Notes & Steps

Key idea

When you multiply or divide by 10, 100, or 1000, the digits move left or right in their place-value columns. Multiply shifts left; divide shifts right.

Steps for multiplying

1. Count the zeros in 10, 100, or 1000.
2. Move the digits that many places to the left.
3. Fill any empty columns with zeros.

Steps for dividing

1. Count the zeros.
2. Move the digits that many places to the right.
3. For decimals past the point, keep the decimal point fixed.

Pattern examples

- $6 \times 10 = 60$ (6 moves left one place)
- $4 \times 100 = 400$ (4 moves left two places)
- $80 \div 10 = 8$ (8 moves right one place)
- $500 \div 100 = 5$ (5 moves right two places)
- $3.4 \times 10 = 34$ (decimal moves right)
- $5.8 \div 10 = 0.58$ (decimal moves left)

Common mistake

"Just add a zero" only works for whole numbers. For example, $3.4 \times 10 \neq 3.40$. The answer is 34, not 3.40. The digits shift, zeros are not just tacked on.

Try these

1. 9×1000
2. $7000 \div 1000$
3. 0.7×100

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Example 1: multiplying decimals

Calculate 1.25×10.

$$1.25$$

Move the digits one place left: 12.5. Answer: 12.5.

Example 2: dividing decimals

Calculate $4.2 \div 100$.

$$4.2$$

Move the digits two places right: 0.042. Answer: 0.042.

Try these

1. 3.6×100
2. 0.48×1000
3. $72 \div 100$

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Example 3: dividing a small decimal

Calculate 0.09×1000.

$$0.09$$

Move three places left. 9 needs zeros: $09.0 \to 90$. Answer: 90.

Example 4: applying to real units

Convert 0.047 km to metres.

$$0.047 \times 1000 = 47$$

So 0.047 km = 47 m.

Common mistake

When dividing, digits move right — the number gets smaller. Many students think $4.2 \div 100 = 420$ because they add zeros. Actually $4.2 \div 100 = 0.042$.