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LESSON 4

Multiplication and Division Number Sentences

3.OA.4, 3.OA.6

A fact family is always made up of the same three numbers.

Multiplication and division are **inverse operations.** This means the two operations do the opposite of each other. Multiplication puts groups together. Division separates things into groups. A **fact family** shows the multiplication and division number sentences for three numbers.

This is the fact family for 3, 5, and 15.

$3 \times 5 = 15$ $\quad$ $15 \div 3 = 5$

$5 \times 3 = 15$ $\quad$ $15 \div 5 = 3$

Use your knowledge of fact families to find a missing number in a multiplication or division number sentence.

What number is missing in this number sentence?

$4 \times \square = 24$

Write a division fact that is in the same fact family: $24 \div 4 = \square$

Find the quotient of the division fact: $24 \div 4 = 6$

So, $4 \times 6 = 24$. The missing number is 6.

What number is missing in this number sentence?

$49 \div 7 = \square$

Write a multiplication fact in the same fact family: $7 \times \square = 49$

Ask yourself, "What number times 7 equals 49?"

Since $7 \times 7 = 49$, $49 \div 7 = 7$.

The missing number is 7.

Think of division as a multiplication sentence with a missing factor. Use your knowledge of multiplication facts to find the missing factor. Then you have the answer to the division problem.

$35 \div 5 = \square$

Think: What number times 5 equals 35?

$5 \times \mathbf{7} = 35$

So, $35 \div 5 = \mathbf{7}$.

SAMPLE

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Read each problem. Circle the letter of the best answer.

SAMPLE What number goes in the box to make this number sentence true?

$27 \div \square = 9$

A 3 **C** 9

B 6 **D** 18

The correct answer is A. Think of the number sentence as $9 \times \square = 27$. Use your knowledge of multiplication facts to find the missing factor: $9 \times 3 = 27$. So, $27 \div 3 = 9$.

1 What in the missing number?

$4 \times \square = 0$

A 4 **C** 1

B 2 **D** 0

2 Which multiplication sentence can help you find $12 \div 3$?

A $6 \times \square = 12$ **C** $3 \times \square = 15$

B $3 \times \square = 12$ **D** $2 \times \square = 12$

3 Find the missing number.

$80 \div \square = 8$

A 2 **C** 8

B 4 **D** 10

4 Which fact is in the fact family for 2, 5, and 10?

A $50 \div 5 = 10$ **C** $5 \times 2 = 10$

B $10 \times 5 = 50$ **D** $10 \times 2 = 20$

5 What number is missing in this number sentence?

$2 \times \square = 14$

A 4 **C** 10

B 7 **D** 12

6 Which number makes both number sentences true?

$5 \times \square = 30$ $30 \div 5 = \square$

A 2 **C** 7

B 6 **D** 10

7 What number sentence is missing from this fact family?

$4 \times 8 = 32$
$8 \times 4 = 32$
$32 \div 4 = 8$
$\boxed{?}$

A $32 - 8 = 24$ **C** $32 \div 8 = 4$

B $4 + 8 = 12$ **D** $32 \div 2 = 16$

SAMPLE

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Read each problem. Write your answer.

SAMPLE Find the missing number.

$16 \div \square = 8$

Answer _____

The multiplication fact $2 \times 8 = 16$ tells you that $16 \div 2 = 8$. The missing number is 2.

8 What number is missing in this number sentence?

$5 \times \square = 25$

Answer _____

9 Write the fact family for 7, 9, and 63.

Answer _____

10 Find the missing number.

$42 \div \square = 6$

Answer _____

11 Is $3 \times 6 = 18$ part of the fact family for 3, 4, and 12? Explain.

_____

_____

12 Explain how you can use $6 \times 9 = 54$ to find $54 \div 9$.

_____

_____

SAMPLE

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Read the problem. Write your answer to each part.

13 An array can model a multiplication sentence as well as a division sentence.

Part A Draw an array for $5 \times 9 = 45$. Write the rest of the fact family with one multiplication sentence and two division sentences.

Answer _____

Part B In a fact family, what happens to the quotient in a division fact when it is written as a multiplication fact?

_____

_____

_____

_____

Look at the facts you wrote for part A. How are the numbers rearranged?

SAMPLE

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