

Converting Units with Rates

6th Grade

Multiply by a fraction equal to 1 and the units cancel themselves.

Any conversion is multiplying by a fraction worth exactly 1, arranged so the unwanted unit cancels.

1 WRITE WHAT YOU HAVE

1 Include the unit: 5 km.

2 BUILD A FRACTION WORTH 1

2 1000 m / 1 km — top and bottom are the same length.

3 ARRANGE SO UNITS CANCEL

3 Put km on the bottom so it cancels the km you have.

4 MULTIPLY

4 $5 \text{ km} \times 1000 \text{ m/km} = 5000 \text{ m}$. Only metres survive.

WORKED

$90 \text{ km/h} \rightarrow \text{m/s}: \times 1000 \text{ m/km} \div 3600 \text{ s/h} = 25 \text{ m/s}$

$2.5 \text{ hours} \rightarrow \text{minutes}: 2.5 \times 60 \text{ min/h} = 150 \text{ min}$

This method never needs a memorised direction. The units tell you which way up the fraction goes.