THE BOOK OF FACTS

DIVISION

SAMPLE ACTIVITY

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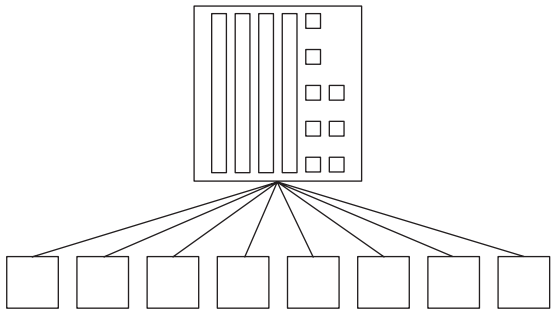
ORIGO EDUCATION

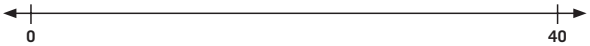
Eights Facts

Introduce

1 Draw a simple diagram of base-ten blocks positioned on a sharing mat as shown below. Explain the representation and gain the students' agreement that the blocks show a total of 48. Ask, **How can you split 48 into 8 equal groups? How do you know?** Encourage the students to work in pairs to discuss their thinking. They may like to draw diagrams to help. Afterward, call on volunteers to explain their solutions. For each description, change the diagram to match. Repeat the discussion for other facts (including the partner facts) that involve multiples of eight up to 64. For example, ask how to split forty-eight into eight equal groups ($48 \div 8 = 6$), then ask how to split forty-eight into six equal groups ($48 \div 6 = 8$).

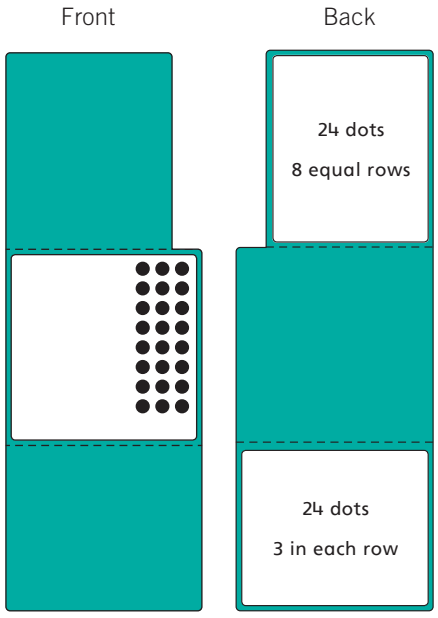


2 Draw the number line shown below on the board. Ask, **How many jumps of eight can you make to reach forty?** Encourage each student to draw a number line to find the solution. Afterward, invite volunteers to show their thinking on the number line on the board. For example, "When I count by eights, I get to forty in five jumps of eight." Repeat the discussion for other multiples of eight up to 64. Include the partner facts in the same way as in the previous activity. Occasionally, alternate the direction of the jumps required, asking questions such as, **If you start at forty, how many jumps of eight can you make to reach zero?**



3 Share some of the eights-facts stories from Blackline Master 5 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. Encourage the students to show their thinking using materials such as counters and to write a matching number fact. Afterward, direct the students to write two or three stories. They can then give their stories to a partner to solve.

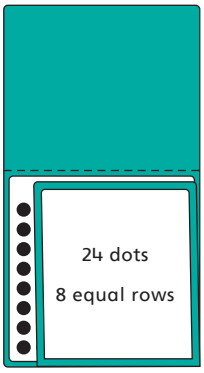
4 Select or make a set of flip cards like the example shown below. Make cards to show 8×2 to 8×9 inclusive. Some of the cards have been used to teach other facts.



See: *Think-Multiplication Division Strategy Cards*

Fold the 8×3 card as shown below. Ask, **What do we know when we look at this card?** (The total number of dots and the number of rows.) **How can we figure out the number of dots in each row?** Encourage the students to think of a multiplication

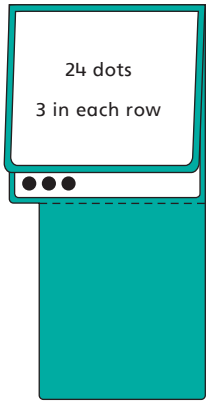
fact that can help them. Invite the students to share their thinking. For example, "I know eight threes are twenty-four, so twenty-four divided by eight must be three."



Highlight the connection between multiplication and division by writing **24 ÷ 8 = 3 because 8 × 3 = 24** on the board.

Repeat the activity using other cards from the set. For each card, call on students to say the number sentences that describe the multiplication and division facts involved.

At a later time, repeat the activity by folding the top flap down as shown below.

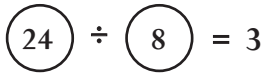


Reinforce

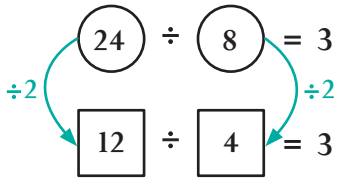
1 Write **7**, **56**, and **8** on the board. Ask, **What number sentences can you write using just these three numbers? How did you figure out the sentences?** Encourage the students to explain the thinking they used. They should write both multiplication and division number sentences. Repeat the discussion for other fact families involving the eights facts.

2 The students can work in pairs for this activity. Give each pair of students two blank cubes. Instruct them to label one cube 2, 2, 4, 4, 8, and 8, and the other cube 4, 5, 6, 7, 8, and 9. The 6 and 9 should be underlined to avoid confusion. Explain that the numerals on both cubes represent factors. The students take turns to roll the cubes and write the fact family for the two numbers rolled.

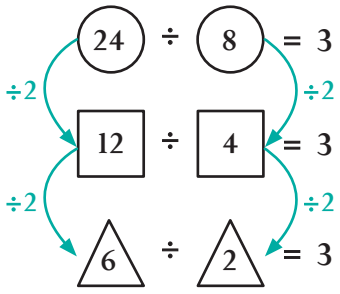
3 Draw the following diagram on the board:



Ask, **What numbers will we have if we halve the numbers in the circles?** Write the new sentence below the first one and draw squares around the dividend and divisor as shown below. Ask, **What do you notice about the new number sentence?** Highlight how the quotient is the same in both sentences.



Ask, **What numbers will we have if we halve the numbers in the squares?** Write the new sentence and draw triangles around the dividend and divisor. Discuss the result as before. Challenge each student to write three other examples where this pattern occurs between twos, fours, and eights facts.



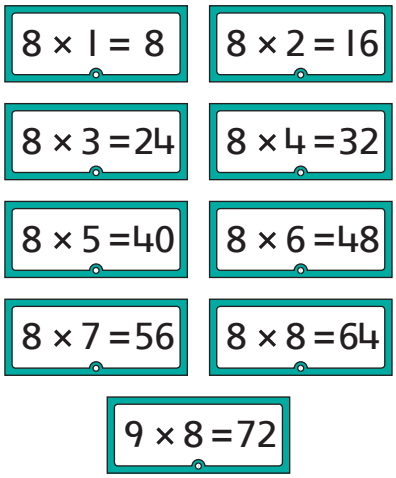
Some students may notice that if the numbers in the triangles are also divided by two, the quotient will still be three.

Fact File

In division, the known amounts are the total (*dividend*), together with the *divisor*. The divisor is either the number of parts or the number in each part. The unknown quantity is the *quotient*, which is either the number in each part or the number of parts. Therefore, division is like multiplication except that the product and one factor are known, while the second factor is unknown.

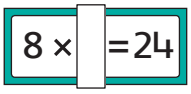
12	÷	3	=	4
dividend		divisor		quotient

4 Make or select the multiplication flash cards shown below. Some of the cards have been used to teach other facts. Make a paper sleeve that can completely cover any symbol or numeral on the cards.



See: *Missing-Factor Division Cards*

Select the 8 × 3 = 24 card and position the sleeve over the second factor as shown. Display the card and ask, **What number is covered? How do you know?** The students' responses may include, "I know that eight threes are twenty-four, so the missing number must be three."



Select another card and position the sleeve over the first factor. Display the card and ask the students to figure out the missing number. Repeat with other cards as time allows, alternating between covering the first and second factors.

Practice

1 Select or make the double-sided flash cards shown below. Each card should show a division fact (such as 24 ÷ 8 = ___) on one side and its partner fact (24 ÷ 3 = ___) on the other side. The cards should be made of exactly the same paper as the other flash cards used previously. Some of the cards have been used to teach other facts. Show one card and select a student to say the missing part. Allow approximately three seconds for the student to respond. Repeat several times with other students and cards (including the partner facts).

Front	Back
8 ÷ 8 = _	8 ÷ 1 = _
16 ÷ 8 = _	16 ÷ 2 = _
24 ÷ 8 = _	24 ÷ 3 = _
32 ÷ 8 = _	32 ÷ 4 = _
40 ÷ 8 = _	40 ÷ 5 = _
48 ÷ 8 = _	48 ÷ 6 = _
56 ÷ 8 = _	56 ÷ 7 = _
64 ÷ 8 = _	64 ÷ 8 = _
72 ÷ 8 = _	72 ÷ 9 = _

See: *Division Flash Cards*

2 This is a game for two players. Give each student a copy of Blackline Master 14. Each pair of students will need a spinner from Blackline Master 11 and a paper clip. Instruct them to label the spinner from 1 to 9 inclusive, leaving the remaining space blank. The 6 and 9 should be underlined to avoid confusion. Have the students straighten the paper clip to use with the spinner.

To play the game:

- The first player spins the paper clip.
- The number on the spinner is an IN number for one of the function machines. The player writes the number in a correct space on one of their function machines.
- The other player has a turn.
- As the game continues, the player misses a turn if there is no correct space available.
- The first player to write fifteen correct IN numbers wins.

3 Give each student a copy of Blackline Master 15. Read the instruction with the students before allowing them to complete the sheet individually.

4 This is a game for two teams of one to two players, with one student as an umpire. Make a copy of Blackline Master 16 and cut out the numeral cards. Compile a set of flash cards from these activities:

- *Practice* Activity 1 on page 19
- *Practice* Activity 1 on page 25
- *Practice* Activity 1 on this page

To play the game:

- The numeral cards are spread out in a row between the two teams.
- The umpire shuffles the flash cards, divides them into two stacks, and places one stack beneath a sheet of scrap paper in front of each team.
- At a starting time, the players remove the sheets of paper and work as quickly as possible to match their flash cards to the numeral cards. The players should make sure their flash cards stay on their team's side of the numeral cards.
- Once both teams are finished, all players check the matching for accuracy. Each team's correct matches are placed to one side.
- The first team to finish the matching earns five points. Then each team earns one bonus point for each correct match.
- The player or team with the most points wins.

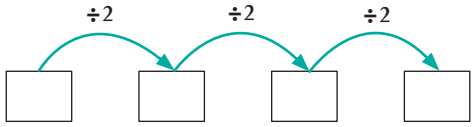
Fact File

The word *umpire* comes from the Old French word *noumpere*, which accidentally became "an oumpere", instead of "a noumpere". The phrase originally came from the Latin *non per*, meaning "not even" or "an odd number".

5 Distribute the students' record sheets used in *Practice* Activity 4 on page 12 (Blackline Master 7). Direct them to fold the sheet so that they can see only the *Eights-Facts* section. This assessment task should take no more than about $1\frac{1}{2}$ 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.

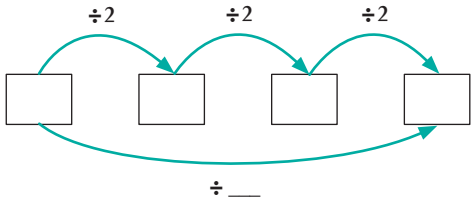
Extend

1 Draw the following diagram on the board:



Ask, **What numbers can we write in the boxes so that the number on the right is the result when the number on the left is divided by two, then divided by two, and by two again? How did you decide what numbers to use?** Invite volunteers to suggest pairs of numbers and explain the thinking they used. Encourage the students to use two- or three-digit numbers. For each suggestion, ask other students to verify that the numbers are correct by using a different strategy.

After three examples, draw an arrow underneath the boxes as shown below. Ask, **What number should we write for this arrow?** Continue the discussion for a few more examples.

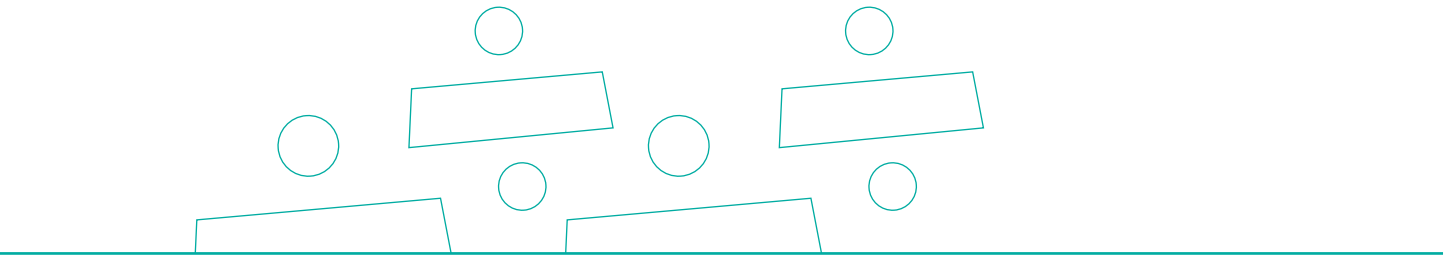


2 Write these number sentences on the board:

40 ÷ 2 = ___

40 ÷ 4 = ___

40 ÷ 8 = ___



Ask, **What sentences can you complete? How do you know? How can you figure out the ones you do not know?** Invite volunteers to share their thinking. After all three number sentences have been completed, ask, **What patterns do you notice? How can you use either of the first two sentences to solve the third sentence?**

Write the following three sentences and repeat the discussion:

$48 \div 2 =$ ___

$48 \div 4 =$ ___

$48 \div 8 =$ ___

Repeat the activity for other sets of three number sentences. Encourage the students to explain how they can also figure out the answer to the third number sentence using multiplication. At a later stage, some students may enjoy the challenge of extending the pattern to involve sentences that involve division by 16. Multiples of 16 such as 32, 48, 64, 80, 96, 112, and 128 could be used.

3 On the board, draw an empty three-column table and label each column as shown. Ask, **Can you divide two hundred evenly by two? How do you know?** Encourage more than one explanation. Write **200** in the first column. Repeat the discussion for dividing evenly by four, and then dividing evenly by eight.

Ask, **What is the next number you can divide evenly by two? How do you know?** Encourage the students to use even numbers or division to explain their thinking. Write **202** in the first column below 200, then ask, **Can you divide this number evenly by four (eight)? How do you know?**

Repeat the entire discussion for the next seven numbers that can be divided evenly by two. Ask the students to describe the patterns they notice.

divide by 2	divide by 4	divide by 8
200	200	200
202	204	208
204	208	216
206	212	
208	216	
210		
212		
214		
216		

Fives facts

Sarah bought 15 apples. She put an equal number of apples in each of 3 bags. How many apples are in each bag?

It took 30 minutes to fill and move 6 loads of soil in a wheel-barrow. If each load took the same amount of time, how long did it take for one load?

Forty chairs are set out in 5 equal rows. How many chairs are in each row?

Nine cats have 45 kittens in total. If each cat has the same number of kittens, how many kittens does each cat have?

It took 10 minutes to fill 5 buckets of water. If each bucket took the same amount of time to fill, how long did it take to fill one bucket?

Jacob sowed 35 seeds, with 5 seeds in each row. How many rows did he plant?

Twos facts

Kayla carried 14 shopping bags from the car to the house. If she carried 2 bags at a time, how many trips did she make from the car to the house?

Eighteen students line up in 2 rows. How many students are in each row?

Twelve students want to play a game in 2 equal teams. How many students will be in each team?

Twelve ducks are sitting by the pond in pairs. How many pairs of ducks are there?

Katie has her birthday in 14 days. How many weeks are there until her birthday?

Eight cars are parked on the road. The same number of cards are parked on the left side of the road as on the right side. How many cars are parked on the left side?

Fours facts

Emma's family is going on a vacation in 28 days. In how many weeks will they leave?

Sarah is playing a card game. She arranges 20 cards in 4 equal rows. How many cards are in each row?

Daniel buys 6 pencils in packs of 4. How many packs did he buy?

Cameron is baking muffins. The muffin tray holds 12 muffins, with 4 muffins in each row. How many rows are there?

Four small bottles of olives are placed one on top of another in a stack. The total height of the stack is 36 cm. How tall is each bottle?

Chris' omelet recipe needs 3 eggs. He has 12 eggs. How many omelets can he make?

Eights facts

Joshua walks 3 laps around the sports field in 24 minutes. How many minutes does it take him to walk one lap?

A marching band has 48 members arranged in 6 equal rows. How many band members are in each row?

Jessica bought 32 oranges. She put an equal number of oranges in each of 4 bags. How many oranges are in each bag?

Matthew was given 48 trading cards. The cards were in packs of 6. How many packs did he receive?

A bamboo plant grew 56 cm in 7 days. If it grew the same amount each day, how much did it grow each day?

Emily sowed 72 seeds, with 8 seeds in each row. How many rows did she plant?

Name: _____

Fives facts

Write the answers as fast as you can.

20 ÷ 5 = ____
10 ÷ 2 = ____
45 ÷ 5 = ____
25 ÷ 5 = ____
5 ÷ 5 = ____
40 ÷ 8 = ____
35 ÷ 5 = ____
15 ÷ 3 = ____
20 ÷ 4 = ____

5 ÷ 1 = ____
30 ÷ 5 = ____
40 ÷ 5 = ____
35 ÷ 7 = ____
15 ÷ 5 = ____
45 ÷ 9 = ____
10 ÷ 5 = ____
30 ÷ 6 = ____

Twos facts

Write the answers as fast as you can.

6 ÷ 2 = ____
16 ÷ 8 = ____
2 ÷ 1 = ____
4 ÷ 2 = ____
14 ÷ 2 = ____
18 ÷ 9 = ____
8 ÷ 4 = ____
2 ÷ 2 = ____

18 ÷ 2 = ____
12 ÷ 6 = ____
6 ÷ 3 = ____
8 ÷ 2 = ____
16 ÷ 2 = ____
12 ÷ 2 = ____
14 ÷ 7 = ____

Fours facts

Write the answers as fast as you can.

24 ÷ 4 = ____
12 ÷ 4 = ____
36 ÷ 9 = ____
4 ÷ 1 = ____
28 ÷ 7 = ____
24 ÷ 6 = ____
32 ÷ 4 = ____

36 ÷ 4 = ____
28 ÷ 4 = ____
4 ÷ 4 = ____
16 ÷ 4 = ____
32 ÷ 8 = ____
12 ÷ 3 = ____

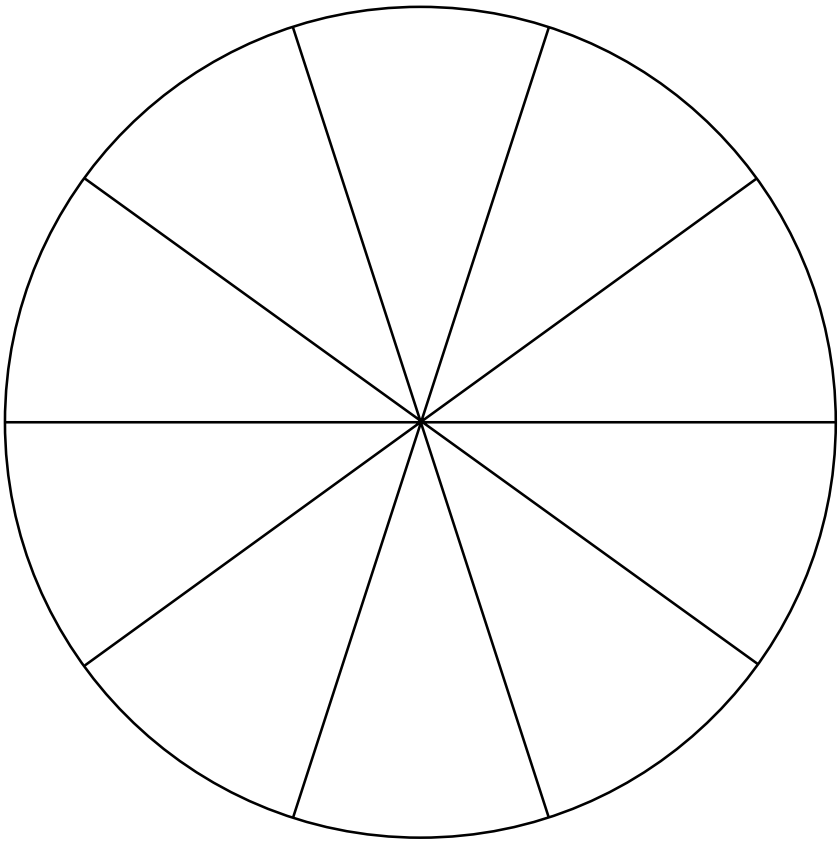
Eights facts

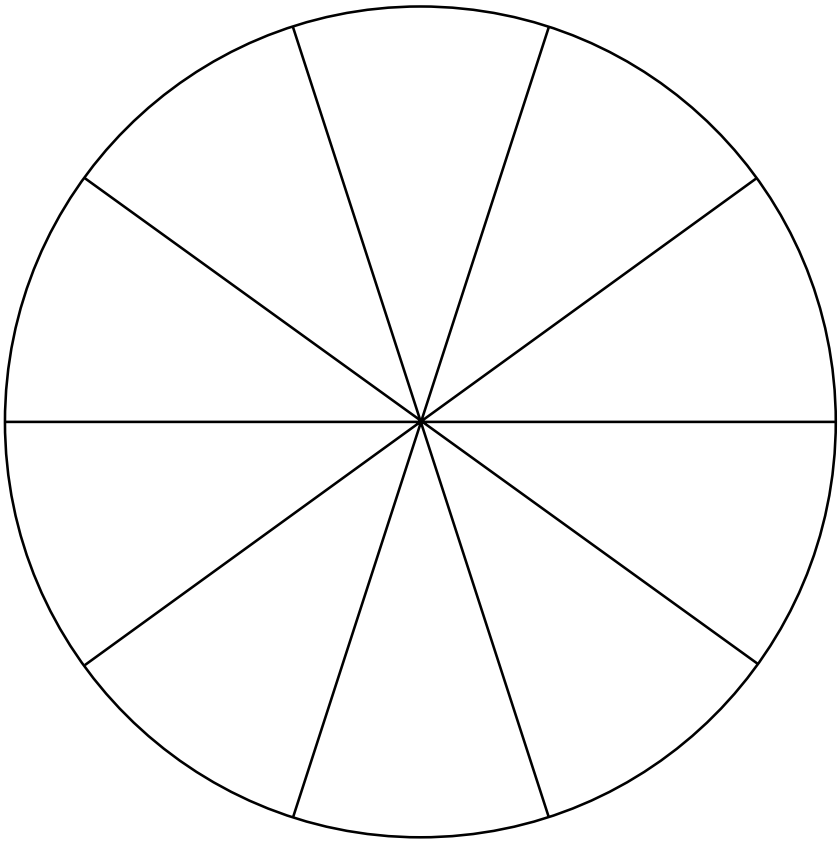
Write the answers as fast as you can.

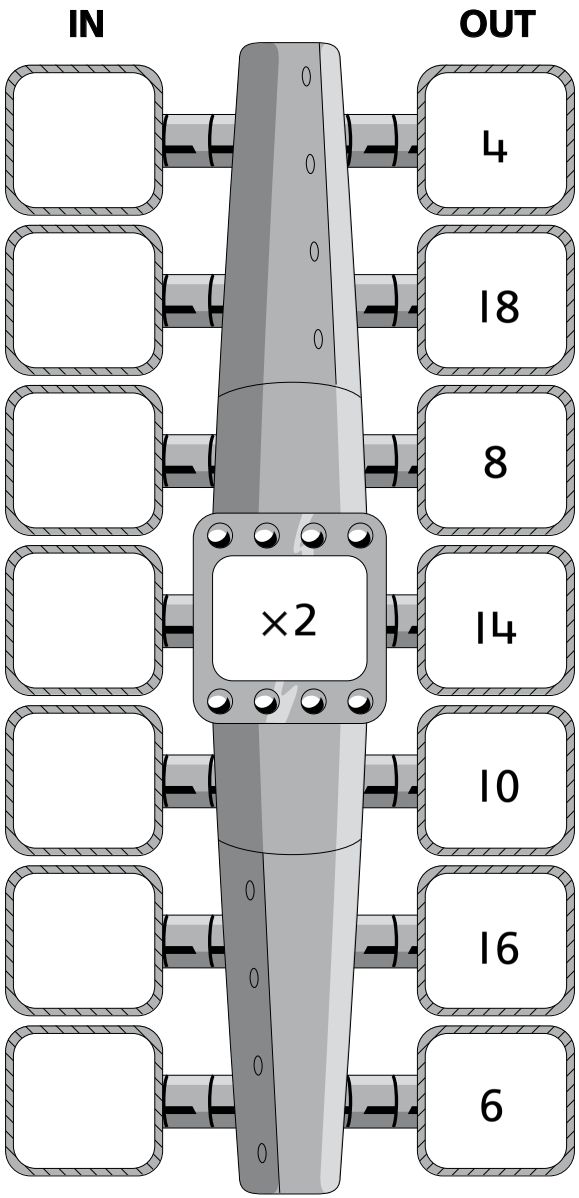
24 ÷ 8 = ____
72 ÷ 8 = ____
8 ÷ 1 = ____
64 ÷ 8 = ____
24 ÷ 3 = ____
56 ÷ 7 = ____

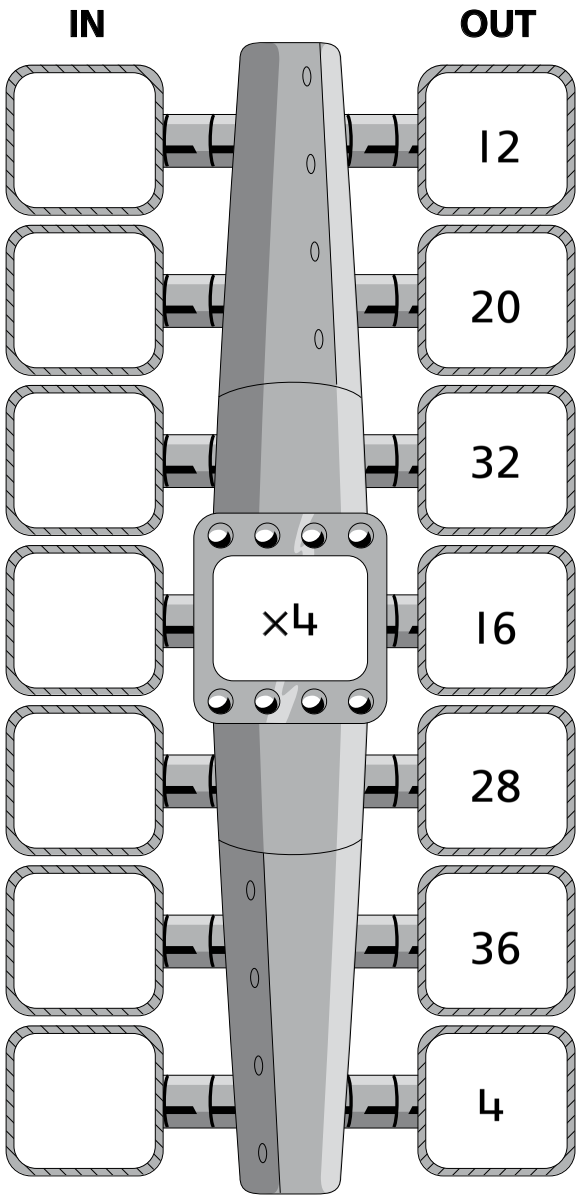
48 ÷ 8 = ____
8 ÷ 8 = ____
48 ÷ 6 = ____
56 ÷ 8 = ____
72 ÷ 9 = ____

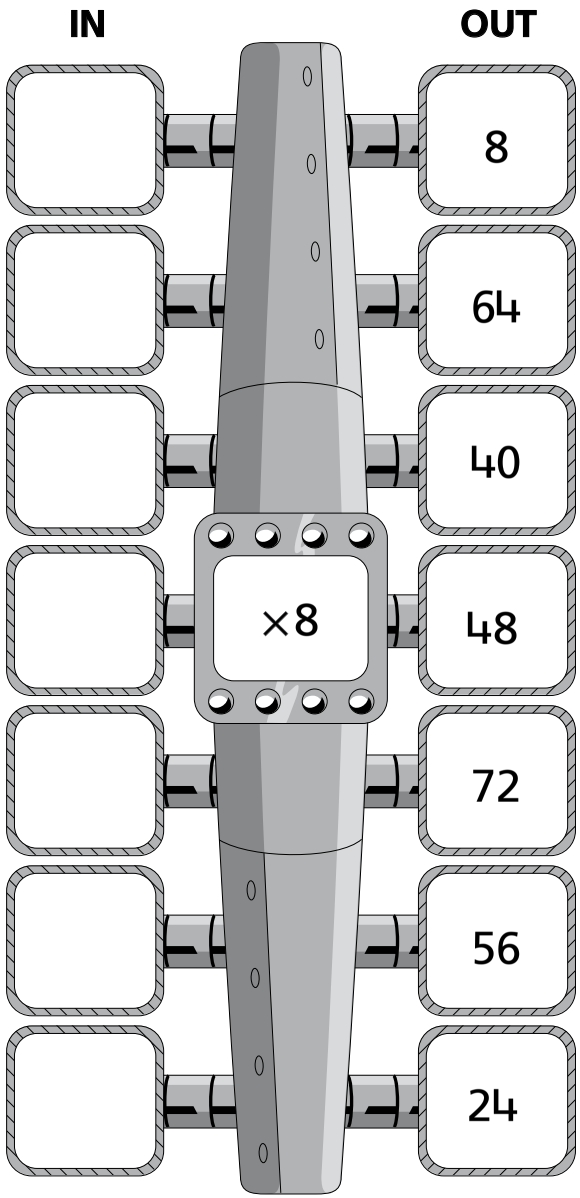
Blank Spinners







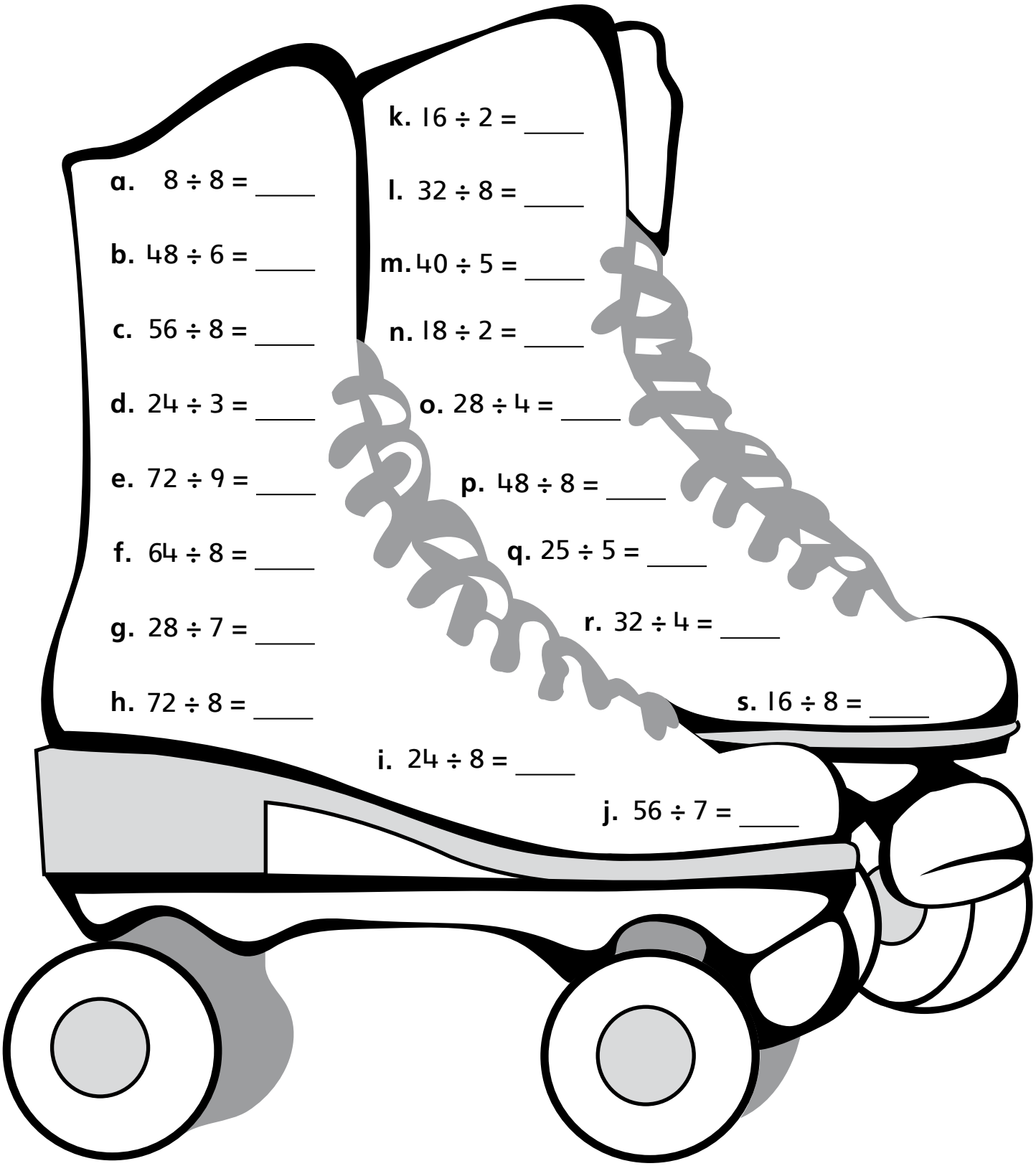




Skating Eights

Name: _____

Complete each number fact.



a. 8 ÷ 8 = _____

b. 48 ÷ 6 = _____

c. 56 ÷ 8 = _____

d. 24 ÷ 3 = _____

e. 72 ÷ 9 = _____

f. 64 ÷ 8 = _____

g. 28 ÷ 7 = _____

h. 72 ÷ 8 = _____

i. 24 ÷ 8 = _____

j. 56 ÷ 7 = _____

k. 16 ÷ 2 = _____

l. 32 ÷ 8 = _____

m. 40 ÷ 5 = _____

n. 18 ÷ 2 = _____

o. 28 ÷ 4 = _____

p. 48 ÷ 8 = _____

q. 25 ÷ 5 = _____

r. 32 ÷ 4 = _____

s. 16 ÷ 8 = _____

Numeral Cards 1 to 9

1	2	3
4	5	6
7	8	9