THE BOOK OF FACTS

MULTIPLICATION

SAMPLE ACTIVITY

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ORIGO EDUCATION

Fours Facts

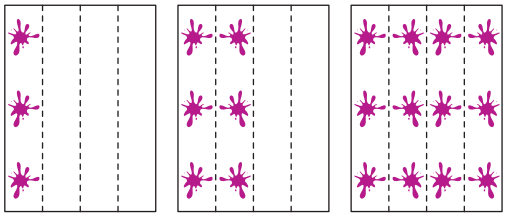
Introduce

1 Write **20** on the board. Ask, **If you make four jumps of equal length to reach twenty, what will be the amount of each jump? How do you know?** Encourage the students to explain their thinking. For example, they may say, "I make four jumps of five to get to twenty." Ask them to demonstrate the thinking they used by drawing jumps on a number line or by making cube trains of equal length.

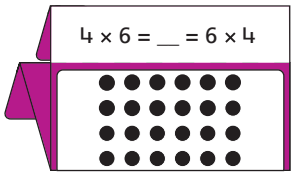
Ask, **If you make five jumps of equal length to reach twenty, what will be the amount of each jump? How do you know?** Highlight how "four jumps of 5" and "five jumps of 4" produce the same total. Repeat the discussion for other multiples of 4, such as 24, 28, 32, and 36.

2 Ask two volunteers to help place six counters in each of four transparent plastic bags. Have the volunteers use the bags to act out the following story. Say, **Jessica has a bag containing six jelly beans. I give her another bag of six jelly beans.** One student holds a bag in each hand. Ask, **How many jelly beans does she have in total? Her friend Sarah has the same total number of jelly beans.** The second student holds one bag in each hand. Ask, **How many jelly beans do Jessica and Sarah have in total? How do you know?** Repeat with other amounts of counters in each bag.

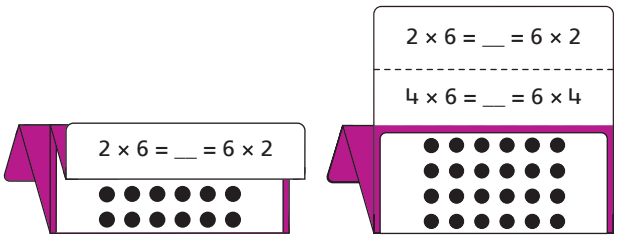
3 Give each student a sheet of paper, some thick paint, and a paintbrush. Instruct them to fold the paper in half lengthwise, and then in half again to make four columns as shown. Ask them to choose a number between 3 and 9 and then put that number of paint blobs in the first column from the left. Have them carefully fold the first column over the second column from the left to double the number of paint blobs as shown. Direct the students to unfold the paper and ask individuals how many paint blobs they now have on their sheets. Before the paint dries, have them fold the paper again along the fold immediately to the right of the new column of paint blobs. Direct the students to unfold the paper and ask them how many paint blobs they have now. Encourage them to describe the total number as being "double, double" their starting number.



4 Reuse the doubling cards from *Introduce* Activity 4 on page 16. Fold the 8 × 6 card as shown below. Ask, **How can you figure out the total number of dots?**



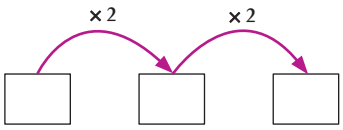
Fold then unfold the card as shown below to dem -onstrate the idea of doubling a double fact to figure out a fours fact. Encourage the students to describe what they see. For example, they may say, "Two sixes or double six is twelve. Four sixes or double, double six is twenty-four." Repeat with other cards from the set.



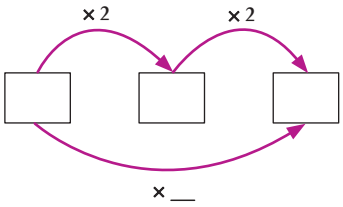
See: *Doubling Strategy Cards*

Reinforce

1 Draw the diagram shown below on the board. Ask a volunteer to select a numeral to write in the first box on the left. Say, **Use the arrows to figure out what to write in the other boxes.** Challenge the students to figure out the other numbers. Encourage them to explain the thinking they used and the relationship between the three numbers. Erase the numerals in the boxes and repeat the discussion several times.



Using the last set of numerals discussed, draw an arrow underneath the boxes as shown. Ask, **What number should we write for this arrow? How do you know?** The students should be able to describe how doubling and doubling again is the same as multiplying by 4.



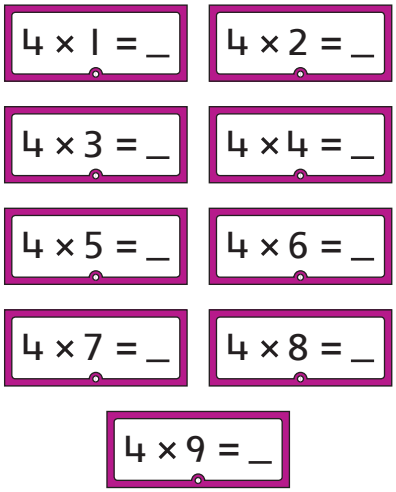
2 Share some of the fours-facts stories from Blackline Master 6 with the class. For each story, ask the students to describe which numbers are known, which number is unknown, and how they can figure out the unknown value. Ask the students to show their thinking using materials such as counters and to write a matching number fact. Afterward, instruct the students to write two or three stories. They can then have a partner solve their stories.

3 On the board, draw the table shown below. Ask, **What products can you figure out quickly? How can you figure out the other products?** Encourage the students to describe a range of horizontal and vertical patterns. Continue the discussion until the table is complete. Ask, **What patterns do you notice? Where do you see doubles and doubling in this table?** The students should be able to identify doubling patterns that are shown horizontally (e.g. double 3 is 6 and double 6 is 12) and vertically (e.g. double 12 is 24).

	× 2	× 4
3		
6		
4		
8		
5		
10		

Practice

1 Select or make the double-sided flash cards shown below. Each card should show a multiplication fact (such as 4 × 6 = ___) on one side and its turnaround (6 × 4 = ___) on the other side. The cards should be made of exactly the same paper as the flash cards used previously. Some of the cards will have been used to teach other facts. Show one card and invite a student to say the product. Allow approximately three seconds for the student to respond. Repeat several times with other students and cards (including the turnarounds).



See: *Multiplication Flash Cards*

2 This is a game for two to four players. Each student will need four counters (a different color for each student). Each group will need a two blank cubes and a copy of Blackline Master 4. Instruct the students to label the faces of one cube 4, 5, 6, 7, 8, and 9. The 6 and 9 should be underlined to avoid confusion. Direct the students to write **double** on three faces of the second cube and **double double** on the other three faces. Draw the diagram shown on the board and instruct one student in each group to copy it onto their grid to make a game board.

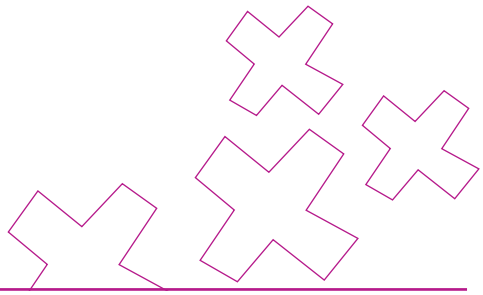
8	16	20	28
32	10	18	24
12	36	12	16
14	32	24	14

To play the game:

- The first player rolls both cubes.
- The player follows the instruction to either *double* or *double*, *double* the number rolled. The player then places a counter on a matching product on the game board.
- Each of the other players has a turn.
- As the game continues, the player misses a turn if the product is already covered by a counter.
- The first player to place all four counters on the game board wins.

As the students play the game, point to spaces without counters and ask questions such as, **What do you need to roll to place your counter here? What do you need to roll to win?**

3 Give each student a copy of Blackline Master 12. Read the instruction with the students before allowing them to complete the sheet individually.



4 This is a game for two players. Give each pair of students a copy of Blackline Master 13, a standard six-sided die, and a blank cube. Instruct the students to label the cube 2, 2, 4, 4, 5, and 5.

To play the game:

- The players sit on opposite sides of the game board.
- The first player rolls the cube and the die.
- The player multiplies the two numbers and says the multiplication fact. The player then draws a jump from zero on their number line to represent the product.
- The next player has a turn.
- As play continues, each new jump should start at the finishing position of the previous jump.
- The first player to reach 100 (or a number greater than 100) wins.

Confident students may like to play the game using the number line from 100 to 200.

5 Distribute the students' record sheets used in *Practice* Activity 5 on page 12 (Blackline Master 9). Direct them to fold the sheet so that they can see only the *Fours-Facts* section. This assessment task should take no more than $1\frac{1}{2}$ minutes for the students to complete. A longer period of time may indicate that recall of the facts is not automatic. Collect the sheets afterward and record the results for each student on Blackline Masters 1 and 2. See page 4 of the *Introduction* for instructions.

Extend

1 Write **4 × ___ = ___** on the board. Ask, **What number can the other factor be? What is the product of that factor and 4? How do you know?** Invite a volunteer to suggest another factor that can be used to complete the number sentence. Encourage individual students to say the product and explain the thinking they used. Ask another volunteer to choose the missing factor and repeat the discussion.

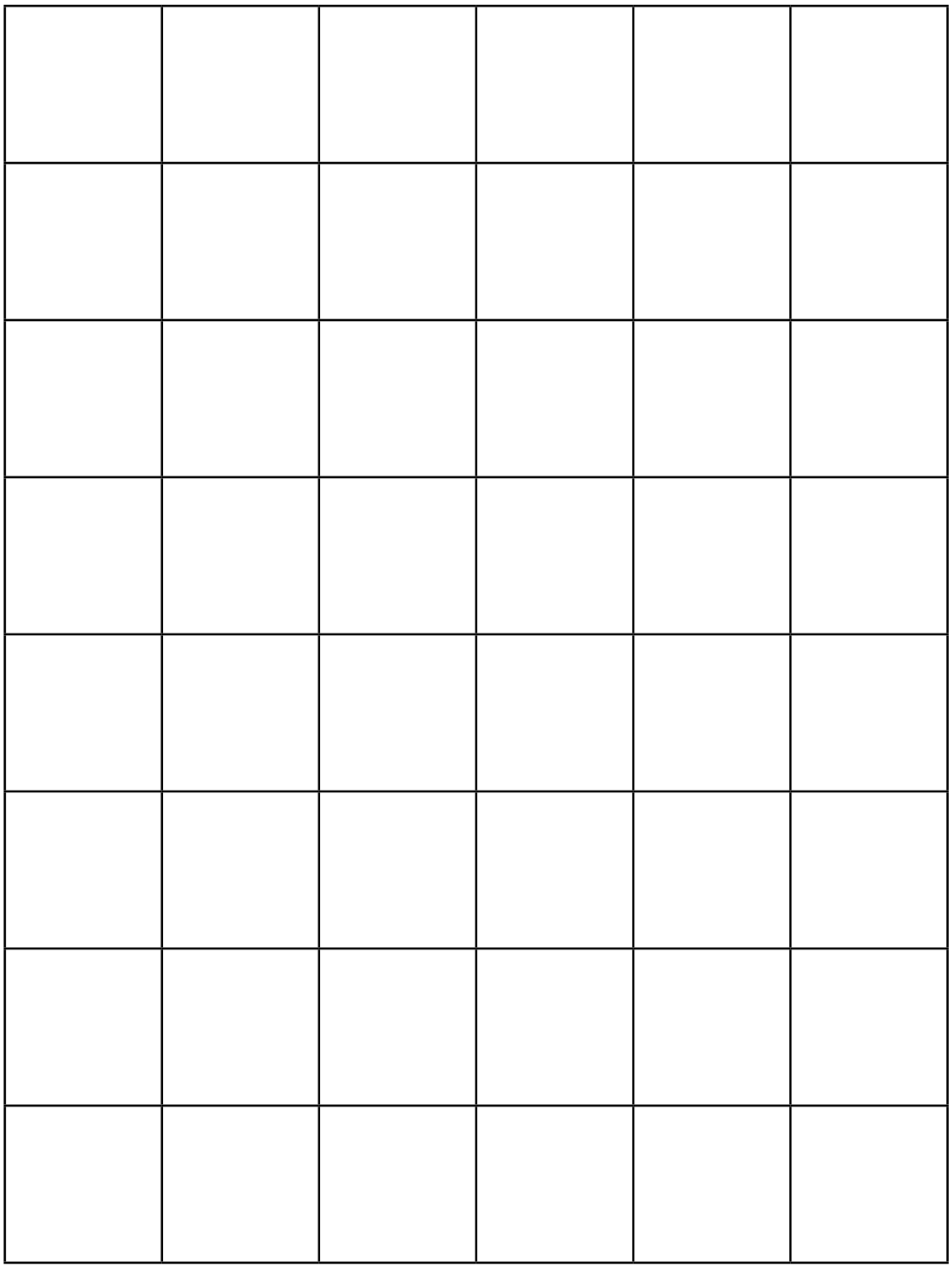
2 Write **___ × 4 = ___** on the board. Ask, **What factor can you use to make a product that is between fifty and one hundred? How did you decide? What is the product using your factor?** Ensure the students explain their thinking. On the board, write each factor and its related product as a number pair, for example, **15 → 60**. Repeat the activity for at least five number pairs. Afterward, change the range in the first question and repeat the activity.

3 Write **4 × ___ = ___** on the board. Ask, **What factors can you use to make a product that is between 300 and 400? How do you know?** Ensure the students explain their thinking. On the board, write each factor and its related product as a number pair, for example, **80 → 320**. Repeat the activity for at least five number pairs.

Repeat the activity until several possible pairs have been written. Ask questions such as, **What is the greatest number pair?** (100 → 400.) **What is the least number pair?** (75 → 300.) **What factors can you use to make a product that is between 300 and 400?** (Any number between 75 and 100.) **How can we describe the products?** (Even numbers between 300 and 400.)

Grid

Name: _____



Fives facts

There are bags of 5 apples for sale. If you buy 3 bags, how many apples will you have?

It takes 5 minutes to fill a wheelbarrow with soil. How long will it take to fill 6 wheelbarrows?

There are 5 rows of 8 chairs. How many people can be seated?

Nine cats each had 5 kittens. How many kittens are there in total?

When Ben places 4 shoes from heel to toe in a line, they measure 1 m. How many of these shoes will measure 5 m?

Jacob has to sow 7 rows of 5 seeds. How many seeds will he need?

Twos facts

Kayla can carry 2 shopping bags at a time. How many bags will she carry if she makes 7 trips from the store?

A class of students lines up in 2 rows of 9. How many students are there in total?

It takes Chris 2 minutes to brush his teeth. How many minutes will it take him to brush his teeth 8 times?

There are 6 pairs of ducks sitting next to the pond. How many ducks are there in total?

Katie has her birthday in 2 weeks. How many days is it until her birthday?

There are 4 cars parked on the left side of the road. The same number of cars is parked on the right side. How many cars are parked here in total?

Fours facts

Emma's family is going on vacation in 4 weeks' time. In how many days will they leave?

Sarah is playing a card game. She arranges 4 rows of cards on the desk. There are 5 cards in each row. How many cards are there in total?

Pencils are sold in packs of 3. Daniel buys 4 packs. How many pencils does he buy?

A muffin tray holds 3 rows of 4 muffins. How many muffins can be made in total?

A small bottle of olives is 9 cm high. If 4 bottles are placed one on top of the other in a stack, how tall will the stack be?

A sheet of paper can be folded in half to make a 4-page booklet. If 6 sheets of paper are folded, how many pages will the booklet have?

Eights facts

It takes Joshua 8 minutes to walk a lap of the sports field. How long will it take to walk 3 laps?

Musicians in a marching band are arranged in 6 rows of 8. How many musicians are there in total?

There are bags of 8 apples for sale. If you buy 5 bags, how many apples will you have?

Trading cards come in packs of 4. If Matthew buys 8 packs, how many cards will he have?

A bamboo plant grows 8 cm each day. How tall will the plant be after 7 days?

Emily is sowing seeds. She puts 8 seeds in each row. She sows 9 rows. How many seeds does she use in total?

Name: _____

Fives facts

Write the answers as fast as you can.

$5 \times 4 =$ ____ $3 \times 5 =$ ____ $9 \times 5 =$ ____

$2 \times 5 =$ ____ $4 \times 5 =$ ____ $5 \times 2 =$ ____

$5 \times 9 =$ ____ $1 \times 5 =$ ____ $6 \times 5 =$ ____

$5 \times 5 =$ ____ $5 \times 6 =$ ____

$5 \times 1 =$ ____ $5 \times 8 =$ ____

$8 \times 5 =$ ____ $7 \times 5 =$ ____

$5 \times 7 =$ ____ $5 \times 3 =$ ____

Twos facts

Write the answers as fast as you can.

$2 \times 3 =$ ____ $2 \times 9 =$ ____

$8 \times 2 =$ ____ $6 \times 2 =$ ____

$1 \times 2 =$ ____ $3 \times 2 =$ ____

$2 \times 2 =$ ____ $2 \times 4 =$ ____

$2 \times 7 =$ ____ $2 \times 8 =$ ____

$9 \times 2 =$ ____ $2 \times 6 =$ ____

$4 \times 2 =$ ____ $7 \times 2 =$ ____

$2 \times 1 =$ ____

Fours facts

Write the answers as fast as you can.

$4 \times 6 =$ ____ $4 \times 9 =$ ____

$4 \times 3 =$ ____ $4 \times 7 =$ ____

$9 \times 4 =$ ____ $4 \times 1 =$ ____

$1 \times 4 =$ ____ $4 \times 4 =$ ____

$7 \times 4 =$ ____ $8 \times 4 =$ ____

$6 \times 4 =$ ____ $3 \times 4 =$ ____

$4 \times 8 =$ ____

Eights facts

Write the answers as fast as you can.

$8 \times 3 =$ ____ $8 \times 6 =$ ____

$8 \times 9 =$ ____ $8 \times 1 =$ ____

$1 \times 8 =$ ____ $6 \times 8 =$ ____

$8 \times 8 =$ ____ $8 \times 7 =$ ____

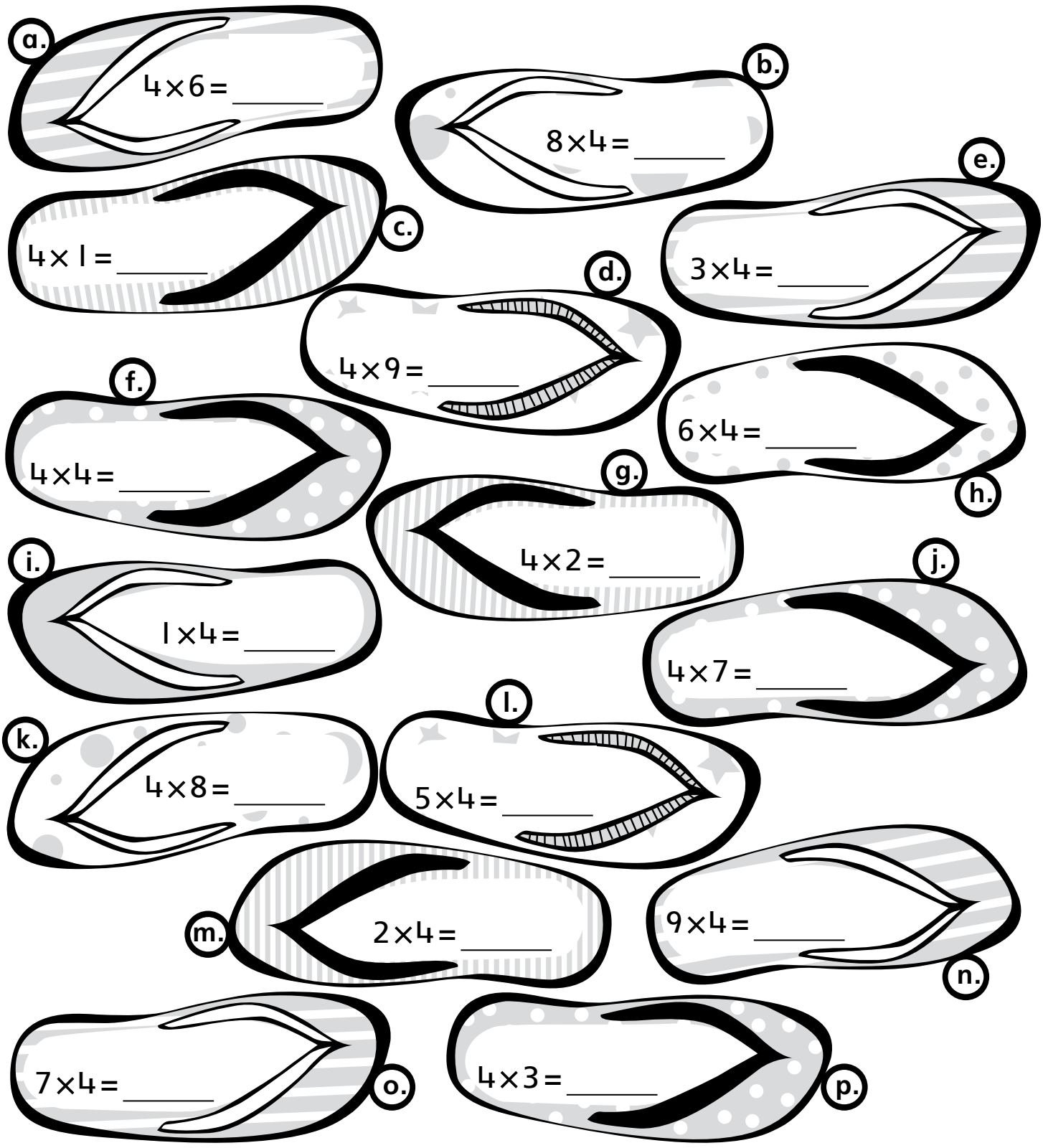
$3 \times 8 =$ ____ $9 \times 8 =$ ____

$7 \times 8 =$ ____

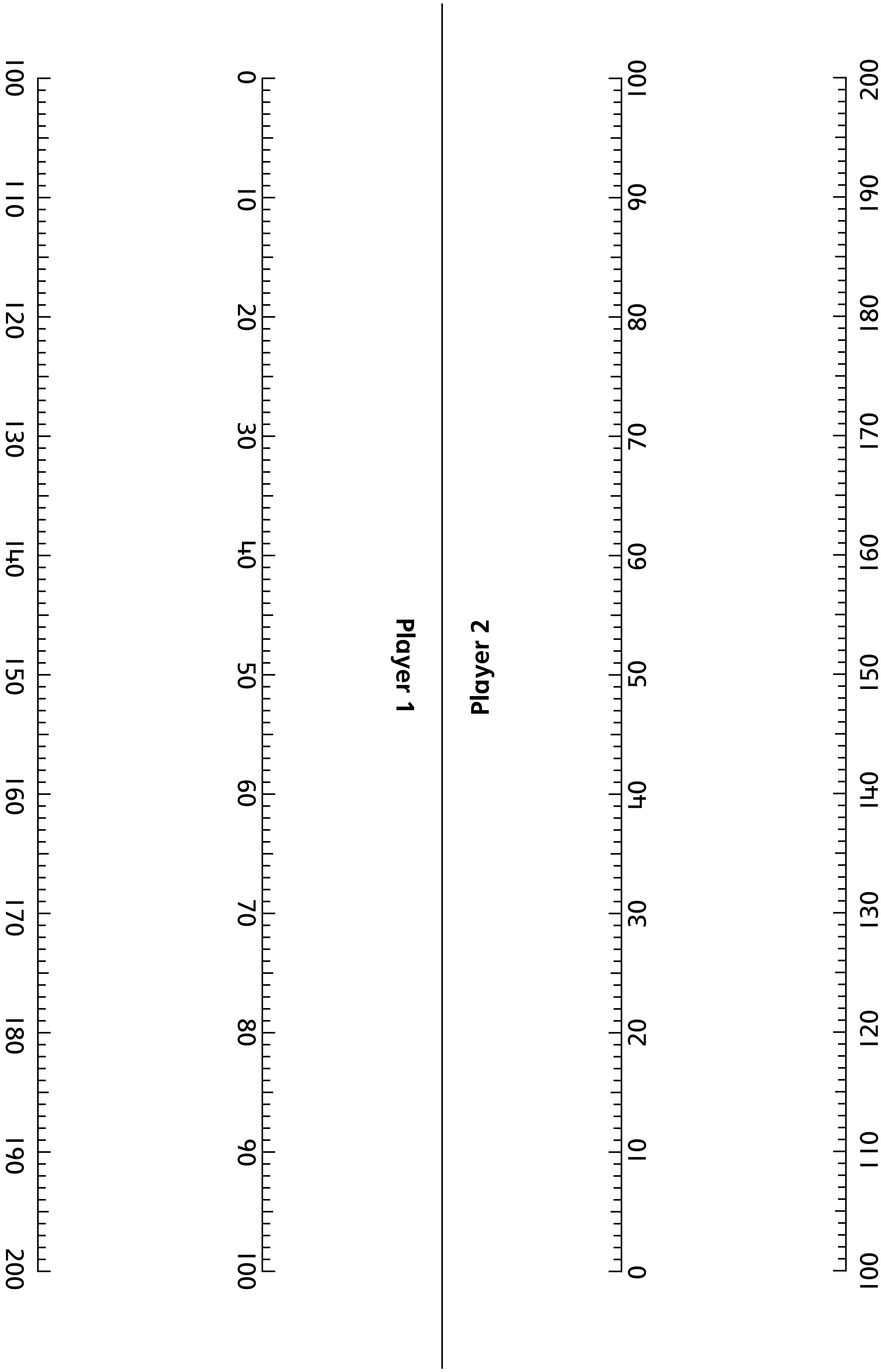
Fun Facts

Name: _____

Complete each number fact.



Number Line Race



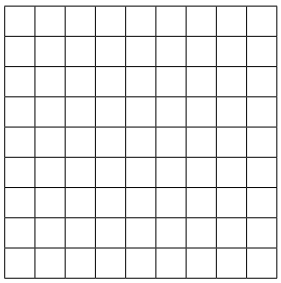
Arrays

Name: _____

Roll the cubes. Shade a rectangle to match the numbers you rolled.
Write two number facts.

a.

1st Roll

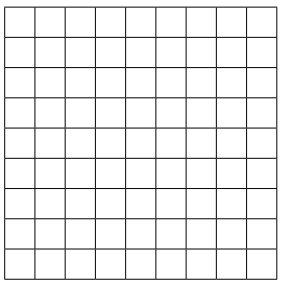


_____ × _____ = _____

_____ × _____ = _____

b.

2nd Roll

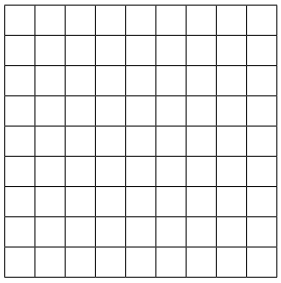


_____ × _____ = _____

_____ × _____ = _____

c.

3rd Roll

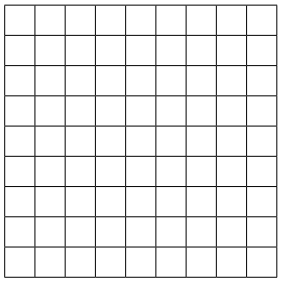


_____ × _____ = _____

_____ × _____ = _____

d.

4th Roll

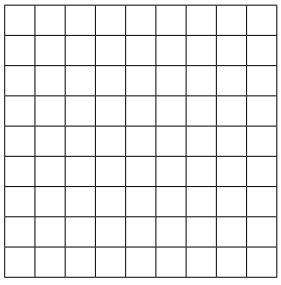


_____ × _____ = _____

_____ × _____ = _____

e.

5th Roll

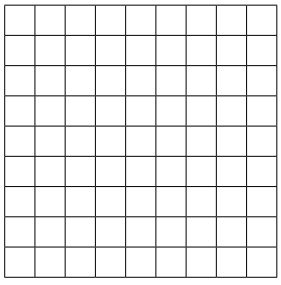


_____ × _____ = _____

_____ × _____ = _____

f.

6th Roll



_____ × _____ = _____

_____ × _____ = _____