

Exploring Multiplication and Division

Choosing Snacks

You need

- milk containers
- juice boxes
- pieces of fruit
- pictures of fruits and drinks (optional)

Make and record different combinations.

STEP 1 Making Combinations

How many fruits do you have? _____

How many drinks do you have? _____

What one fruit did you choose? _____

What one drink did you choose? _____

STEP 2 Recording Combinations

What other combination of a drink and fruit could you make?

Record all of the different combinations.

How many different combinations did you find? _____

STEP 3 Finding All Combinations

How do you know you found all the combinations?





School-Home Connection

Dear Family,

Today we started Chapter 13 of *Think Math!* In this chapter, I will explore combinations, intersections, and arrays as I learn about multiplication and division. 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 multiplication and division.

Love,

Family Fun

What Will I Wear?

Work with your child to act out one of the activities from class.

- Use some of your child's clothing to find how many different outfits can be made. Take out 2 pairs of pants or skirts and 2 or 3 tops.

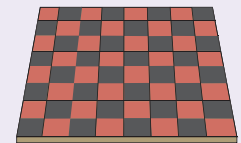
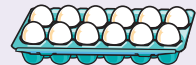


- Work with your child to make outfits by combining each top with a bottom. Help your child come up with a method to make sure you get all the combinations, such as pairing the first top with every bottom and then doing the same with each top.
- Together, make a list to keep track of all the different outfits. Count all of the different combinations.
- If time allows, add another top or bottom to see how many more outfits you can make.

Scavenger Hunt

Work with your child to count equal groups.

- Look around the house to find objects that are arranged in equal rows and columns. For example, tiles on the floor, pictures on a wall, panels on a door, or paints in a box.
- Help your child find the total number of objects in a display with equal groups. Talk about how to skip-count by the number of objects in a row or column. To find how many eggs are in a full carton, skip-count by twos or by sixes.
- Help your child write a multiplication sentence to show each arrangement.



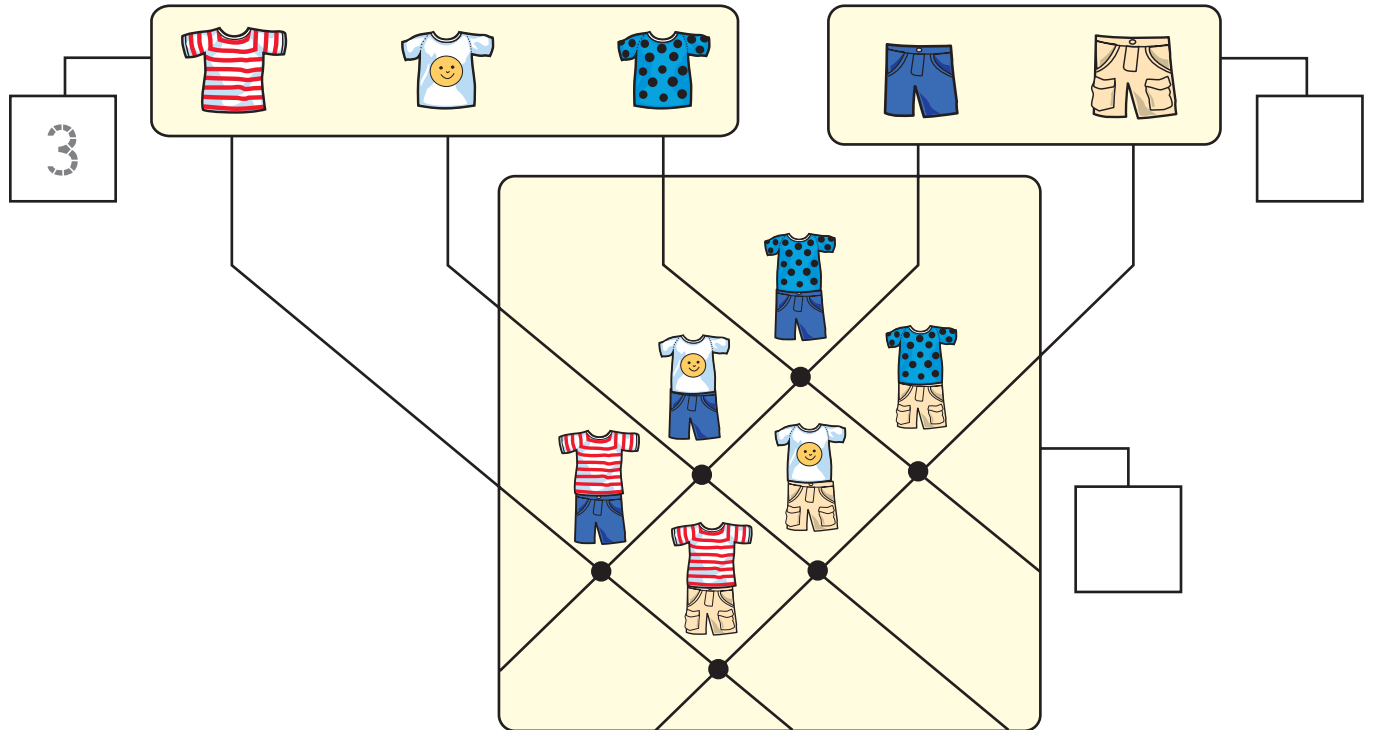
$$2 \times 6 = 12 \text{ or } 6 \times 2 = 12$$

Counting Combinations

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

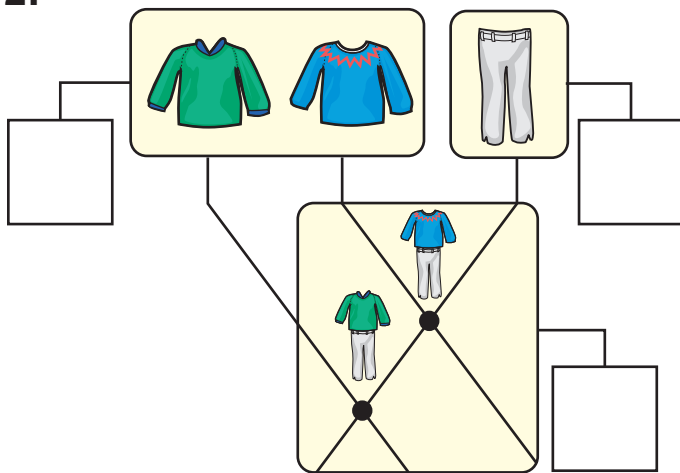
How many different outfits can be made each time?

1.



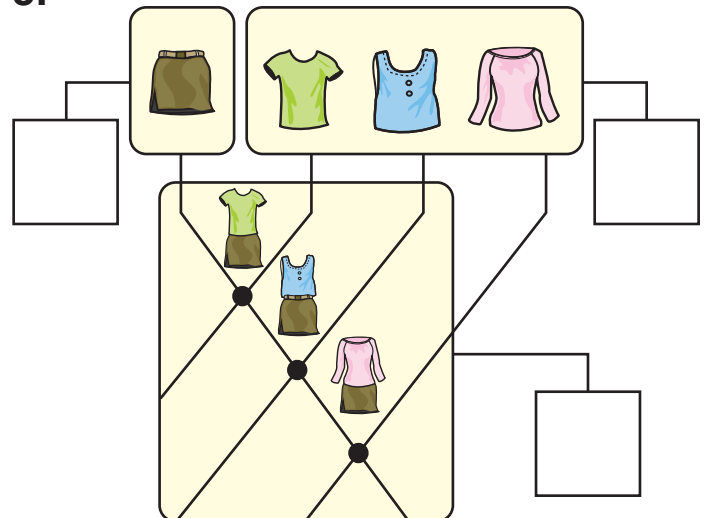
_____ outfits

2.



_____ outfits

3.

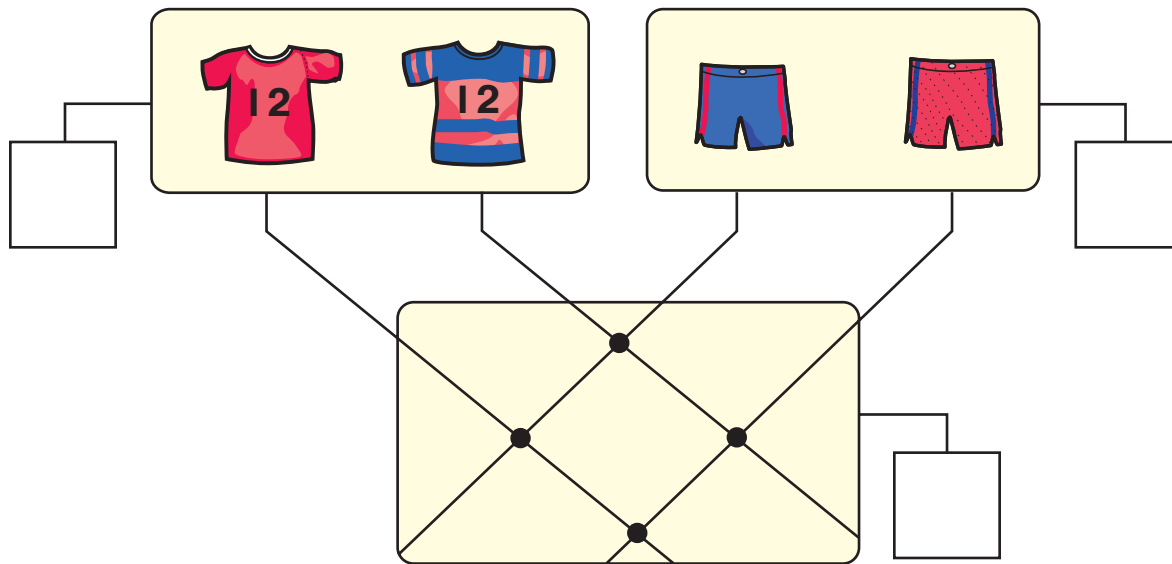


_____ outfits



NOTE: Your child is learning to find all possible combinations from two sets.

4. Andrew has 2 shirts and 2 pairs of shorts for soccer.
How many different uniforms can he make?



_____ uniforms

What multiplication sentence
can you use to solve the problem?



5. How many different outfits can you make from
3 shirts and 3 pairs of pants? Use words, numbers,
or pictures to explain.

_____ outfits

Challenge

6. How many different two-digit numbers can you make
using the digits 2, 3, and 4? List all of the numbers.

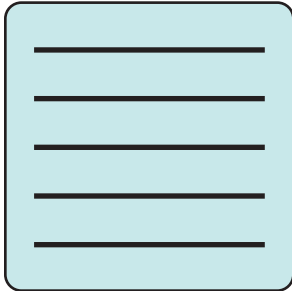
I can make _____ two-digit numbers.

Counting Intersections

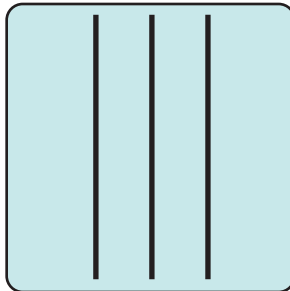
NCTM Standards 1, 2, 3, 6, 7, 8, 9, 10

How many intersections are there? Write the missing numbers.

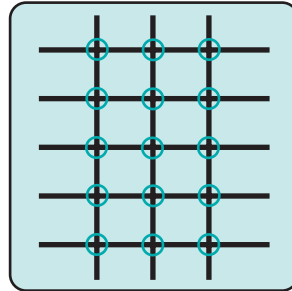
1.



5 lines



_____ lines

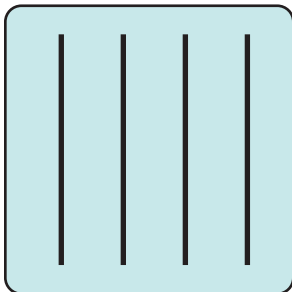


_____ intersections

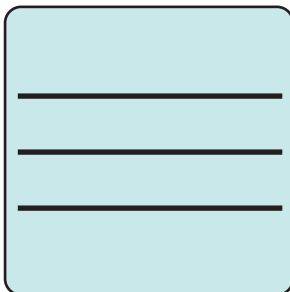
$$5 \times 3 = \underline{\hspace{2cm}}$$

$$3 \times 5 = \underline{\hspace{2cm}}$$

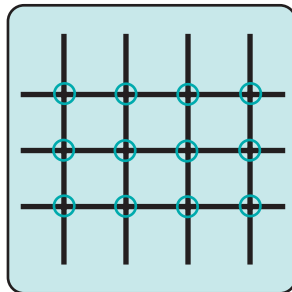
2.



_____ lines



_____ lines

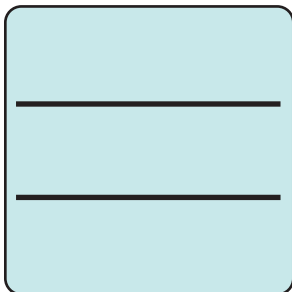


_____ intersections

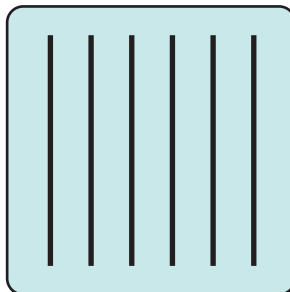
$$3 \times 4 = \underline{\hspace{2cm}}$$

$$4 \times 3 = \underline{\hspace{2cm}}$$

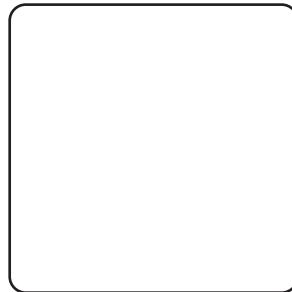
3. Draw the intersections.



_____ lines



_____ lines



_____ intersections

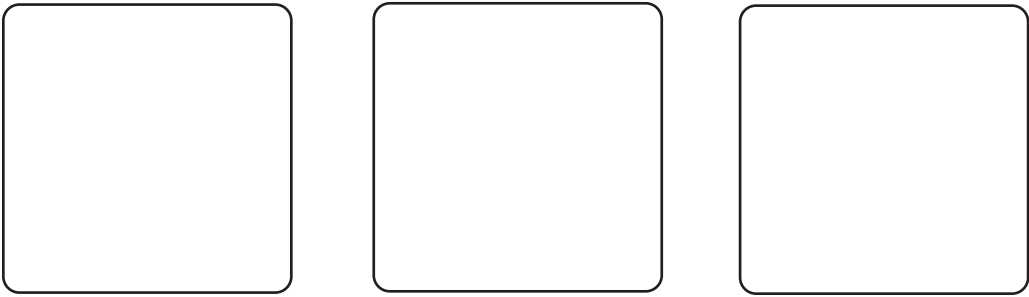
$$2 \times 6 = \underline{\hspace{2cm}}$$

$$6 \times 2 = \underline{\hspace{2cm}}$$

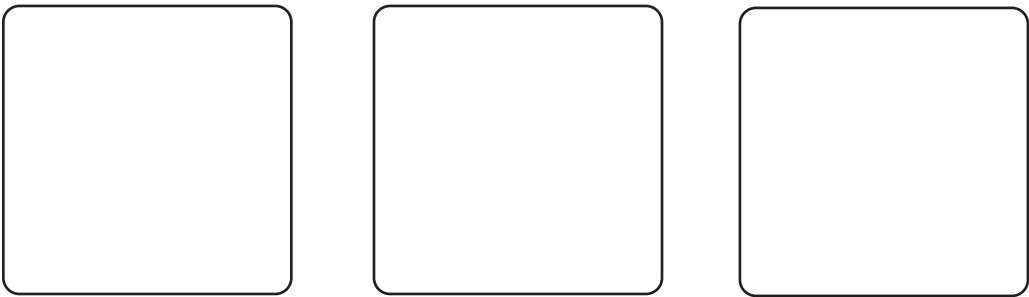


NOTE: Your child is working with intersecting lines to learn multiplication facts.


What is missing? Draw lines and numbers to show the multiplication.

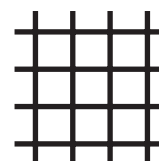
4.  $2 \times 4 = \underline{\hspace{2cm}}$
 $4 \times 2 = \underline{\hspace{2cm}}$

 lines lines intersections

5.  $3 \times 3 = \underline{\hspace{2cm}}$

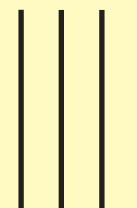
 lines lines intersections

-  6. There are 4 east-west lines and 4 north-south lines. How many intersections are there? Explain how you found the answer.



Problem Solving

7. In Bridgetown, 4 streets go north-south. Every north-south street crosses every east-west street. There is a stoplight at every intersection. There are 24 stoplights in town. How many streets go east-west?

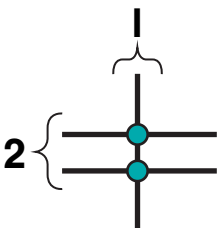


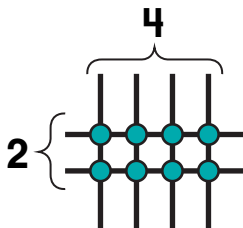
 east-west streets

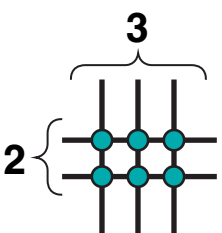
Counting Hidden Intersections

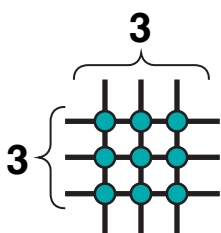
NCTM Standards 1, 2, 3, 6, 8, 9, 10

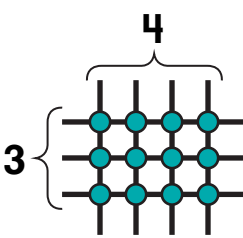
How many intersections are there?
Write the missing numbers.

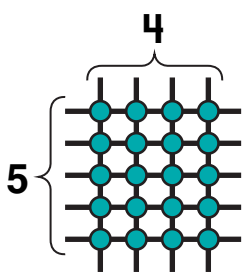
1.  $2 \times 1 = \underline{2}$
 $1 \times 2 = \underline{2}$

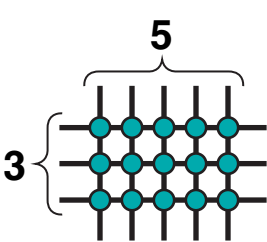
2.  $2 \times 4 = \underline{\hspace{2cm}}$
 $4 \times 2 = \underline{\hspace{2cm}}$

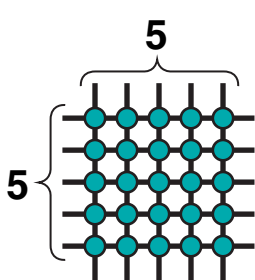
3.  $3 \times 2 = \underline{\hspace{2cm}}$
 $2 \times 3 = \underline{\hspace{2cm}}$

4.  $3 \times 3 = \underline{\hspace{2cm}}$

5.  $4 \times 3 = \underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

6.  $4 \times 5 = \underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

7.  $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

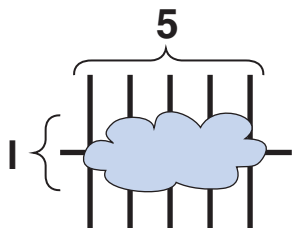
8.  $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$



NOTE: Your child is working with intersecting lines to learn multiplication facts.

How many intersections are there?
Write the missing numbers.

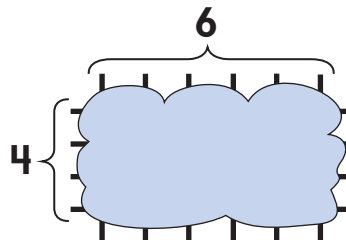
9.



$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

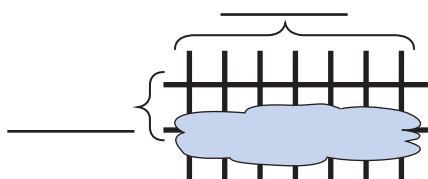
10.



$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

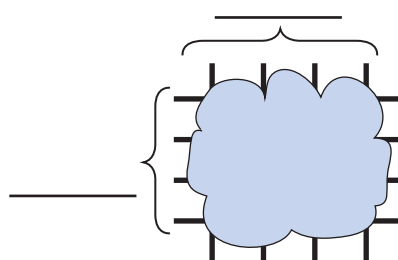
11.



$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

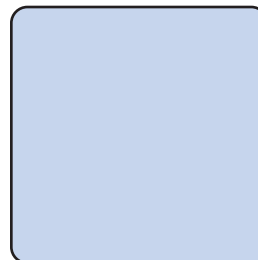
12.



$$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

13. Choose an even number between 10 and 30.
Draw a town map with that many intersections.

 intersections



Problem Solving

14. Bear Town has 8 intersections.
Every north-south street crosses
every east-west street. How many
streets could there be?
Explain how you found the answer.

Draw streets to
make 8 intersections.
Count the streets.

 streets

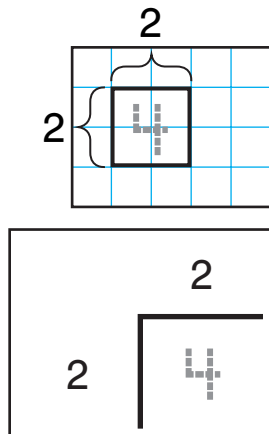


Introducing Division

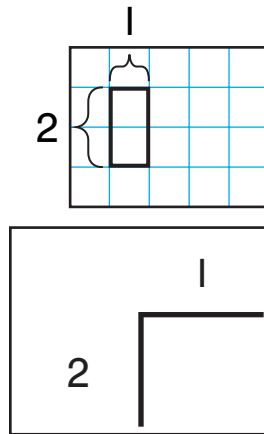
NCTM Standards 1, 2, 3, 6, 8, 9, 10

Write the missing numbers.

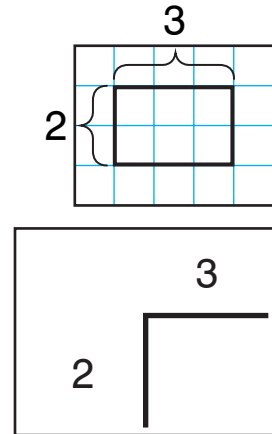
1.



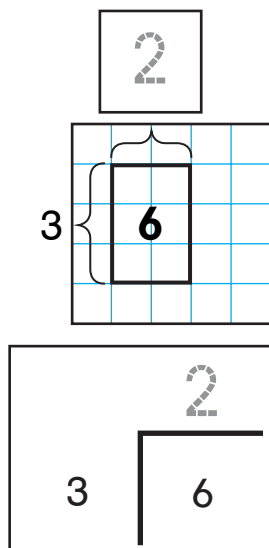
2.



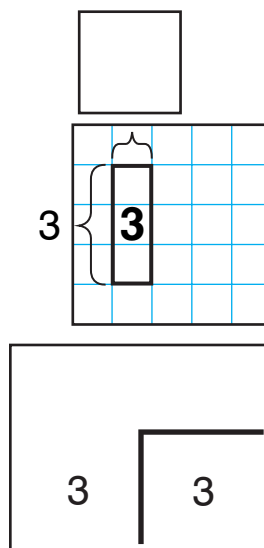
3.



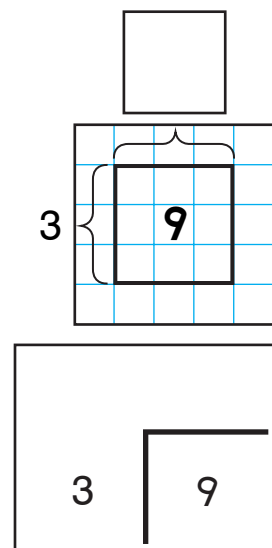
4.



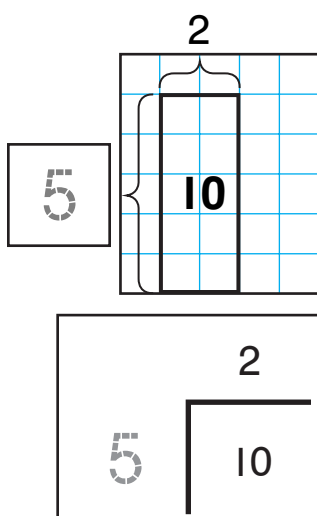
5.



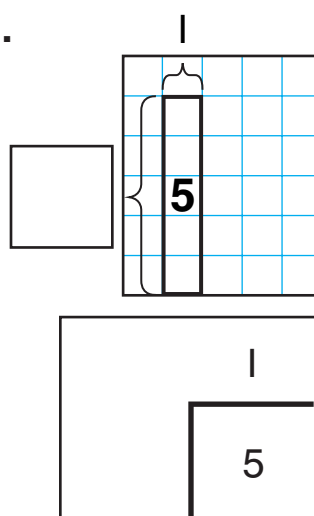
6.



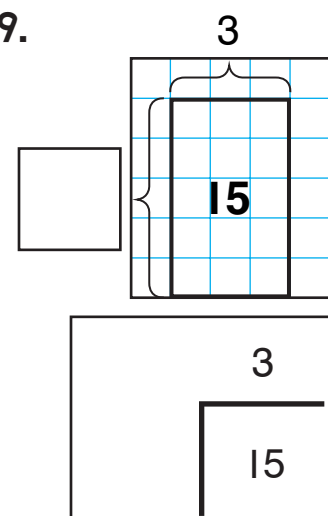
7.



8.



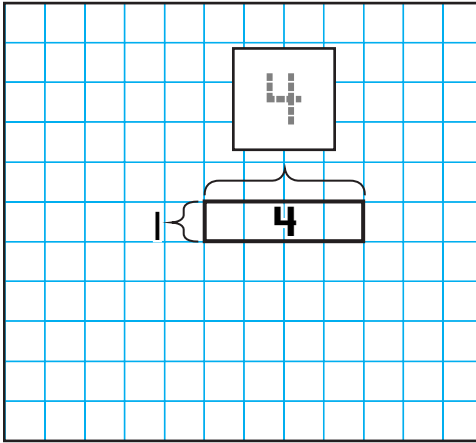
9.



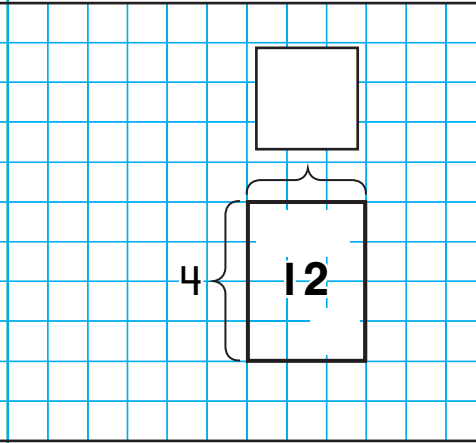
NOTE: Your child is learning to divide by thinking about missing factors.

Write the missing numbers.

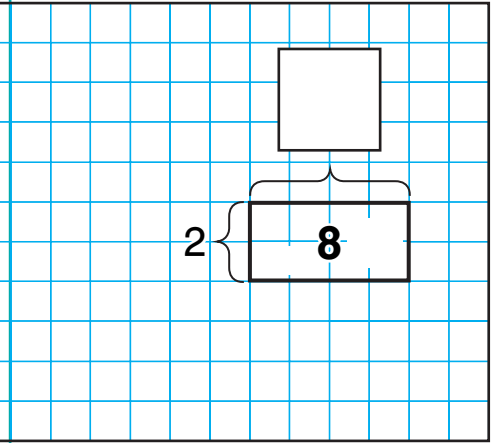
10.



11.

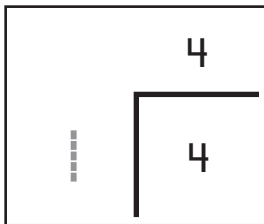


12.

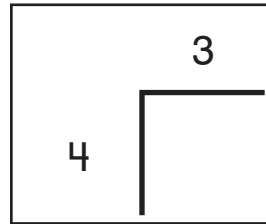


Here is a shorter way to write the examples for Problems 10 to 12. Write the missing numbers.

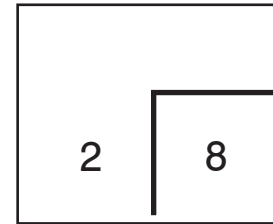
13.



14.

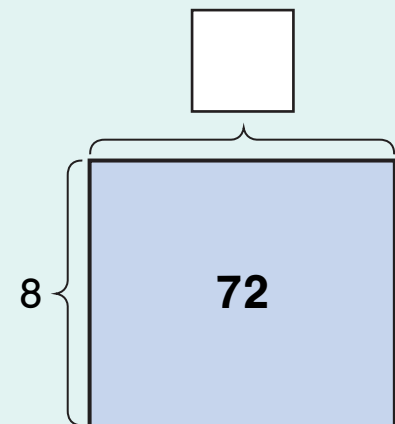


15.



Challenge

16. What is the missing number?
Tell how you know.

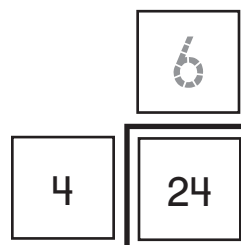
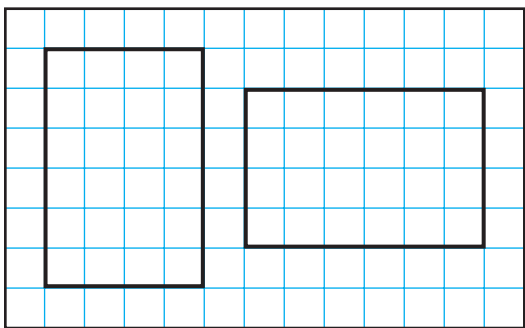


Multiplication and Division Fact Families

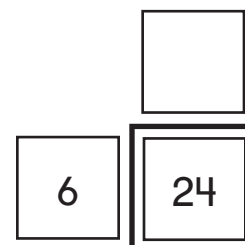
NCTM Standards 1, 2, 3, 6, 8, 9, 10

Complete each fact family.

1.

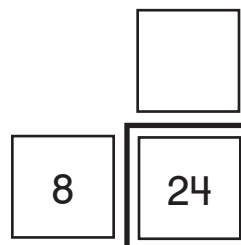
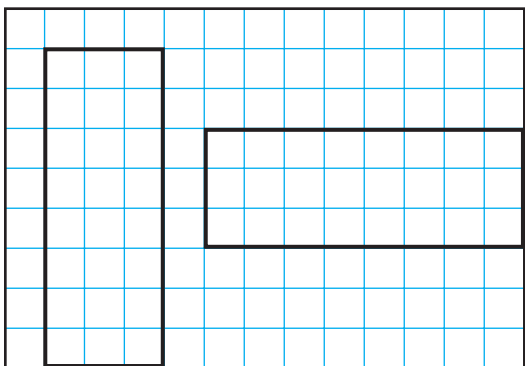


$$4 \times 6 = 24$$

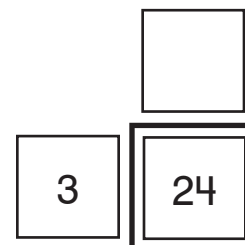


$$6 \times 4 = \underline{\quad}$$

2.

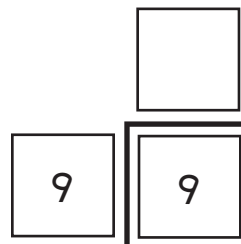
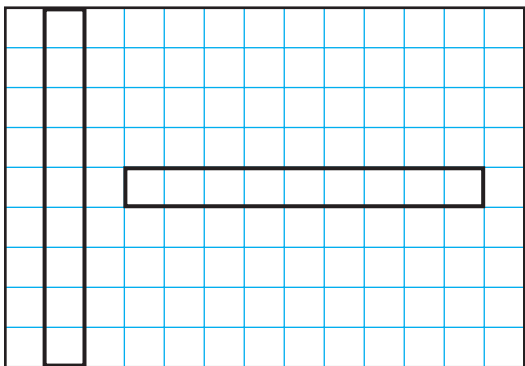


$$8 \times \underline{\quad} = 24$$

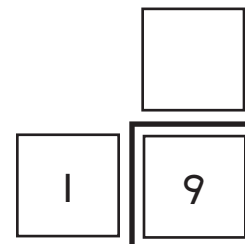


$$3 \times \underline{\quad} = 24$$

3.

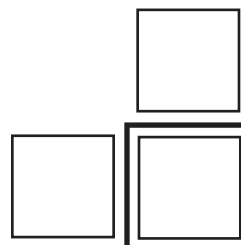
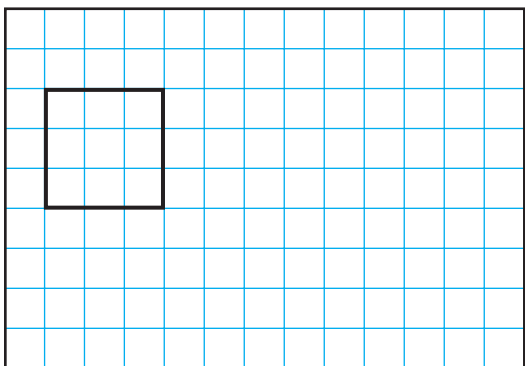


$$9 \times 1 = \underline{\quad}$$

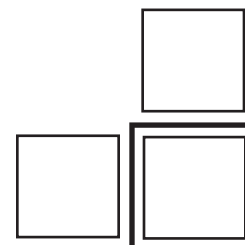


$$1 \times 9 = \underline{\quad}$$

4.



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

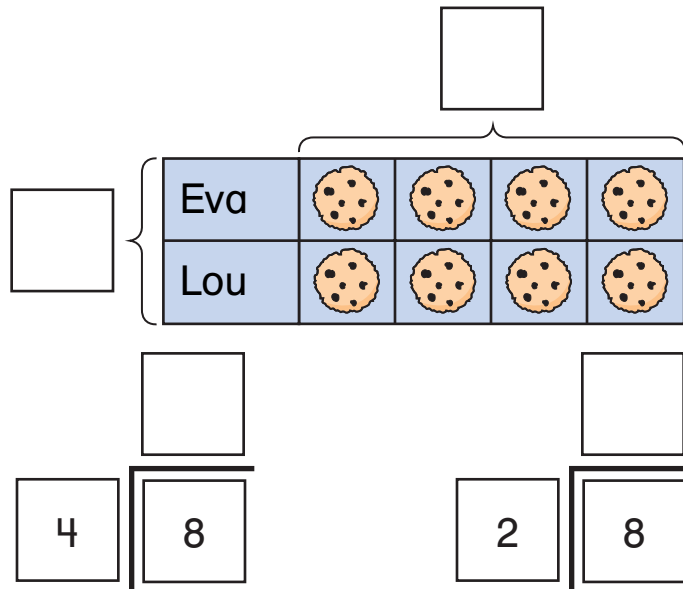
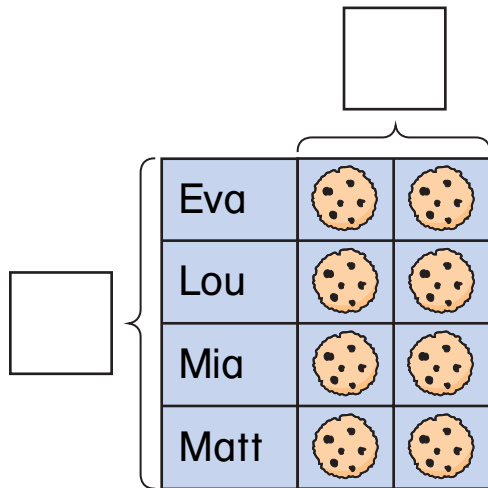


$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$



NOTE: Your child is learning to write all members of multiplication and division fact families.

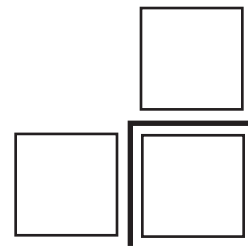
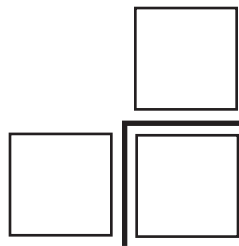
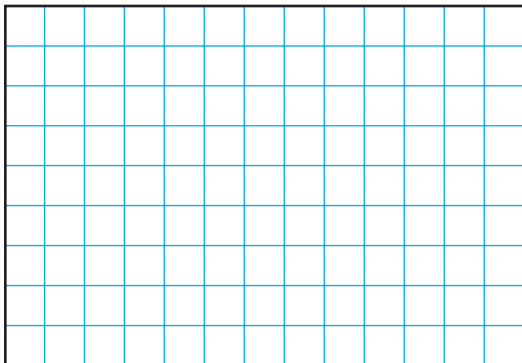
5. Some friends share 8 cookies. Write the missing numbers.
Show the fact family for the pictures.



$$4 \times \underline{\quad} = 8$$

$$2 \times \underline{\quad} = 8$$

6. Draw a rectangle on the grid.
Write the fact family for the rectangle.



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

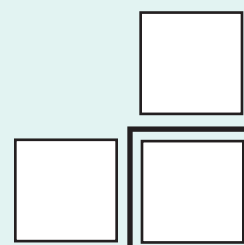
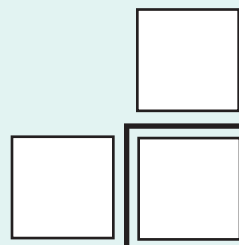
$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

Challenge

7. Write a fact family for a rectangle with 20 squares

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

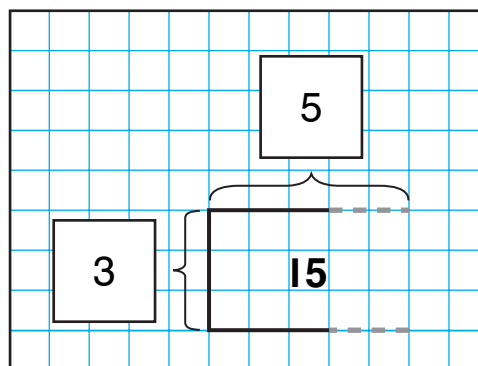
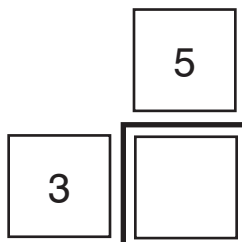


Multiplication and Division Models

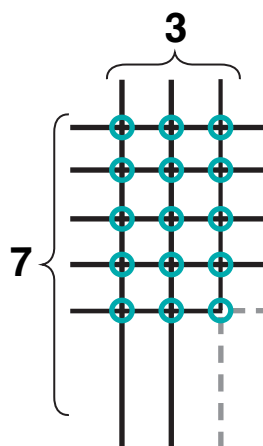
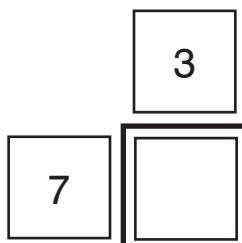
NCTM Standards 1, 2, 6, 7, 8, 9, 10

Complete each model.
What are the missing numbers?

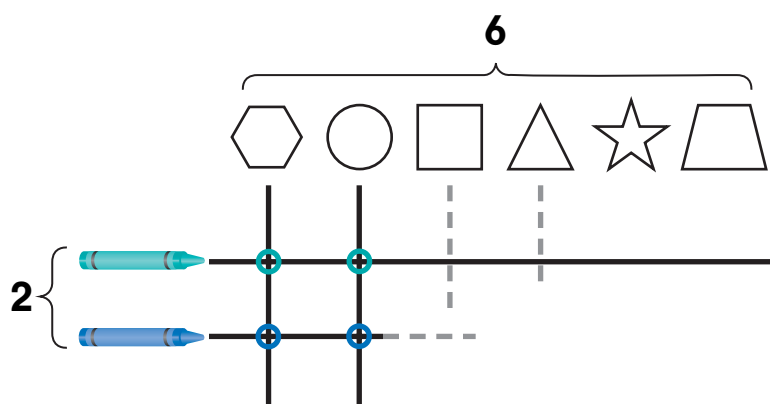
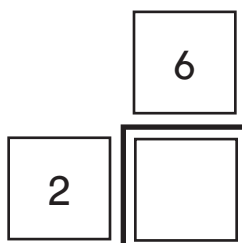
1. $3 \times 5 = \underline{\quad}$



2. $7 \times 3 = \underline{\quad}$



3. $2 \times 6 = \underline{\quad}$



NOTE: Your child is learning basic multiplication facts by working with different models.

How can you solve each problem? Show your work.

4. Two children equally share a pack of 18 stickers. How many stickers does each child get?

_____ stickers

5. Callie is making a sandwich. She has 2 different cheeses and 3 different lunch meats. How many different sandwiches of one meat and one cheese can she make?

_____ sandwiches

6. Five children go to the fair. Each child wins 5 goldfish. How many goldfish do they win in all?

_____ goldfish



Problem Solving

7. Three friends share 2 boxes of granola bars. There are 9 bars in each box. How many granola bars does each friend get? Use words, numbers, or pictures to explain.

_____ bars

Dividing and Estimating with Coins

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

How many coins make one dollar?
Write the missing numbers.

1.



1¢

100 pennies = \$1.00

 × 1 = 100

2.



5¢

 nickels = \$1.00

 × 5 = 100

3.



10¢

 dimes = \$1.00

 × 10 = 100

4.



25¢

 quarters = \$1.00

 × 25 = 100

5.



50¢

 half dollars = \$1.00

 × 50 = 100

6.



100¢

 dollar coin = \$1.00

 × 100 = 100



NOTE: Your child is learning to work with groups of coins equal to whole dollar amounts. Together, find how many dimes are equal to \$2.00.

Circle the best estimate for each problem.

7. You have 32 dimes. About how many dollars do you have?



\$1.00 \$2.00 (\$3.00)

About means you do not need an exact amount.



8. You have 25 quarters. About how many dollars is that?



\$2.00 \$6.00 \$8.00

9. You have 21 half dollars. About how many dollars is that?



\$5.00 \$9.00 \$10.00



10. You have \$4.00 in one kind of coin.
How many coins might you have? Explain.

Problem Solving

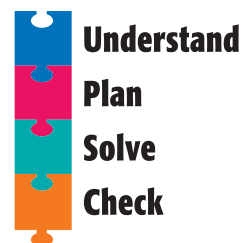
11. Jose is saving quarters. He gets one quarter each day. How many days will he need to save for a total of \$2.00?

_____ days

Problem Solving Strategy

Guess and Check

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



1. My town has 21 intersections. There are 10 roads. How many north-south roads and east-west roads can my town have? Explain how you found the answer.

_____ north-south roads

_____ east-west roads

2. Three children equally share 27 pennies. How many pennies does each child get? Explain.

_____ pennies

3. Jodie has 2 different pair of pants. She can make 14 outfits. How many shirts does Jodie have? Explain.

_____ shirts



NOTE: Your child is exploring different ways to solve problems. Sometimes using the strategy, *guess and check*, is an efficient way to solve a problem.

Problem Solving Test Prep

1. Jeff has a penny, a nickel, a dime, and a quarter. He picks two coins. Which is NOT an amount of money he could have?
 - (A) 15¢
 - (B) 21¢
 - (C) 26¢
 - (D) 35¢
2. A snail travels 2 inches every hour. If it starts moving at 3 o'clock, how far would it get by 5 o'clock?
 - (A) 2 inches
 - (B) 3 inches
 - (C) 4 inches
 - (D) 5 inches



Show What You Know

3. Bob has a pack of 16 batteries. He puts the same number of batteries in each toy car. He has enough batteries to get 5 cars running. How many batteries go in each car?

_____ batteries

Explain your answer.

4. Dana has a rectangular piece of cloth. She cuts the cloth with 4 straight lines to get all triangle pieces. How many triangles does she make?



_____ triangles

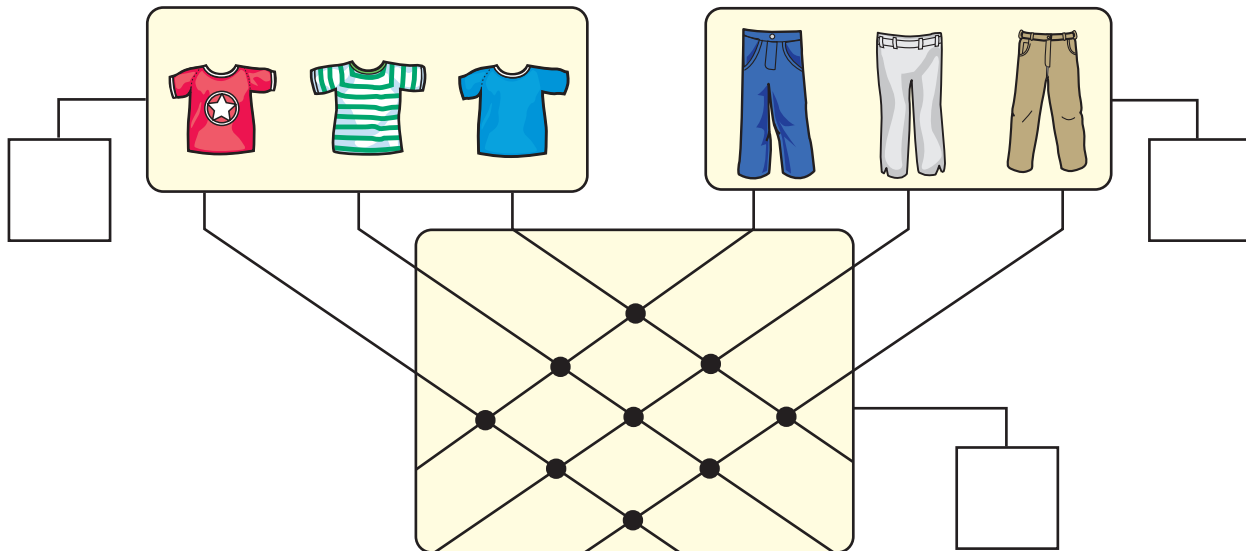
Explain your answer.



Review/Assessment

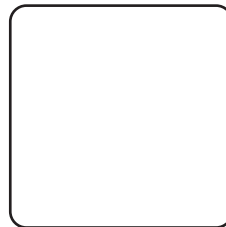
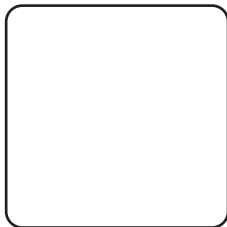
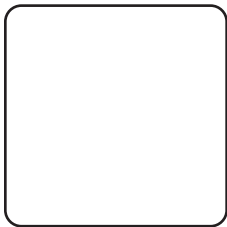
NCTM Standards 1, 2, 3, 4, 6, 7, 8, 9, 10

1. How many different outfits can you make? Lesson 1



_____ outfits

2. What is missing? Draw lines and numbers to show the multiplication. Lesson 2



$$3 \times 4 = \underline{\hspace{2cm}}$$

$$4 \times 3 = \underline{\hspace{2cm}}$$

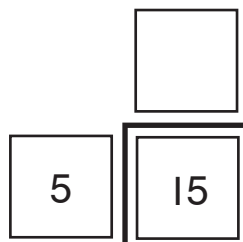
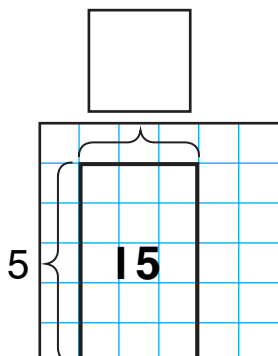
_____ lines

_____ lines

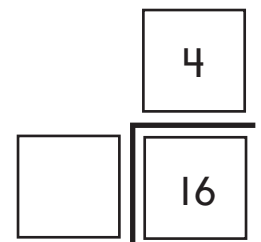
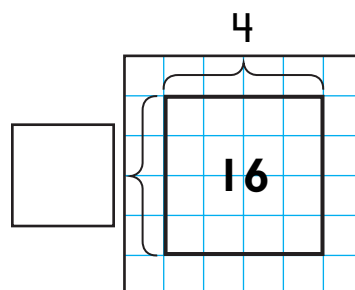
_____ intersections

Write the missing numbers. Lesson 4

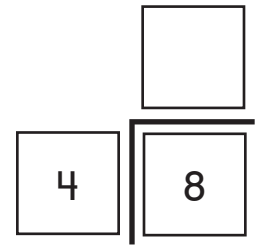
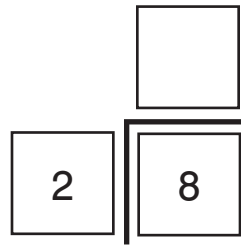
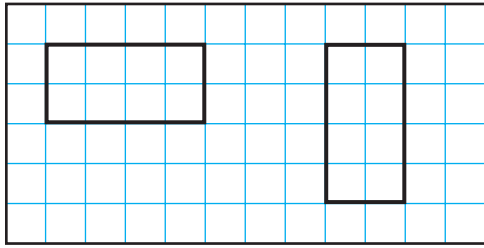
3.



4.



5. Complete the fact family. [Lesson 5](#)



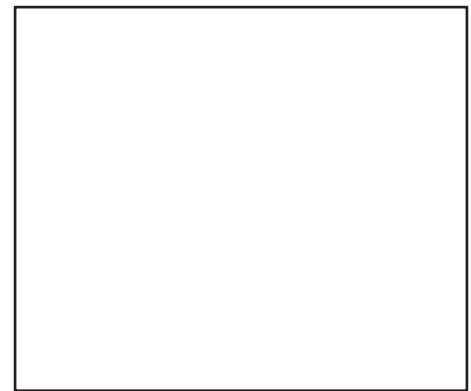
$2 \times \underline{\quad\quad} = 8$

$4 \times \underline{\quad\quad} = 8$

6. Make a model to solve the problem. Show your work. [Lesson 6](#)

Six friends go to a book fair.
Each friend buys 4 books.
How many books do they buy in all?

_____ books



7. You have 28 dimes. About how many dollars do you have?
Circle the best estimate. [Lesson 7](#)



\$2.00

\$3.00

\$28.00

Problem Solving [Lesson 8](#)

8. Tyson has 20 baseball cards in a book.
One page holds 6 cards. How many pages
of the book are full?

_____ pages