Multiplying Decimals

Multiplying Decimals: Apply, Compare, and Design

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

QUICK REVIEW

Multiply as whole numbers, then account for decimal units. Since $1.2 = 12/10$ and $0.4 = 4/10$, their product is $48/100 = 0.48$. Multiplication by a positive number less than 1 makes a quantity smaller.

Worked example

Calculate 5.6×0.8. Show the place-value or fraction calculation.

1. Write $5.6 = \frac{56}{10}$ and $0.8 = \frac{8}{10}$.
2. Multiply whole-number parts: $56 \times 8 = 448$; the scale is $10 \times 10 = 100$.
3. The product is $\frac{448}{100} = 4.48$; check $4.48 \div 0.8 = 5.6$.
Answer: 4.48.

Practice Problems

Show your thinking.

1. Cloth costs 2.6 dollars per meter. Find the cost of 0.6 m.

2. Choose the missing amount so this plan totals 0.72 dollars: $0.9 \times \square$. Write the completed equation.

3. Plan A uses 3.45×1.2 units. Plan B uses 3.45×1.3 units. Which produces the larger amount, and by how much?

4. Each of two containers holds 1.8×2.5 L. Another 0.1 L is added to their combined contents. Find the final volume.

5. Choose the missing amount so this plan totals 0.26 dollars: $0.65 \times \square$. Write the completed equation.

6. Complete the two-output table for the rule: input $\times 0.3$. Inputs are 4.4 and 8.8. Compare the outputs.

Input	Output
4.4	
8.8	

7. A student writes $2.95 \times 1.4 = 4.23$. Correct the result and check it.

8. Use an inverse operation to verify a proposed result of 0.55 for 1.1×0.5. Show both computations.

Answer Key

1. 1.56 dollars.
2. 0.8 dollars; $0.9 \times 0.8 = 0.72$.
3. Plan B by 0.345 units.
4. 9.1 L.
5. 0.4 dollars; $0.65 \times 0.4 = 0.26$.
6. Outputs 1.32 and 2.64; second minus first is 1.32.
7. 4.13, not 4.23.
8. The result 0.55 is correct.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The quantities call for 2.6×0.6; the result is measured in dollars.
2. Write $2.6 = \frac{26}{10}$ and $0.6 = \frac{6}{10}$.
3. Multiply whole-number parts: $26 \times 6 = 156$; the scale is $10 \times 10 = 100$.
4. The product is $\frac{156}{100} = 1.56$; check $1.56 \div 0.6 = 2.6$.

Problem 2

1. Write $0.9 = \frac{9}{10}$ and $0.8 = \frac{8}{10}$.
2. Multiply whole-number parts: $9 \times 8 = 72$; the scale is $10 \times 10 = 100$.
3. The product is $\frac{72}{100} = 0.72$; check $0.72 \div 0.8 = 0.9$.
4. Using 0.8 in the plan gives exactly 0.72 dollars.

Problem 3

1. Write $3.45 = \frac{345}{100}$ and $1.2 = \frac{12}{10}$.
2. Multiply whole-number parts: $345 \times 12 = 4140$; the scale is $100 \times 10 = 1000$.
3. The product is $\frac{4140}{1000} = 4.14$; check $4.14 \div 1.2 = 3.45$.
4. Plan B: $3.45 \times 1.3 = 4.485$ units.
5. The difference in amounts is 0.345 units.

Problem 4

1. Write $1.8 = \frac{18}{10}$ and $2.5 = \frac{25}{10}$.
2. Multiply whole-number parts: $18 \times 25 = 450$; the scale is $10 \times 10 = 100$.
3. The product is $\frac{450}{100} = 4.5$; check $4.5 \div 2.5 = 1.8$.
4. Two containers hold $2 \times 4.5 = 9$ L.
5. After the addition: $9 + 0.1 = 9.1$ L.

Problem 5

1. Write $0.65 = \frac{65}{100}$ and $0.4 = \frac{4}{10}$.
2. Multiply whole-number parts: $65 \times 4 = 260$; the scale is $100 \times 10 = 1000$.
3. The product is $\frac{260}{1000} = 0.26$; check $0.26 \div 0.4 = 0.65$.
4. Using 0.4 in the plan gives exactly 0.26 dollars.

Problem 6

1. Write $4.4 = \frac{44}{10}$ and $0.3 = \frac{3}{10}$.
2. Multiply whole-number parts: $44 \times 3 = 132$; the scale is $10 \times 10 = 100$.
3. The product is $\frac{132}{100} = 1.32$; check $1.32 \div 0.3 = 4.4$.
4. Second output: $8.8 \times 0.3 = 2.64$; difference $2.64 - 1.32 = 1.32$.

Problem 7

1. Write $2.95 = \frac{295}{100}$ and $1.4 = \frac{14}{10}$.
2. Multiply whole-number parts: $295 \times 14 = 4130$; the scale is $100 \times 10 = 1000$.
3. The product is $\frac{4130}{1000} = 4.13$; check $4.13 \div 1.4 = 2.95$.
4. The claimed value differs by 0.1, so it fails the exact calculation.

Problem 8

1. Write $1.1 = \frac{11}{10}$ and $0.5 = \frac{5}{10}$.
2. Multiply whole-number parts: $11 \times 5 = 55$; the scale is $10 \times 10 = 100$.
3. The product is $\frac{55}{100} = 0.55$; check $0.55 \div 0.5 = 1.1$.
4. Inverse check: $0.55 \div 0.5 = 1.1$.

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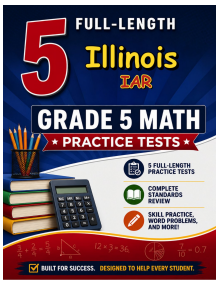

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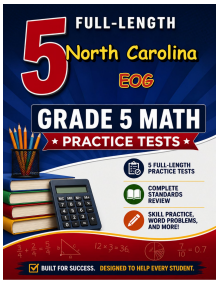

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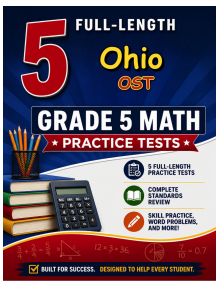

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