Dividing Decimals by Decimals

Dividing Decimals by Decimals: Models and Computation

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

QUICK REVIEW

Multiply both dividend and divisor by the same power of ten to make the divisor whole. Thus $4.2 \div 0.6 = 42 \div 6 = 7$. Check $7 \times 0.6 = 4.2$; changing only the divisor changes the quotient.

Worked example

Calculate $5.6 \div 0.8$. Show the place-value or fraction calculation.

1. Multiply both numbers by 10: $5.6 \div 0.8 = 56 \div 8$.
2. $7 \times 8 = 56$, leaving $56 - 56 = 0$.
3. No remainder: $56 \div 8 = 7$.
4. Check: $7 \times 0.8 = 5.6$.
Answer: 7.

Practice Problems

Show your thinking.

1. Calculate $4.8 \div 0.6$. Show the place-value or fraction calculation.

2. Draw a grouping or equal-sharing model for $3.75 \div 0.5$ and label the result.

3. There are 6.24 L of juice. One full portion is 1.2 L. How many portions is that, including any fraction of a portion?

4. Use an inverse operation to verify a proposed result of 8 for $7.2 \div 0.9$. Show both computations.

5. Is $5.04 \div 0.7$ greater than, less than, or equal to 7.45? Find the exact gap.

6. A student writes $9.6 \div 1.5 = 6.5$. Correct the result and check it.

7. Find the missing number: $2.88 \div \square = 7.2$. Check by substitution.

8. Calculate $8.4 \div 0.35$. Show the place-value or fraction calculation.

Answer Key

1. 8.
2. 7.5.
3. 5.2 portions: 5 full and 0.2 of one portion.
4. The result 8 is correct.
5. Less than by 0.25.
6. 6.4, not 6.5.
7. 0.4.
8. 24.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Multiply both numbers by 10: $4.8 \div 0.6 = 48 \div 6$.
2. $8 \times 6 = 48$, leaving $48 - 48 = 0$.
3. No remainder: $48 \div 6 = 8$.
4. Check: $8 \times 0.6 = 4.8$.

Problem 2

1. Multiply both numbers by 100: $3.75 \div 0.5 = 375 \div 50$.
2. $7 \times 50 = 350$, leaving $375 - 350 = 25$.
3. The leftover is $25/50 = 0.5$ of one group, so the quotient is $7 + 0.5 = 7.5$.
4. Labeled grouping model:

Groups	Calculation	Amount
Full groups	7×0.5	3.5
Partial group	0.5×0.5	0.25
Total	7.5 groups	3.75

5. Check: $7.5 \times 0.5 = 3.75$.

Problem 3

1. 5 full portions use $5 \times 1.2 = 6$ L.
2. That leaves $6.24 - 6 = 0.24$ L.
3. The leftover makes $0.24 \div 1.2 = 0.2$ of a portion. Total: $5 + 0.2 = 5.2$ portions.
4. Check: $5.2 \times 1.2 = 6.24$ L.

Problem 4

1. Multiply both numbers by 10: $7.2 \div 0.9 = 72 \div 9$.
2. $8 \times 9 = 72$, leaving $72 - 72 = 0$.
3. No remainder: $72 \div 9 = 8$.
4. Check: $8 \times 0.9 = 7.2$.
5. Inverse check: $8 \times 0.9 = 7.2$.

Problem 5

1. Multiply both numbers by 100: $5.04 \div 0.7 = 504 \div 70$.
2. $7 \times 70 = 490$, leaving $504 - 490 = 14$.
3. The leftover is $14/70 = 0.2$ of one group, so the quotient is $7 + 0.2 = 7.2$.
4. Check: $7.2 \times 0.7 = 5.04$.
5. $7.45 - 7.2 = 0.25$, so the expression is smaller.

Problem 6

1. Multiply both numbers by 10: $9.6 \div 1.5 = 96 \div 15$.
2. $6 \times 15 = 90$, leaving $96 - 90 = 6$.
3. The leftover is $6/15 = 0.4$ of one group, so the quotient is $6 + 0.4 = 6.4$.
4. Check: $6.4 \times 1.5 = 9.6$.
5. The claimed value differs by 0.1, so it fails the exact calculation.

Problem 7

1. Undo the known operation to find the missing value: $2.88 \div 7.2 = 0.4$.
2. Multiply both numbers by 100: $2.88 \div 0.4 = 288 \div 40$.
3. $7 \times 40 = 280$, leaving $288 - 280 = 8$.
4. The leftover is $8/40 = 0.2$ of one group, so the quotient is $7 + 0.2 = 7.2$.
5. Check: $7.2 \times 0.4 = 2.88$.

Problem 8

1. Multiply both numbers by 100: $8.4 \div 0.35 = 840 \div 35$.
2. $24 \times 35 = 840$, leaving $840 - 840 = 0$.
3. No remainder: $840 \div 35 = 24$.
4. Check: $24 \times 0.35 = 8.4$.

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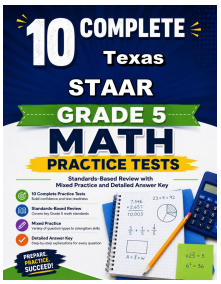

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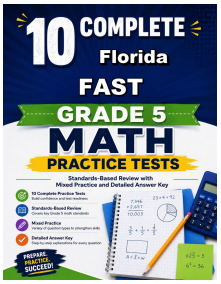

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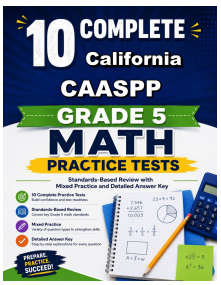

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