Dividing Decimals by Decimals

Dividing Decimals by Decimals: Find, Fix, and Work Backward

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. A student writes $2.1 \div 0.6 = 3.6$. Correct the result and check it.

2. Find the missing number: $\square \div 0.5 = 4.5$. Check by substitution.

3. Find the missing number: $6.6 \div \square = 5.5$. Check by substitution.

4. A recorded result for $5.85 \div 0.9$ is 6.6. By exactly how much, and in which direction, must that record change? Give the repaired equation.

5. Complete the two-output table for the rule: input $\div 0.7$. Inputs are 5.25 and 10.5. Compare the outputs.

Input	Output
5.25	
10.5	

6. Is $12.75 \div 1.5$ greater than, less than, or equal to 8.75? Find the exact gap.

7. Find the missing number: $\square \div 0.4 = 9.5$. Check by substitution.

8. Find the missing number: $3.675 \div \square = 10.5$. Check by substitution.

Answer Key

1. 3.5, not 3.6.
2. 2.25.
3. 1.2.
4. Decrease by 0.1; $5.85 \div 0.9 = 6.5$.
5. Outputs 7.5 and 15; second minus first is 7.5.
6. Less than by 0.25.
7. 3.8.
8. 0.35.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Multiply both numbers by 10: $2.1 \div 0.6 = 21 \div 6$.
2. $3 \times 6 = 18$, leaving $21 - 18 = 3$.
3. The leftover is $3/6 = 0.5$ of one group, so the quotient is $3 + 0.5 = 3.5$.
4. Check: $3.5 \times 0.6 = 2.1$.
5. The claimed value differs by 0.1, so it fails the exact calculation.

Problem 2

1. Undo the known operation to find the missing value: $4.5 \times 0.5 = 2.25$.
2. Multiply both numbers by 100: $2.25 \div 0.5 = 225 \div 50$.
3. $4 \times 50 = 200$, leaving $225 - 200 = 25$.
4. The leftover is $25/50 = 0.5$ of one group, so the quotient is $4 + 0.5 = 4.5$.
5. Check: $4.5 \times 0.5 = 2.25$.

Problem 3

1. Undo the known operation to find the missing value: $6.6 \div 5.5 = 1.2$.
2. Multiply both numbers by 10: $6.6 \div 1.2 = 66 \div 12$.
3. $5 \times 12 = 60$, leaving $66 - 60 = 6$.
4. The leftover is $6/12 = 0.5$ of one group, so the quotient is $5 + 0.5 = 5.5$.
5. Check: $5.5 \times 1.2 = 6.6$.

Problem 4

1. Multiply both numbers by 100: $5.85 \div 0.9 = 585 \div 90$.
2. $6 \times 90 = 540$, leaving $585 - 540 = 45$.
3. The leftover is $45/90 = 0.5$ of one group, so the quotient is $6 + 0.5 = 6.5$.
4. Check: $6.5 \times 0.9 = 5.85$.
5. The correction is $6.6 - 6.5 = 0.1$, so subtract that amount from the record.

Problem 5

1. Multiply both numbers by 100: $5.25 \div 0.7 = 525 \div 70$.
2. $7 \times 70 = 490$, leaving $525 - 490 = 35$.
3. The leftover is $35/70 = 0.5$ of one group, so the quotient is $7 + 0.5 = 7.5$.
4. Check: $7.5 \times 0.7 = 5.25$.
5. Second output: $10.5 \div 0.7 = 15$; difference $15 - 7.5 = 7.5$.

Problem 6

1. Multiply both numbers by 100: $12.75 \div 1.5 = 1275 \div 150$.
2. $8 \times 150 = 1200$, leaving $1275 - 1200 = 75$.
3. The leftover is $75/150 = 0.5$ of one group, so the quotient is $8 + 0.5 = 8.5$.
4. Check: $8.5 \times 1.5 = 12.75$.
5. $8.75 - 8.5 = 0.25$, so the expression is smaller.

Problem 7

1. Undo the known operation to find the missing value: $9.5 \times 0.4 = 3.8$.
2. Multiply both numbers by 10: $3.8 \div 0.4 = 38 \div 4$.
3. $9 \times 4 = 36$, leaving $38 - 36 = 2$.
4. The leftover is $2/4 = 0.5$ of one group, so the quotient is $9 + 0.5 = 9.5$.
5. Check: $9.5 \times 0.4 = 3.8$.

Problem 8

1. Undo the known operation to find the missing value: $3.675 \div 10.5 = 0.35$.
2. Multiply both numbers by 1000: $3.675 \div 0.35 = 3675 \div 350$.
3. $10 \times 350 = 3500$, leaving $3675 - 3500 = 175$.
4. The leftover is $175/350 = 0.5$ of one group, so the quotient is $10 + 0.5 = 10.5$.
5. Check: $10.5 \times 0.35 = 3.675$.

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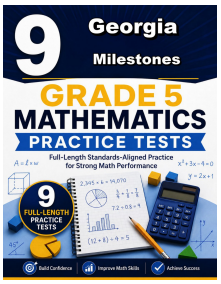

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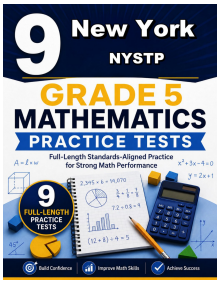

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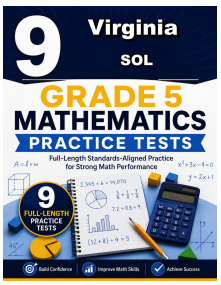

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