

Center Activity 5.17 ★★

Division with Area Models

What You Need

- number cube
- Recording Sheet

Check Understanding

Use an area model to show the quotient.
 $954 \div 18$

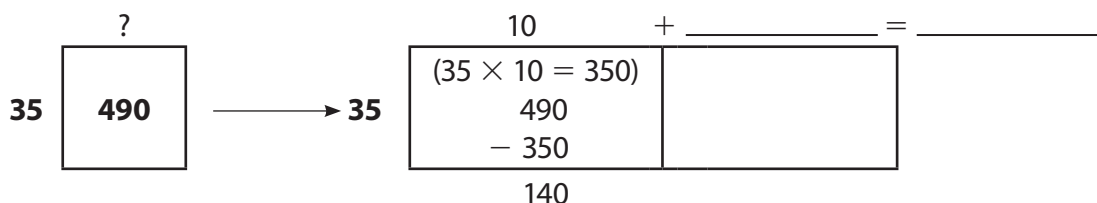
What You Do

1. Take turns. Toss the number cube. Read the problem next to the number in the table. If the problem has already been solved, roll again.
2. On the **Recording Sheet**, draw an area model to solve the division problem.
3. Explain why your area model is correct. Your partner checks your work.
4. The round is over once each partner has solved a problem. The partner with the greater quotient scores 1 point.
5. Play for three rounds. The player with the most points wins the game.

Toss	Problem
1	$168 \div 14$
2	$575 \div 25$
3	$952 \div 28$
4	$792 \div 12$
5	$825 \div 15$
6	$768 \div 16$

Go Further!

A student started the following area model for the problem $490 \div 35$. Complete the area model to solve the problem.



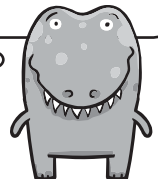
Division with Area Models

Round	Partner A	Partner B
1		
2		
3		

$276 \div 12 = ?$ It helps to estimate first.

Think: $12 \times 2 = 24$, so $12 \times 20 = 240$.

Since $240 < 276$, I can start with 20.



Center Activity 5.18 ★★

Solve Area Problems with Division

What You Need

- Recording Sheet

Check Understanding

What is the second side length of this rectangle? Show your work.

Area: 1,575 square units

Side 1: 35 units

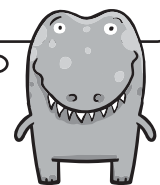
What You Do

1. Take turns. Choose a problem on the **Recording Sheet**. The area of a rectangle and one side length are given.
2. Write a division equation to find the missing side length of the rectangle.
3. Solve the division equation using any method.
4. Your partner checks your answer and draws the rectangle described on the grid.
5. Repeat until each partner has had two turns.

I know that division and multiplication are inverse operations. For any rectangle,

$area \div side\ length = side\ length$ and

$side\ length \times side\ length = area$



Go Further!

A rectangle has an area of 480 square units. Work with your partner to come up with the dimensions of the rectangle if the side length is 12 units, 15 units, or 16 units. Draw a sketch of each rectangle.

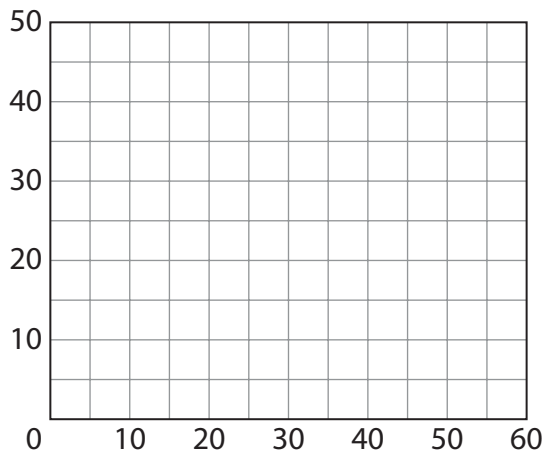


Solve Area Problems with Division

Area of a rectangle: 1,375 square units

Side: 25 units Side: _____ units

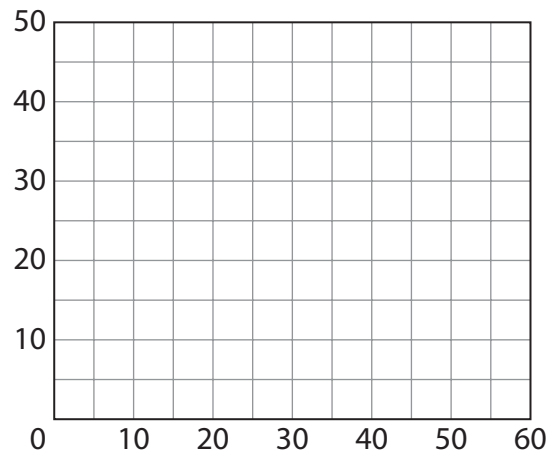
_____ ÷ _____ = _____



Area of a rectangle: 1,400 square units

Side: 40 units Side: _____ units

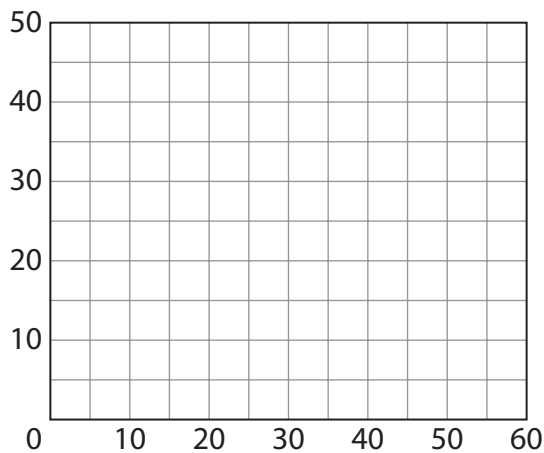
_____ ÷ _____ = _____



Area of a rectangle: 675 square units

Side: 15 units Side: _____ units

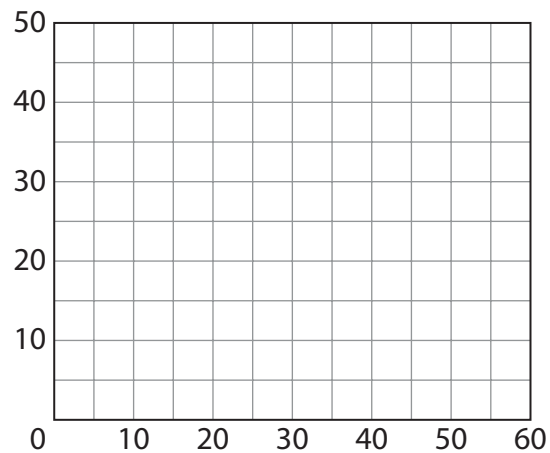
_____ ÷ _____ = _____



Area of a rectangle: 3,000 square units

Side: 60 units Side: _____ units

_____ ÷ _____ = _____



Center Activity 5.9 ★★

Powers of Ten Vocabulary Match

What You Need

- Recording Sheet



Check Understanding

Use an exponent to write $10 \times 10 \times 10$. Tell how you found the answer, using the words *factor*, *expression*, and *exponent*.

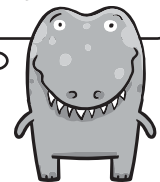
What You Do

1. Pick any word on the **Recording Sheet**.
2. Say the word and describe an example.
3. Your partner tells a non-example for the word and explains why it is a non-example.
4. Draw a line to the definition.
5. Take turns until all the words have been used.

A digit's place value tells the value of a digit in a number.

In 365, the place value of the 3 is 300.

A non-example of place value is *hundreds*, which names a position in a number, not a value.



Go Further!

Explain why $0.5 \times 1,000 = 500$. Use at least three words from the **Recording Sheet**.



Powers of Ten Vocabulary Match

Math Words

exponent

inverse

power of 10

decimal number

division

expression

multiplication

base ten

place value

factor

Definitions

a number written in base ten

a ten-digit number system that uses place value to record numbers

the number in a power that tells how many times to use the base as a factor

the opposite of something

a group of numbers and symbols that shows a mathematical relationship

the value of a digit that depends on the digit's position in a number (ones, tens, hundreds, and so on)

a number that can be written as a product of tens

an operation used to find the number in each group or the number of groups in equal-sized groups

a number that is multiplied by another number

an operation used to find the total number of items in equal-sized groups



Center Activity 5.10 ★★

Patterns of Zeros

What You Need

- 10 game markers of one color
- 10 game markers of another color
- number cube (1–6)
- Game Board

Check Understanding

Tell the number of zeros in the product and quotient below. Explain your reasoning.

$$9 \times 10^2$$

$$50,000 \div 10^3$$

What You Do

1. Take turns. Toss the number cube. Read the clue next to that number.
2. Find an expression on the **Game Board** with a product or quotient that matches the clue.
3. Write the product or quotient. Your partner checks your work.
4. If you are correct, place your game marker on the expression and score 1 point. If you are incorrect, your turn ends.
5. If no expression matches your clue, roll again. If no expression matches your second clue, your turn ends.
6. The first person to score 5 points wins.

Toss	Clue
1	2 zeros in the product
2	3 zeros in the product
3	decimal point shifts 2 places to the right
4	2 zeros in the quotient
5	decimal point shifts 2 places to the left
6	no zeros in the product or quotient

Go Further!

Choose an expression on the **Game Board**. Write the inverse operation. Compare the two answers. Ask your partner to check your work.



Patterns of Zeros

3×10^3	$2,000 \div 10^3$	$0.3 \times 10 \times 10$
$4 \times 10 \times 10 \times 10$	$8,000 \div 10$	$7 \times 1,000$
50×10	$0.5 \div 10^2$	0.002×100
$0.06 \times 10,000$	$70 \div 100$	$0.4 \div 10 \times 10$
$3 \div 10^3$	$0.005 \times 10 \times 10 \times 10$	0.06×10^2

When I multiply or divide a number by a power of ten, I decide how many places to move the decimal point to the right or to the left.

