Division as an Unknown-Factor Problem

Explore ideas and representations

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.

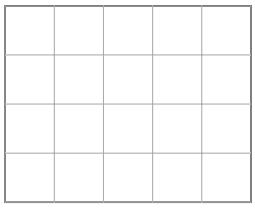
1. The unknown factor counts how many 4s make 24: $4 \times 6 = 24$.
2. So $24 \div 4 = 6$. Check by multiplying $6 \times 4 = 24$.
Answer: $\square = 6$; $24 \div 4 = 6$.

Practice Problems

Show your thinking.

1. Turn $18 \div 3$ into $3 \times \square = 18$. Find the box and the quotient.

2. The array has 20 squares in 4 rows. Write a missing-factor equation and find squares per row.



3. Use $5 \times 7 = 35$ to write two division facts. Tell why both work.

4. Eli uses $6 \times 5 = 24$ to solve $24 \div 6$. Repair the multiplication fact.

5. An unknown total divided by 2 gives 9. Write a multiplication equation to find the total.

6. 21 seeds fill packets with 7 seeds each. Complete $7 \times \square = 21$ to find the packets.

7. Turn $32 \div 8$ into $8 \times \square = 32$. Find the box and the quotient.

8. Use $3 \times 8 = 24$ to write two division facts. Tell why both work.

Answer Key

1. $\square = 6$; $18 \div 3 = 6$.
2. $4 \times \square = 20$; 5 per row.
3. $35 \div 5 = 7$ and $35 \div 7 = 5$.
4. $6 \times 4 = 24$, so the quotient is 4.
5. $2 \times 9 = 18$; total 18.
6. 3 packets.
7. $\square = 4$; $32 \div 8 = 4$.
8. $24 \div 3 = 8$ and $24 \div 8 = 3$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The unknown factor counts how many 3s make 18: $3 \times 6 = 18$.

2. So $18 \div 3 = 6$. Check by multiplying $6 \times 3 = 18$.

Problem 2

1. Count 4 rows. Each row contains the same unknown number of squares.

2. $4 \times 5 = 20$, so $20 \div 4 = 5$ squares per row.

Problem 3

1. 5 groups of 7 give 35, so sharing 35 among 5 gives 7.

2. Switch the factors: $7 \times 5 = 35$, so $35 \div 7 = 5$.

Problem 4

1. Test Eli: $6 \times 5 = 30$, which is 6 too many.

2. Remove one group of 6: $30 - 6 = 24$; the factor is 4.

Problem 5

1. A quotient of 9 means 9 groups of 2 make the total.

2. $9 \times 2 = 18$; check $18 \div 2 = 9$.

Problem 6

1. Each packet contributes 7 seeds; the needed factor solves $7 \times \square = 21$.

2. $7 \times 3 = 21$, so $21 \div 7 = 3$ packets.

Problem 7

1. The unknown factor counts how many 8s make 32: $8 \times 4 = 32$.

2. So $32 \div 8 = 4$. Check by multiplying $4 \times 8 = 32$.

Problem 8

1. 3 groups of 8 give 24, so sharing 24 among 3 gives 8.

2. Switch the factors: $8 \times 3 = 24$, so $24 \div 8 = 3$.

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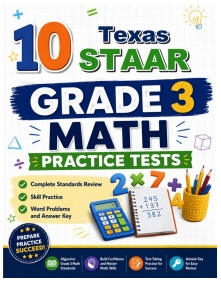

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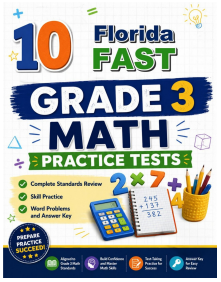

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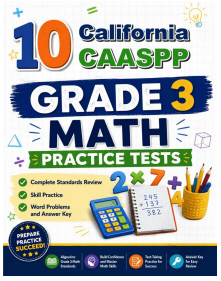

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