Relating Multiplication and Division

Multiplication and division undo each other. Knowing $7 \times 9 = 63$ also tells you $63 \div 9 = 7$ and $63 \div 7 = 9$. Three numbers, four facts — that's a fact family.

Fact family for 4, 7, 28	
$4 \times 7 = 28$	$7 \times 4 = 28$
$28 \div 4 = 7$	$28 \div 7 = 4$

Key Concepts

1. Multiplication and division are **inverse operations**. They undo each other.

2. A **fact family** uses three related numbers — two *factors* and their *product* — to build 4 facts.

3. To find a missing factor, use division. "$? \times 9 = 63$" is the same as "$63 \div 9 = ?$."

4. To **check** a division answer, multiply the quotient by the divisor. If you get the dividend back, your answer is right.

Worked Examples

① Find the missing number: $? \times 9 = 63$.

To find a missing factor, divide the product by the known factor: $63 \div 9 = ?$. From your $\times 9$ facts, $9 \times 7 = 63$, so the missing factor is 7. Check: $7 \times 9 = 63$ ✓.

Answer: 7

② Write the full fact family for 4, 8, and 32.

Take the two factors 4 and 8, and the product 32. The two multiplication facts come from swapping factor order: $4 \times 8 = 32$ and $8 \times 4 = 32$. The two division facts come from dividing the product by each factor: $32 \div 4 = 8$ and $32 \div 8 = 4$. Four facts total.

Answer: $4 \times 8 = 32,\ 8 \times 4 = 32,\ 32 \div 4 = 8,\ 32 \div 8 = 4$

③ Check: is $35 \div 5 = 7$ correct?

Multiply to check. $7 \times 5 = 35$. The product matches the dividend, so yes — $35 \div 5 = 7$ is correct. This "multiply-back" check works for any division problem.

Answer: *Yes, correct*

Practice Problems

Fill in the blank or list the fact family.

1. $? \times 7 = 49$ _____

2. $6 \times ? = 54$ _____

3. $? \times 4 = 28$ _____

4. $8 \times ? = 72$ _____

5. $? \times 3 = 27$ _____

6. $5 \times ? = 45$ _____

7. Fact family: 3, 8, 24 _____

8. Fact family: 7, 6, 42 _____

9. ? $\times 9 = 81$ _____

10. $4\times$? $= 36$ _____

11. Fact family: 5, 9, 45 _____

12. ? $\times 6 = 48$ _____

Study Tips

- ☞ Whenever you see a missing factor problem ($? \times n = m$), turn it into division ($m \div n$). The answer is the same, but the division version uses facts you already know.
- ☞ Practicing fact families is more efficient than practicing single facts: one fact family is 4 equations.
- ☞ Always check division by multiplying back. It only takes a second and catches almost every mistake.

✍ Word Problems

1. Sam has some bags with 7 marbles in each bag. Altogether he has 56 marbles. How many bags does he have? Write both multiplication and division equations.

Answer: _____

2. A baker made 36 cupcakes and put 4 on each plate. How many plates did she use? Check using multiplication.

Answer: _____

Answer Key — with Friendly Explanations

Practice Problems

1. $49 \div 7 = 7$.

Answer: 7

2. $54 \div 6 = 9$.

Answer: 9

3. $28 \div 4 = 7$.

Answer: 7

4. $72 \div 8 = 9$.

Answer: 9

5. $27 \div 3 = 9$.

Answer: 9

6. $45 \div 5 = 9$.

Answer: 9

7. Family: $3 \times 8 = 24$, $8 \times 3 = 24$, $24 \div 3 = 8$, $24 \div 8 = 3$.

Answer: *see family*

8. Family: $7 \times 6 = 42$, $6 \times 7 = 42$, $42 \div 7 = 6$, $42 \div 6 = 7$.

Answer: *see family*

9. $81 \div 9 = 9$.

Answer: 9

10. $36 \div 4 = 9$.

Answer: 9

11. Family: $5 \times 9 = 45$, $9 \times 5 = 45$, $45 \div 5 = 9$, $45 \div 9 = 5$.

Answer: *see family*

12. $48 \div 6 = 8$.

Answer: 8

Word Problems

1. $56 \div 7 = 8$. Eight bags.

Answer: 8 *bags*

2. $36 \div 4 = 9$. Nine plates; check $9 \times 4 = 36$.

Answer: 9 *plates*

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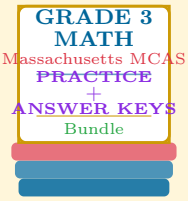

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