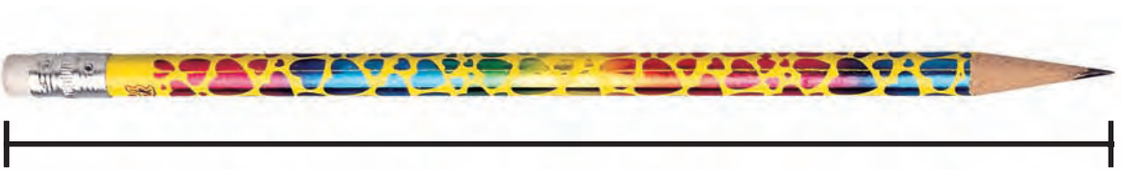
NCTM Standards 1, 2, 4, 6, 7, 8, 9, 10

About how long is each object? Use paper clips to measure.

1.

about _____ paper clips

2.



about _____ paper clips

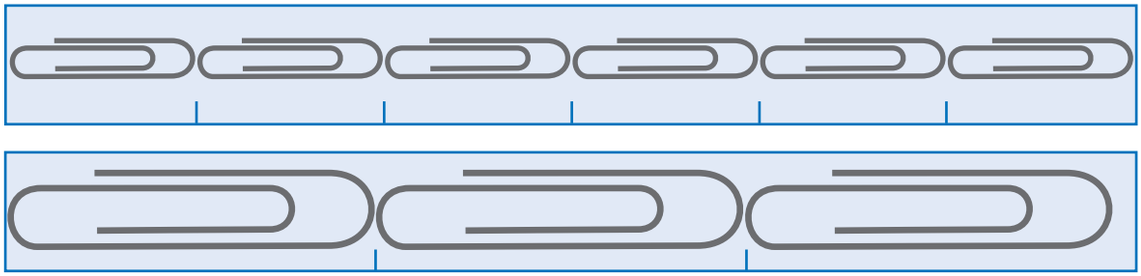
3.

about _____ paper clips

4. Make your own.

about _____ paper clips

NOTE: Your child is learning to measure items using small objects, such as paper clips. Have your child measure items around the house in a similar way.



How long is each line below?
Record the length in the table.

5. A _____

6. B _____

7. C _____

8. D _____

Line	A	B	C	D
Small clip	about 2			
Large clip				

Problem Solving

9. What if you used larger paper clips?
How would the measurements change? Explain.

_____

_____

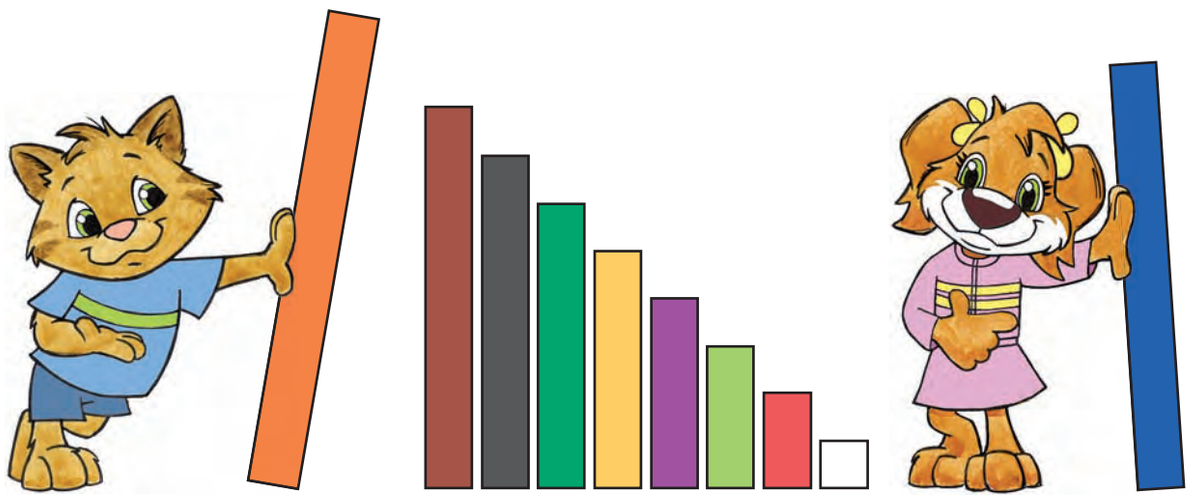
_____

Chapter 12
Lesson 2

Name _____ Date _____

Comparing and Ordering Lengths

NCTM Standards 1, 2, 4, 6, 7, 8, 9, 10



Write >, <, or =.

1. red (<) purple

red + brown (<) purple + brown

---

2. yellow ( ) black

yellow + light green ( ) black + light green

---

3. red ( ) dark green

red + orange ( ) dark green + orange

---

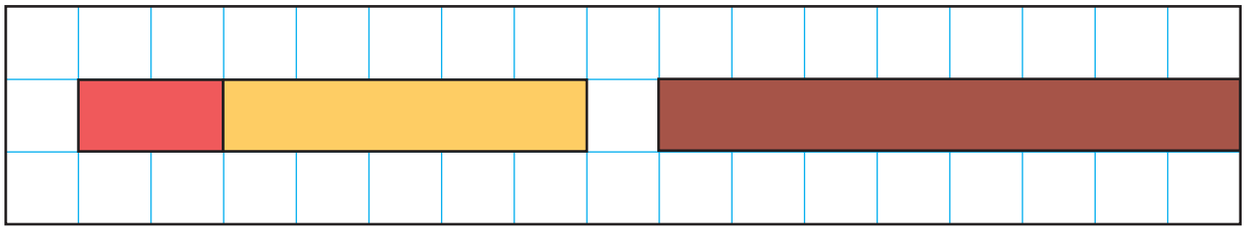
4. blue ( ) blue

blue + purple ( ) blue + purple

NOTE: Your child is learning to measure and compare the lengths of classroom objects, such as the rods on this page.

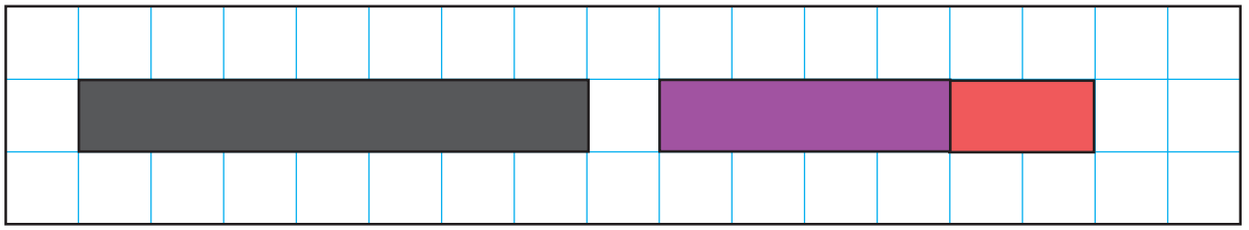
Write >, <, or =.

5.



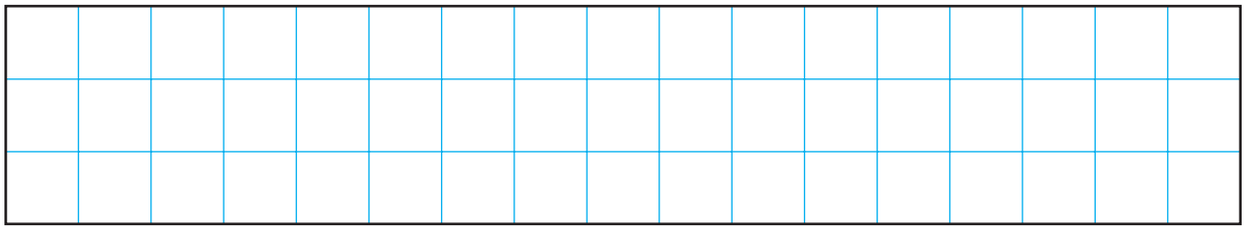
$2 + 5 \bigcirc 8$

6.



$7 \bigcirc 4 + 2$

7. Make your own.



$\bigcirc$

Problem Solving

8. Find these objects in your classroom.
List them in order from shortest to longest.

_____

_____

_____

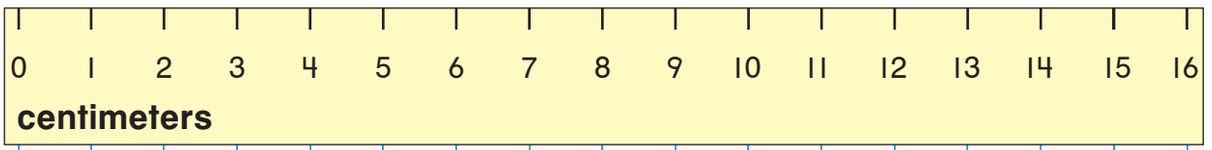
Chapter 12
Lesson 3

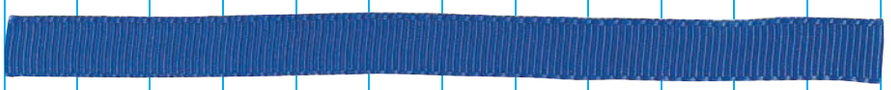
Name _____ Date _____

Measuring with a Centimeter Ruler

NCTM Standards 1, 4, 6, 7, 9, 10

Measure to the nearest centimeter.



1. 

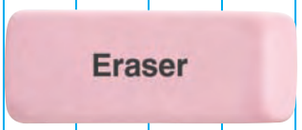
about 12 centimeters

2. 

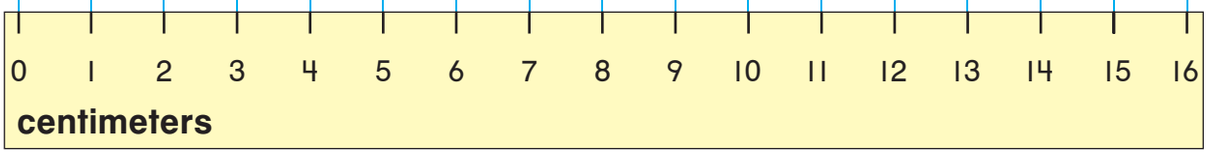
about _____ centimeters

3. 

about _____ centimeters

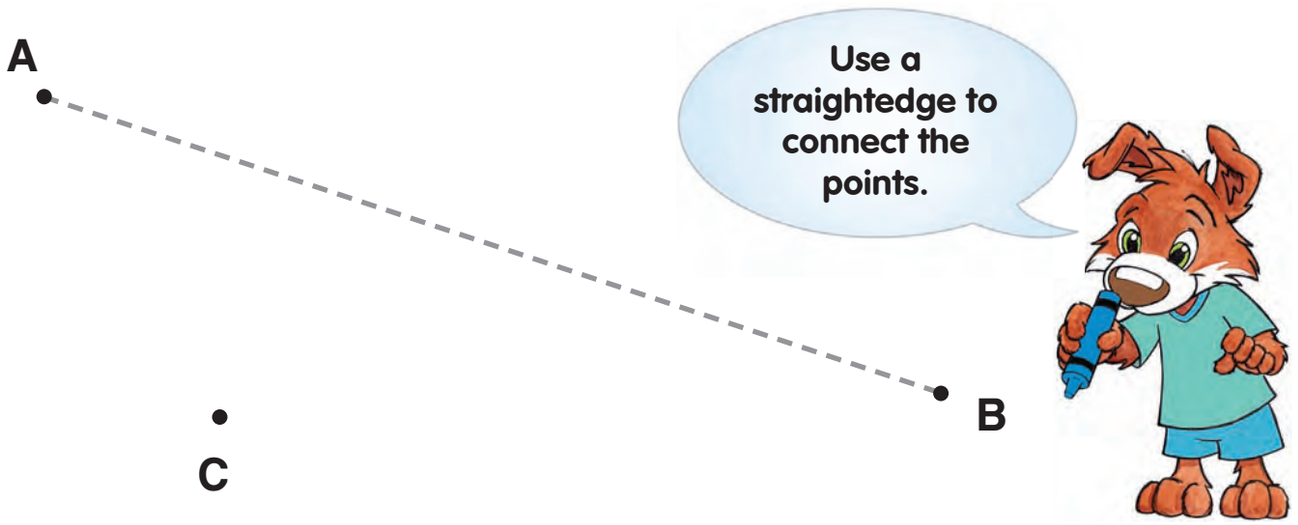
4. 

about _____ centimeters



NOTE: Your child is learning to measure the length of classroom objects using a centimeter ruler. You may wish to ask your child to measure an object at home to the nearest centimeter.

5. Connect the dots.



Measure each line above to the nearest centimeter.

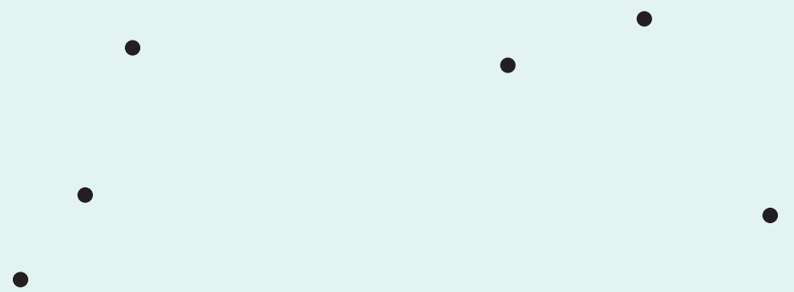
6. **A** to **B** about _____ centimeters

7. **C** to **A** about _____ centimeters

8. **B** to **C** about _____ centimeters

Challenge

9. Connect the dots that are about 6 centimeters apart.



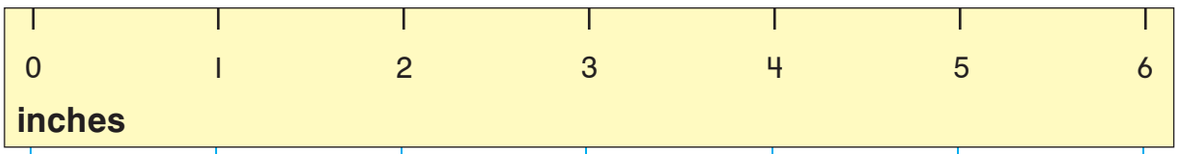
Chapter 12
Lesson 4

Name _____ Date _____

Measuring with an Inch Ruler

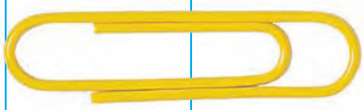
NCTM Standards 1, 4, 6, 7, 8, 9, 10

Measure to the nearest inch.



1. 

about 6 inches

2. 

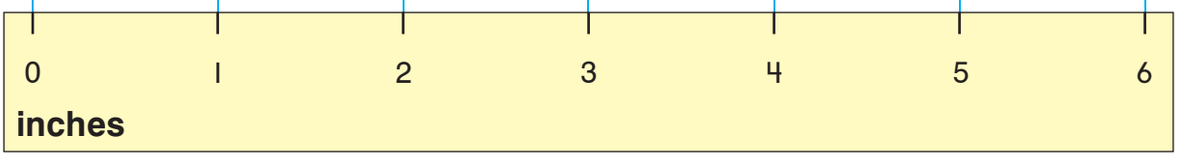
about _____ inches

3. 

about _____ inches

4. 

about _____ inch



NOTE: Your child is learning to measure objects using an inch ruler. You may wish to have your child measure an object at home to the nearest inch.

Measure to the nearest inch.

5. your notebook 

about _____ inches

6. your shoe 

about _____ inches

7. Which is longer—your notebook or your shoe? About how much longer?

_____

_____

_____

Challenge

8. Use a RED. Connect two dots that are about 2 inches apart.

9. Use a BLUE. Connect two dots that are more than 2 inches apart.

10. Use a GREEN. Connect two dots that are less than 2 inches apart.

A • • C

• B

Chapter 12
Lesson 5

Name _____ Date _____

Comparing Figures by Size

NCTM Standards 1, 2, 3, 4, 6, 7, 8, 9, 10

Connect the dots. Measure to the nearest centimeter.

1. A•

C•

•B

Line	Length
A to **B**	about 5 cm
B to **C**	about _____ cm
A to **C**	about _____ cm

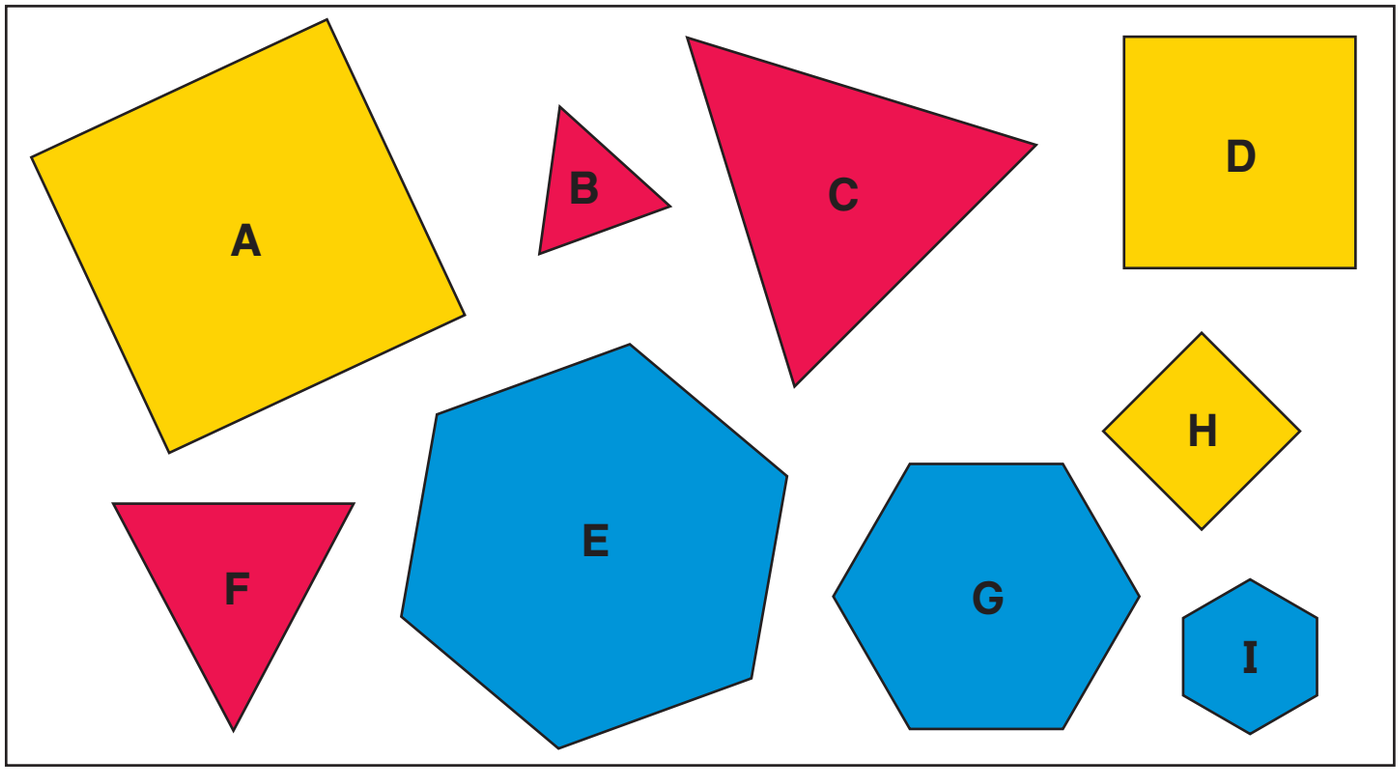
2. K•

M•

•L

Line	Length
K to **L**	about _____ cm
L to **M**	about _____ cm
K to **M**	about _____ cm

NOTE: Your child is learning to measure and compare the sides of figures. Ask your child to describe the relationship between the two triangles on this page.



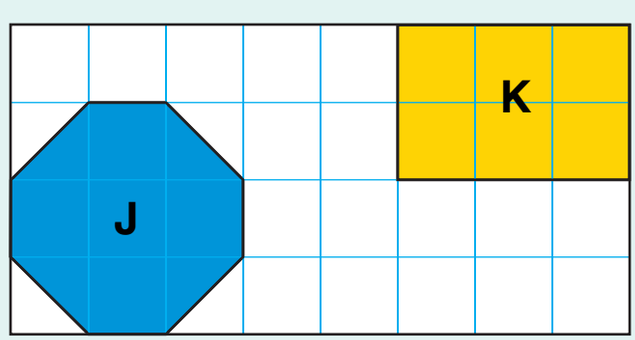
3. Complete the table.

	Largest	In-Between	Smallest
Square	A		
Triangle		F	
Hexagon			

Challenge

4. Which figure uses more ? 2 make a .

J or **K**



Chapter 12
Lesson 6

Name _____ Date _____

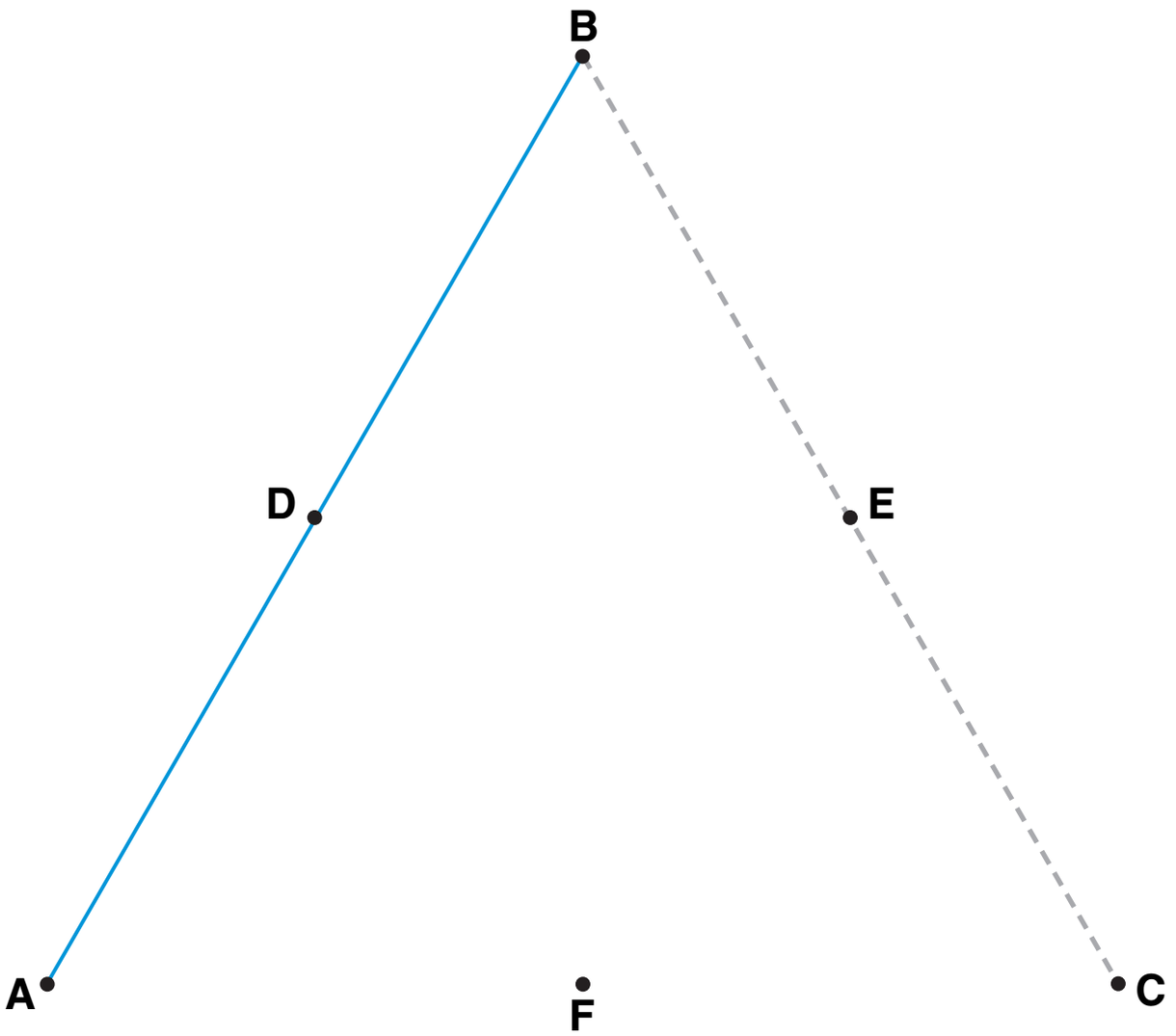
Exploring Area

NCTM Standards 1, 3, 4, 6, 7, 8, 9, 10

1. Connect the dots. Measure to the nearest inch.

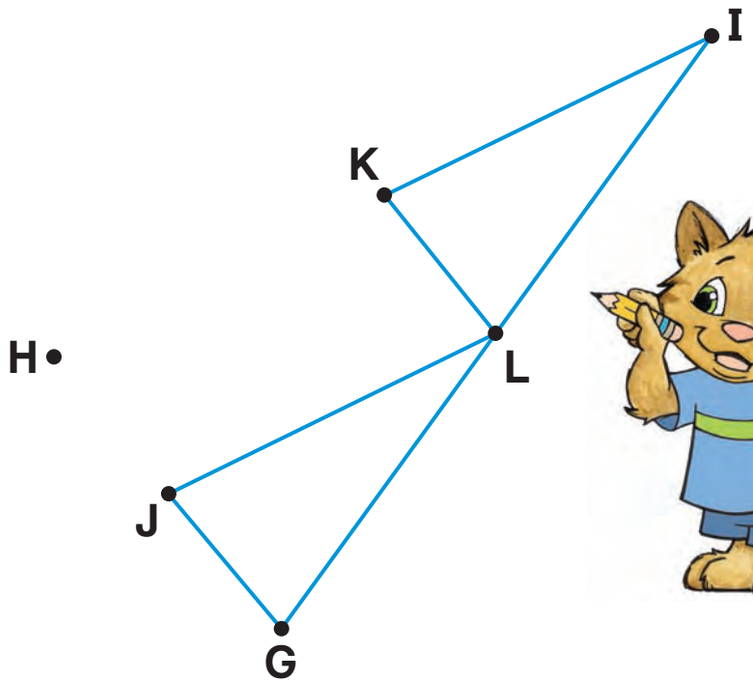
Line	Length
A to **B**	about 6 inches
B to **C**	about _____ inches
A to **C**	about _____ inches

Line	Length
D to **E**	about _____ inches
E to **F**	about _____ inches
D to **F**	about _____ inches



NOTE: Your child is learning to measure the sides of different figures and is exploring the concept of area. You may wish to give your child two pieces of paper in different sizes and ask, "Which piece covers more area on the table?"

2. Measure to the nearest inch.



Line	Length
H to **G**	about 2 inches
H to **I**	about _____ inches
G to **I**	about _____ inches

Line	Length
H to **J**	about _____ inches
H to **K**	about _____ inches
J to **K**	about _____ inches

Problem Solving

3. Make a triangle this way:

① Draw one side.

② Draw another side twice as long.

③ Draw the third side.

Write the length of each side.

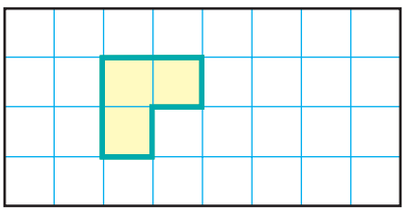
Chapter 12
Lesson 7

Name _____ Date _____

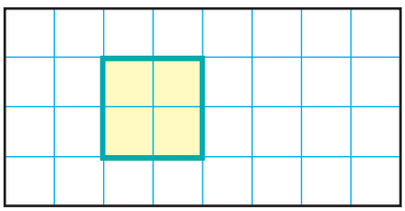
Finding Area on a Grid

NCTM Standards 1, 3, 4, 6, 7, 9, 10

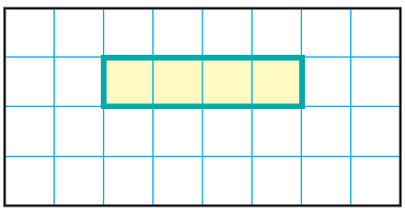
What is the area of each shaded figure?

1. 

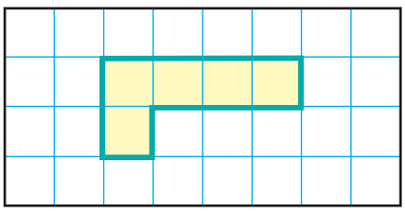
3 _____ ☐

2. 

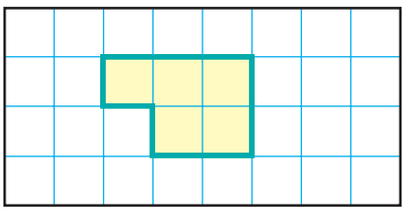
_____ ☐

3. 

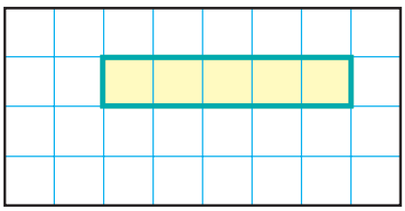
_____ ☐

4. 

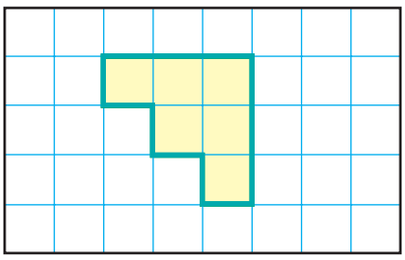
_____ ☐

5. 

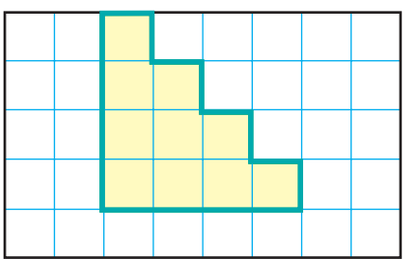
_____ ☐

6. 

_____ ☐

7. 

_____ ☐

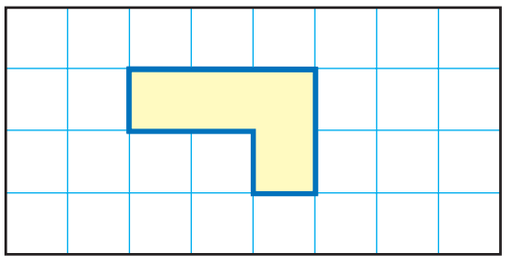
8. 

_____ ☐

NOTE: Your child is learning to find the area of figures by counting square tiles or squares on a grid. You may wish to ask your child to draw two different figures with the same area on grid paper.

What is the area of each shaded figure?

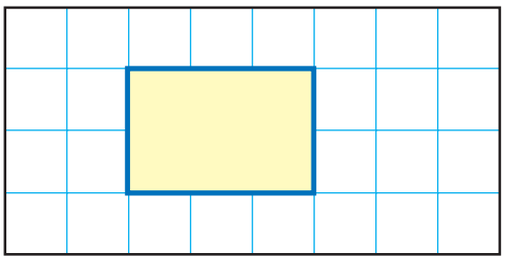
9.



4

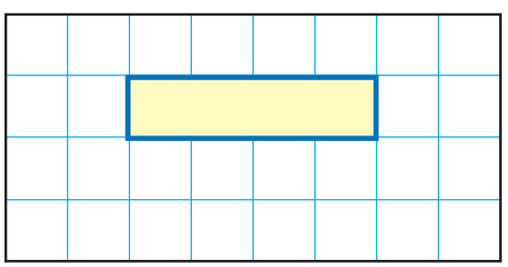
_____

10.



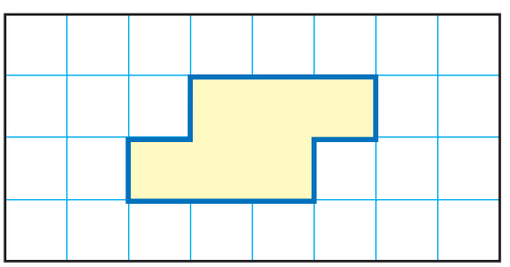
_____

11.



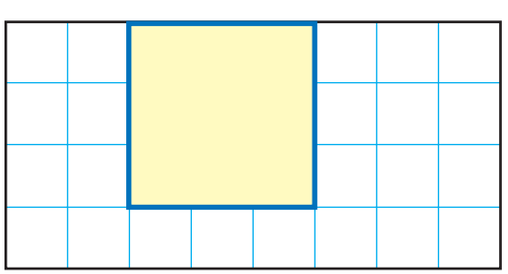
_____

12.



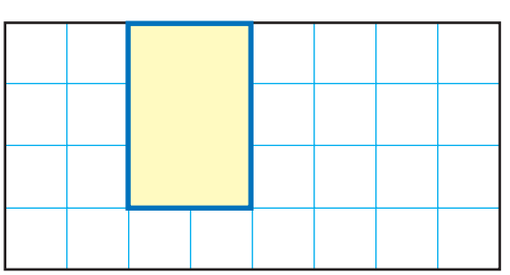
_____

13.



_____

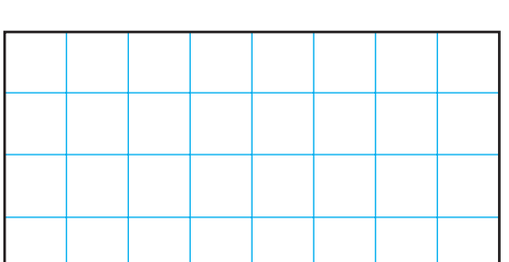
14.



_____

Challenge

15. Draw a rectangle with an area of 12 square units.



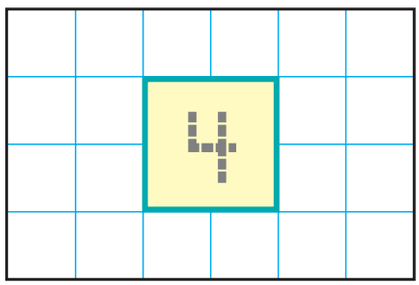
Chapter 12
Lesson 8

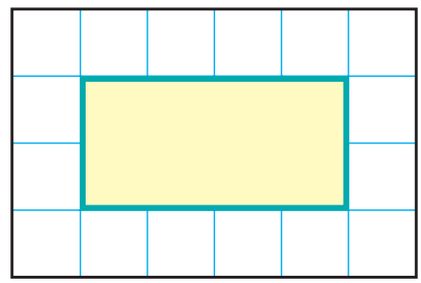
Name _____ Date _____

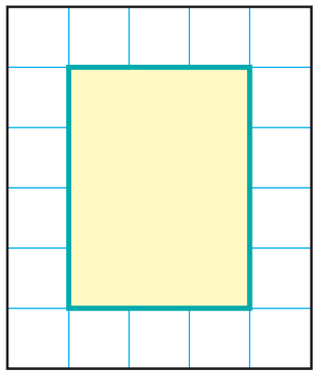
Comparing Areas

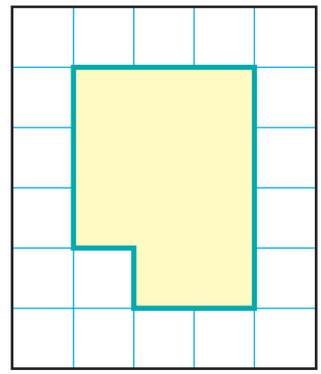
NCTM Standards 1, 3, 4, 6, 7, 9, 10

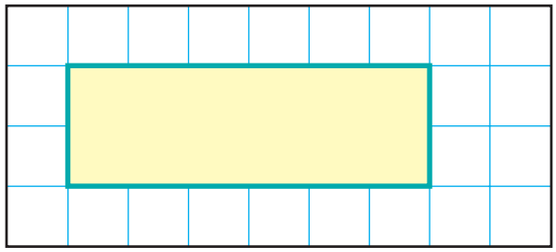
What is the area of each figure?

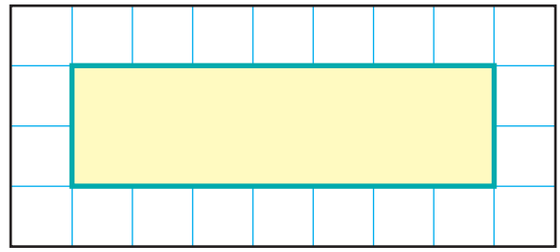
1. 

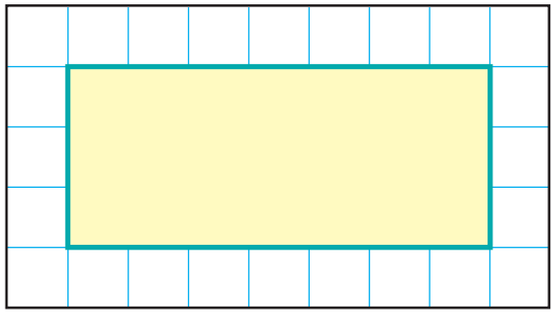
2. 

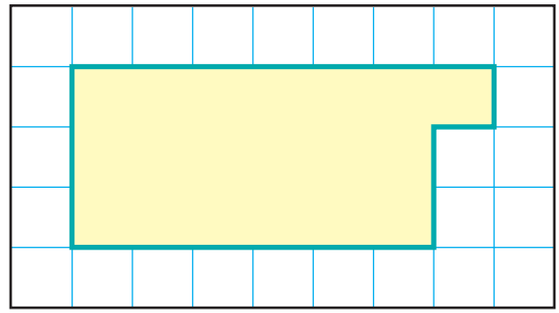
3. 

4. 

5. 

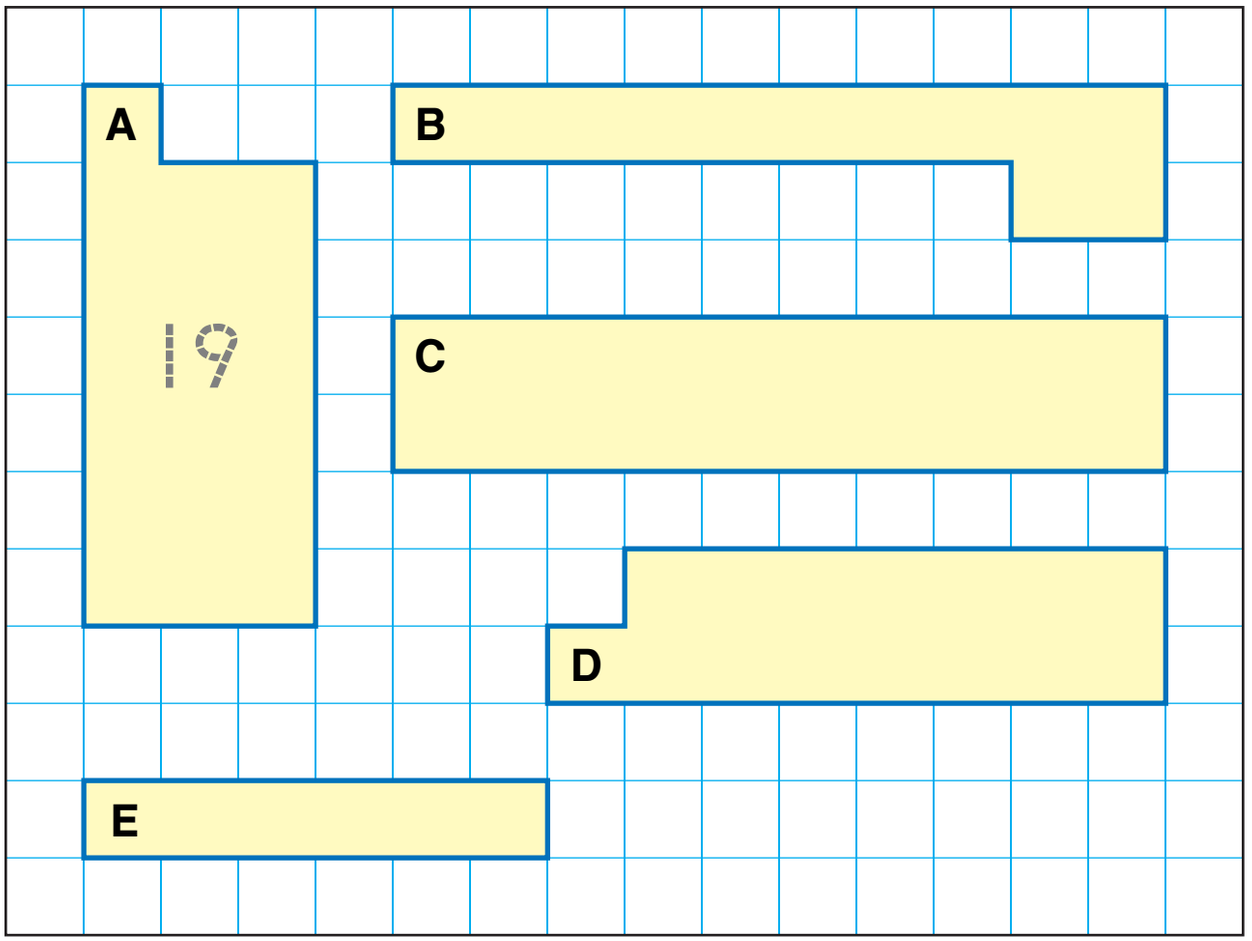
6. 

7. 

8. 

NOTE: Your child is learning to find the area of figures using the area of smaller figures, and to compare areas.

9. Write the area on each figure.

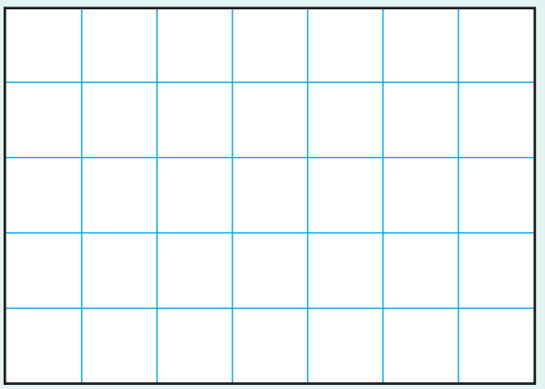


10. Order the figures above from least to greatest area.

Figure	E	B			
Area	6				

Challenge

11. Draw a rectangle with an area of 15 square units.

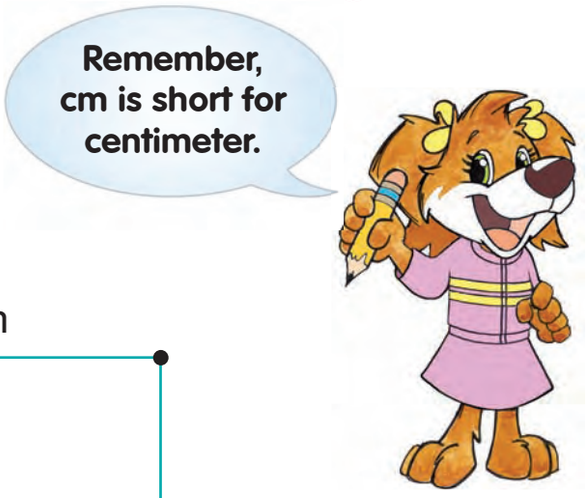


Chapter 12
Lesson 9

Name _____ Date _____

Measuring Boxes and Rectangles

NCTM Standards 1, 3, 4, 6, 7, 8, 9, 10



What is the length of each side?

1.

about _____ cm

about 5 cm

A

about _____ cm

about _____ cm

2.

about _____ cm

about _____ cm

B

about _____ cm

about _____ cm

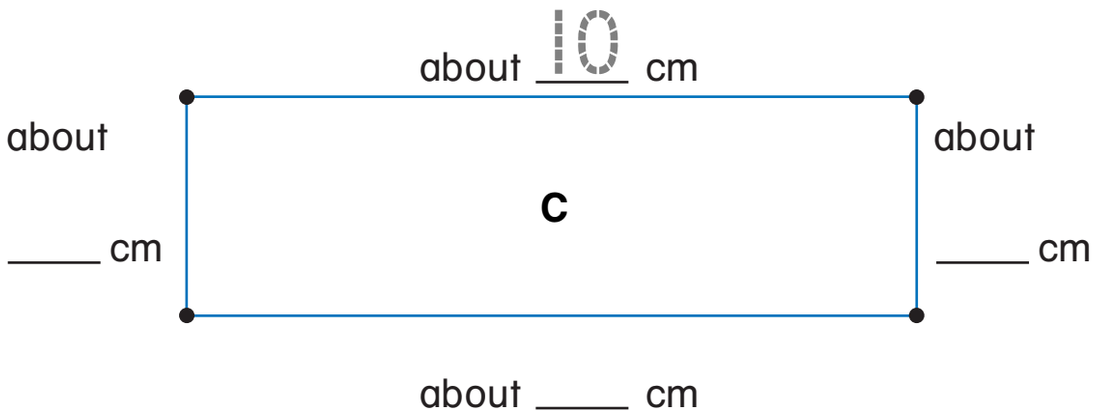
3. Will Rectangle B fit inside Rectangle A? Explain.

_____

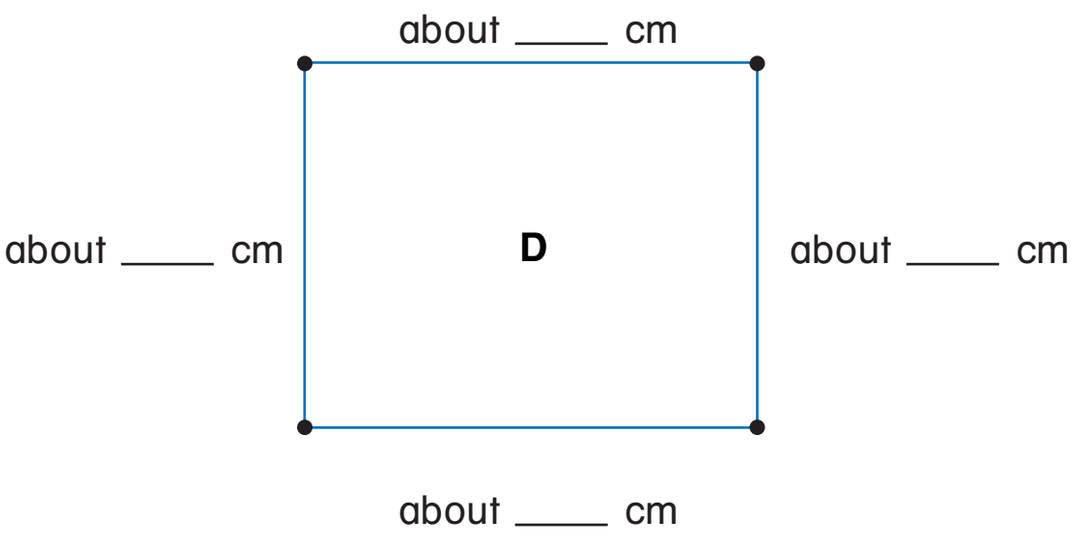
NOTE: Your child is learning to measure and compare measurements. You might ask your child to measure the length, width, and height of two boxes and decide whether one will fit inside the other.

What is the length of each side?

4.



5.



Challenge

6. Will Rectangle C fit inside Rectangle D? _____

Will Rectangle D fit inside Rectangle C? _____
Explain.

_____

_____

_____

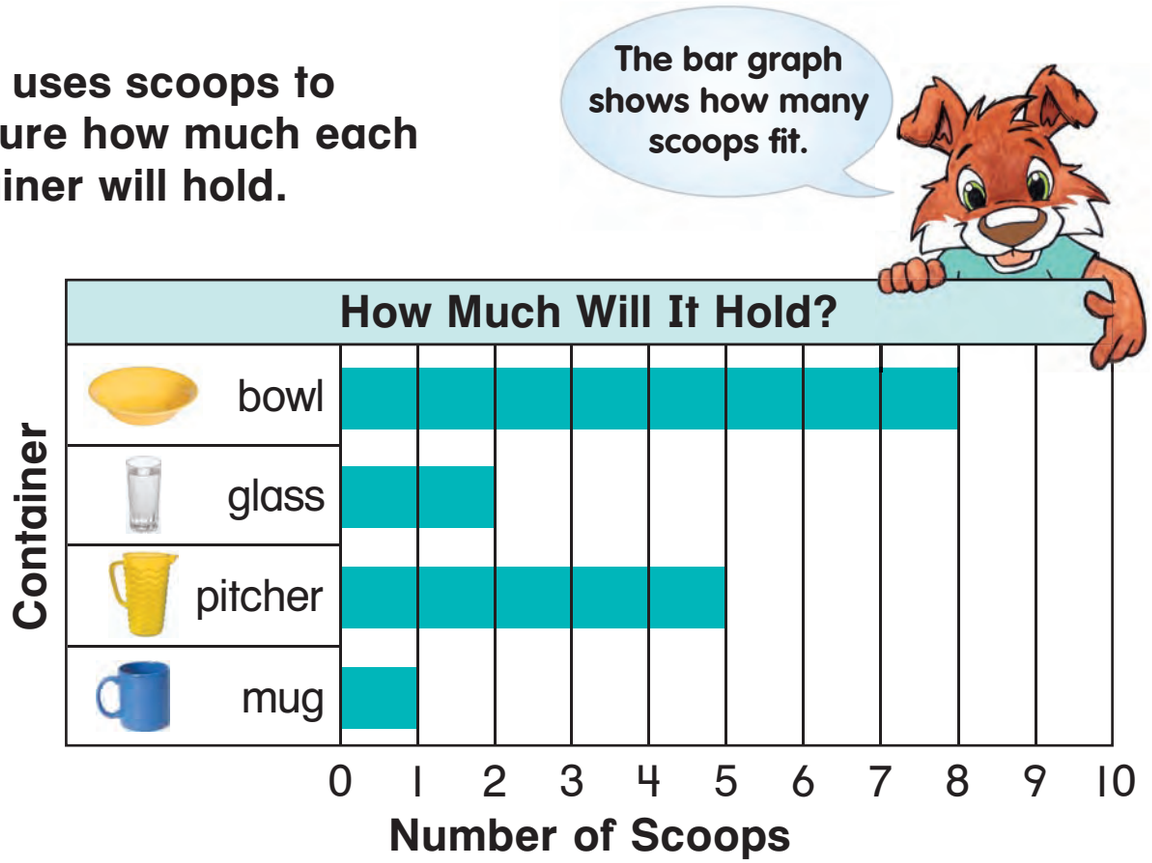
Chapter 12
Lesson 10

Name _____ Date _____

Introducing Capacity with Nonstandard Units

NCTM Standards 1, 4, 6, 7, 8, 9, 10

Carol uses scoops to measure how much each container will hold.



1. Which container holds the most? bowl

2. Which container holds the least? _____

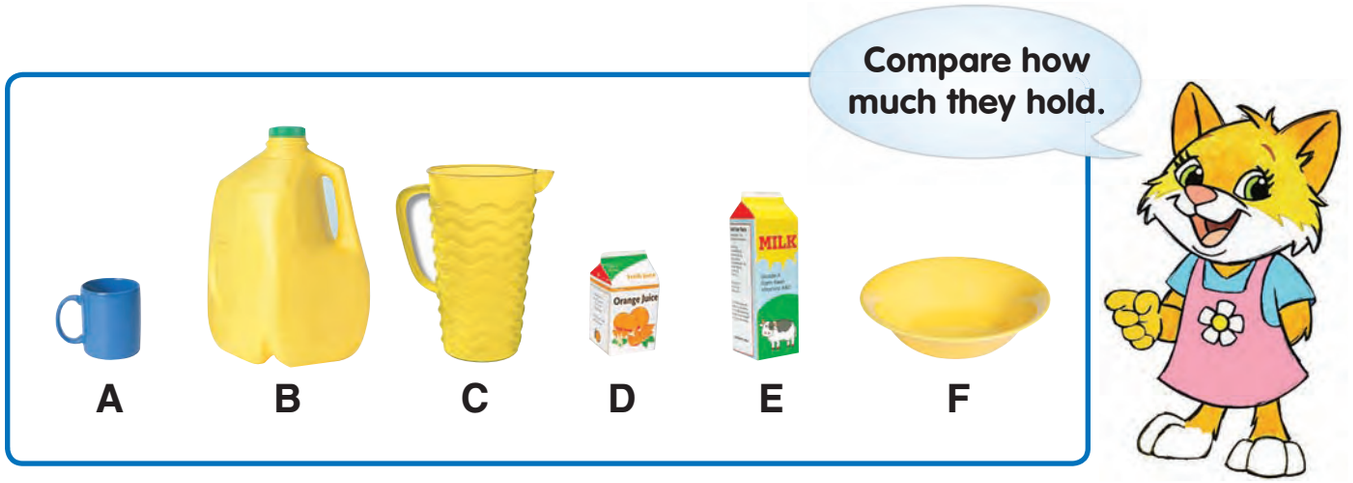
3. How many more scoops does the bowl hold than the pitcher? Explain.

_____

_____

_____

NOTE: Your child is exploring capacity by filling containers. You might have your child fill two containers with water to decide which holds more.



4. Which do you think holds more?  or 

5. Which do you think holds less?  or 

6. Look at **A**, **B**, and **C**.
List them in order from holds the least to holds the most.

_____ _____ _____
least most

7. Look at **C**, **D**, and **E**.
List them in order from holds the most to holds the least.

_____ _____ _____
most least

Problem Solving

8. José has 3 jars labeled X, Y, and Z.
Use the clues.
Which container holds the least?

_____

Clues
X holds more than Z.
Y holds less than X.
Z holds more than Y.

Chapter 12
Lesson 11

Name _____ Date _____

Measuring Capacity with Standard Units

NCTM Standards 1, 4, 6, 7, 8, 9, 10

Which is the better measurement?

1.

(1 quart) 10 quarts

2.

6 pints 60 pints

3.

2 gallons 20 gallons

4.

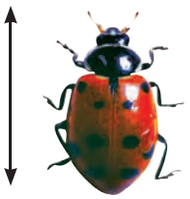
1 liter 10 liters

5. Draw your own container.
Tell about it. How much will it hold?

NOTE: Your child is learning to compare the capacities of different containers and to identify appropriate measurements and measuring tools.

What could the real measurement be?

6.



(2 centimeters) 2 gallons

7.

8 inches 8 pints

8.

less than 1 pint | more than 1 gallon

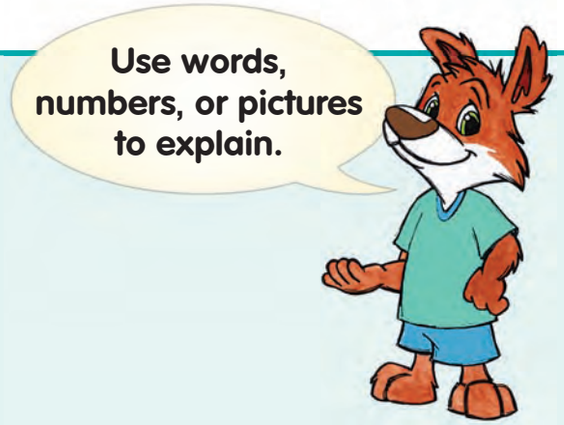
9.

less than 1 pint | more than 1 gallon

Challenge

10. There are 2 pints in 1 quart.
There are 4 quarts in 1 gallon.
How many pints are in 1 gallon?

_____ pints



Name _____ Date _____

Problem Solving Strategy

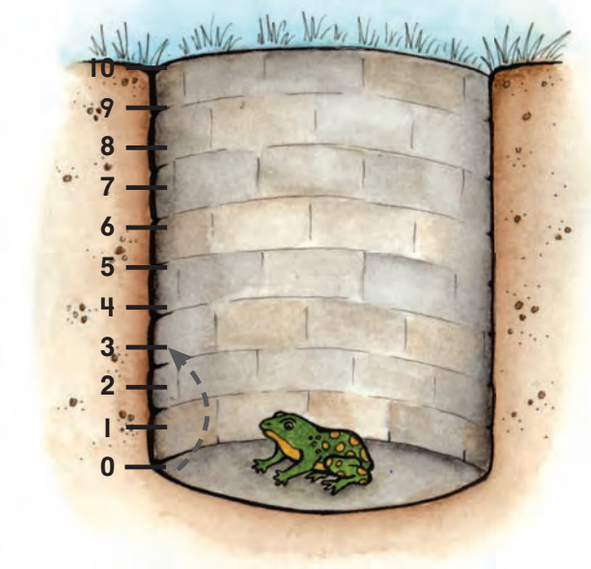
Draw a Picture

NCTM Standards 1, 4, 6, 7, 8, 9, 10

Understand
Plan
Solve
Check

1. A frog is at the bottom of a hole. The hole is 10 inches deep. The frog jumps up 3 inches each time. How many jumps will it take to get to the top?

_____ jumps



2. Scott has 6 square tiles. How many different rectangles can he make with the tiles?

_____ rectangles

3. Heidi has a bowl, a drinking cup, and a pitcher.
The pitcher holds more than the bowl.
The bowl holds 2 cups.
List the containers in order from holds the most to holds the least.

_____

NOTE: Your child is exploring different ways to solve problems. Drawing a picture can help children visualize patterns and relationships in a problem.

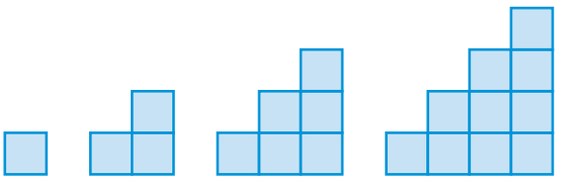
Problem Solving Test Prep

1. George has 2 gallons of punch. He wants to fill 4 pitchers. Each pitcher holds 1 quart. There are 4 quarts in 1 gallon. How much punch will he have left?

Ⓐ 1 gallon Ⓒ 2 quarts

Ⓑ 3 quarts Ⓓ 5 quarts

2. Brooke uses square tiles to make this pattern.



How many tiles does she need for the next figure?

Ⓐ 11 Ⓒ 16

Ⓑ 15 Ⓓ 21

Show What You Know

3. Joey uses 5 inches of string to make a bookmark. He makes 6 bookmarks. How many inches does he use?

_____ inches

Explain.

_____

_____

_____

_____

_____

4. Madison has some dimes and pennies. She has 47¢. How many dimes and pennies could she have?

_____ dimes

_____ pennies

Explain.

_____

_____

_____

_____

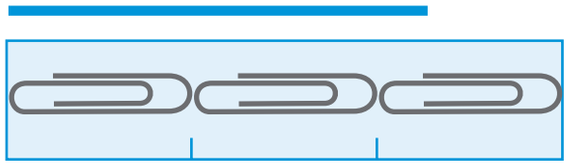
Name _____ Date _____

Chapter 12

Review/Assessment

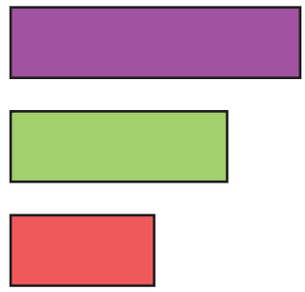
NCTM Standards 1, 3, 4, 6, 9, 10

1. About how long is the line? Lesson 1



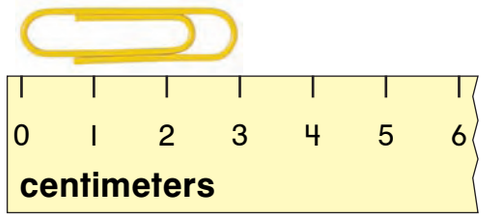
about _____ paper clips

2. Write >, <, or =. Lesson 2



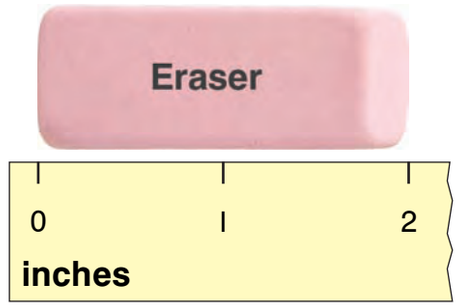
purple ◯ green

3. About how many centimeters long is the paper clip? Lesson 3



about _____ centimeters

4. About how many inches long is the eraser? Lesson 4



about _____ inches

5. Which figure is the smallest? Lesson 5

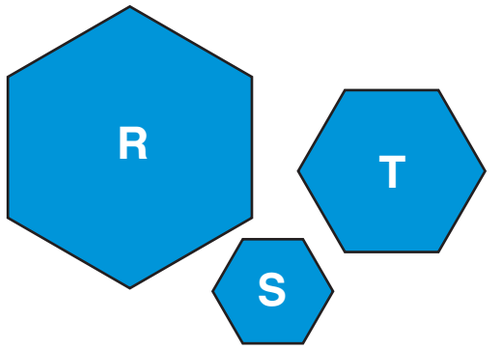
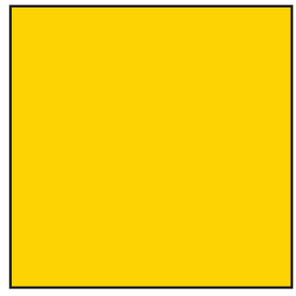


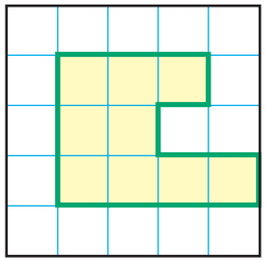
Figure _____

6. Draw a figure with a smaller area. Lesson 6



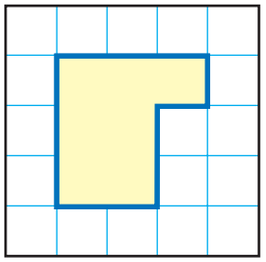
What is the area of each figure? Lessons 7 and 8

7.



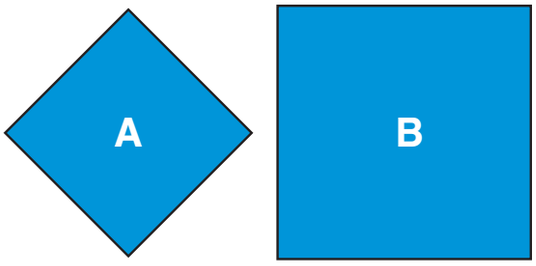
_____ □

8.



_____ □

9. Which figure will fit inside of the other? Lesson 9



_____

10. Order the containers from holds the least to holds the most. Lessons 10 and 11

F G H

_____

Problem Solving Lesson 12

11. Elena makes a quilt with 12 squares patches. The patches are all the same size. How many rectangles can she make?

_____ rectangles