Division as an Unknown-Factor Problem

Spot mistakes, reason, and work backward

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

Division asks for a missing multiplication factor. For $24 \div 6$, ask $6 \times \square = 24$. Since $6 \times 4 = 24$, $24 \div 6 = 4$. The divisor is the known factor; the quotient is the missing factor.

Worked example

Turn $24 \div 4$ into $4 \times \square = 24$. Find the box and the quotient.

1. The unknown factor counts how many 4s make 24: $4 \times 6 = 24$.
2. So $24 \div 4 = 6$. Check by multiplying $6 \times 4 = 24$.
Answer: $\square = 6$; $24 \div 4 = 6$.

Practice Problems

Show your thinking.

1. Eli uses $7 \times 7 = 42$ to solve $42 \div 7$. Repair the multiplication fact.

2. An unknown total divided by 8 gives 5. Write a multiplication equation to find the total.

3. Use $4 \times 7 = 28$ to write two division facts. Tell why both work.

4. To check $24 \div 6 = 4$, a student uses 4×24. Which two numbers should be multiplied, and what should the product be?

5. To solve $48 \div 6$, use $6 \times 5 = 30$ and $6 \times 3 = 18$. Combine the factors, then check.

6. You know $7 \times 6 = 42$. Find $49 \div 7$ without starting the times table again.

7. The same factor multiplies every input in the table. Find it, then write the division fact for the output 35.

Input	Output
3	21
5	35

8. For $36 \div 4$, Ren asks $4 + \square = 36$. Solve that addition question, then explain why it does not solve the division.

Answer Key

1. $7 \times 6 = 42$, so the quotient is 6.
2. $8 \times 5 = 40$; total 40.
3. $28 \div 4 = 7$ and $28 \div 7 = 4$.
4. Multiply quotient 4 by divisor 6: $4 \times 6 = 24$.
5. $48 \div 6 = 8$.
6. 7.
7. Factor 7; $35 \div 5 = 7$.
8. Addition box 32; division quotient 9.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Test Eli: $7 \times 7 = 49$, which is 7 too many.
2. Remove one group of 7: $49 - 7 = 42$; the factor is 6.

Problem 2

1. A quotient of 5 means 5 groups of 8 make the total.
2. $5 \times 8 = 40$; check $40 \div 8 = 5$.

Problem 3

1. 4 groups of 7 give 28, so sharing 28 among 4 gives 7.
2. Switch the factors: $7 \times 4 = 28$, so $28 \div 7 = 4$.

Problem 4

1. Division asks for the factor in $6 \times \square = 24$; that factor is 4.
2. The check is divisor times quotient, $6 \times 4 = 24$, recovering the dividend. Multiplying by the dividend uses the wrong factor.

Problem 5

1. The partial totals combine to $30 + 18 = 48$; their group counts combine to $5 + 3 = 8$.
2. Thus $6 \times 8 = 48$, so the division quotient is 8.

Problem 6

1. The new total is $49 - 42 = 7$ greater, which is one more group of 7.
2. The factor grows from 6 to $6 + 1 = 7$; $7 \times 7 = 49$, so $49 \div 7 = 7$.

Problem 7

1. The first row gives $3 \times \square = 21$, so $21 \div 3 = 7$.
2. Test the second: $5 \times 7 = 35$. Reversing it gives $35 \div 5 = 7$.

Problem 8

1. The addition question gives $36 - 4 = 32$, checked by $4 + 32 = 36$. This finds an addend, not a multiplication factor.
2. Division asks for $4 \times \square = 36$; since $4 \times 9 = 36$, its answer is 9.

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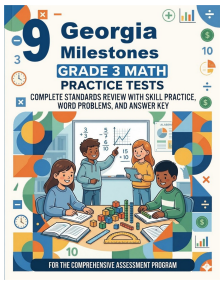

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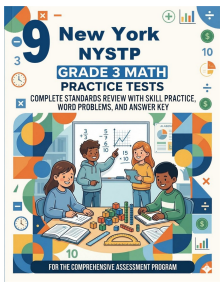

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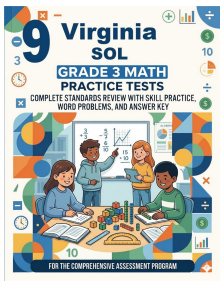

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