

Big idea

Our number system is base 10. That means each place value to the left is 10 times bigger than the one to its right. For example: hundreds, tens, ones, . , tenths, hundredths. Moving one place left multiplies by 10; moving one place right divides by 10.

Multiplying by 10, 100, 1000...

When you multiply by 10, every digit moves one place to the left so the decimal point looks like it moved one place to the right. If you multiply by 100, digits move two places left (decimal moves right two places), and so on.

Easy rule: Count the zeros in 10, 100, 1000... Move the decimal that many places to the right.

Examples:

$3.4 \times 10 \rightarrow$ move decimal 1 place right $\rightarrow 34$

$0.56 \times 100 \rightarrow$ move decimal 2 places right $\rightarrow 56$

$12.3 \times 1000 \rightarrow$ move decimal 3 places right $\rightarrow 12300$

Dividing by 10, 100, 1000...

Dividing does the opposite. Each time you divide by 10 you move the decimal one place to the left. Divide by 100 \rightarrow move two places left, etc.

Easy rule: Count the zeros in 10, 100, 1000... Move the decimal that many places to the left.

Examples:

$45 \div 10 \rightarrow$ move decimal 1 place left $\rightarrow 4.5$

$0.7 \div 100 \rightarrow$ move decimal 2 places left $\rightarrow 0.007$ (add zeros in front if you need them)

Why this works (short)

Each place is 10 times bigger than the one to its right. Multiplying by 10 makes every digit worth 10 times more, so digits must shift one place left. Writing that as moving the decimal is just a quick way to show the shift.

Quick steps you can do:

1. Find how many zeros are in 10, 100, 1000 (that number = places to move).
2. If multiplying, move the decimal to the right that many places. If needed, add zeros at the end.
3. If dividing, move the decimal to the left that many places. If needed, add zeros in front (like 0.007).

Try these (with answers)

1) $2.3 \times 10 = 23$

2) $0.45 \times 10 = 4.5$

3) $7 \div 10 = 0.7$

4) $5 \div 100 = 0.05$

You're just shifting where the decimal point sits because each step left/right is a factor of 10. With practice it becomes quick and easy!