

Multiplying by 10 and 100

3rd Grade

Why the zeros appear — and why 'just add a zero' stops working later.

Multiplying by 10 moves every digit one place to the left. A zero fills the empty ones column.

$\times 10 \rightarrow$ one place $\cdot \times 100 \rightarrow$ two places

$$34 \times 10$$

$$340$$

3 tens became 3 hundreds; 4 ones became 4 tens.

$$34 \times 100$$

$$3,400$$

Two places left, so two zeros appear.

$$7 \times 1000$$

$$7,000$$

Three places, three zeros.

$$2.5 \times 10$$

$$25$$

Here 'add a zero' fails completely — the digits still move.

THE COMMON MISTAKE

$$\times 2.5 \times 10 = 2.50$$

$$\checkmark 2.5 \times 10 = 25$$

The rule is that digits move, not that a zero is glued on. Decimals prove it.

Say 'the digits move left', never 'add a zero'. The first is always true.