

## Rates of change

Find the speed of a train travelling for 100 miles and taking 2 hours.

$$s = \frac{d}{t} = \frac{100}{2}$$

Find the speed of a train travelling for 100 miles and taking 2 and a quarter hours.

$$\frac{100}{2.25}$$

$$\frac{15}{60} = 0.25$$



Find the speed of a train travelling for 100 miles and taking 2 hours 10 minutes.

$$\frac{100}{2.16}$$

$$\frac{10}{60} = 0.16$$

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A1 a,d,g  
A2-A4

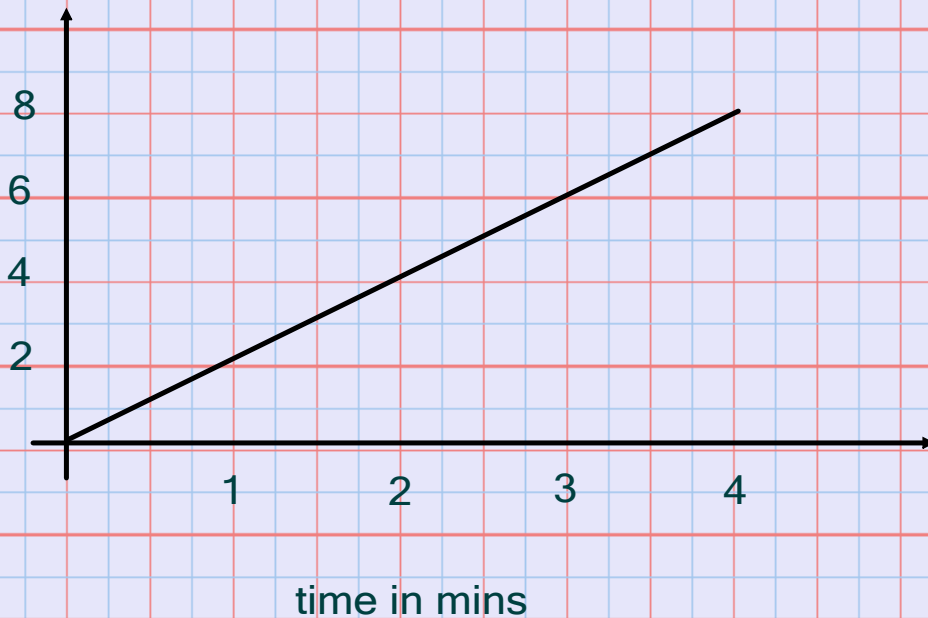
Changing minutes to hours

Think easy eg 30mins

$$\frac{30}{60} = 0.5$$

$$3 \text{ mins to hours: } \frac{3}{60} = 0.05$$

distance  
in miles



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$$s = \frac{d}{t}$$

$$C1 \text{ g) } d = s \times \text{time}$$

$$= 15 \times \frac{1}{3}$$

$$= \underline{\underline{5 \text{ miles}}}$$

C1  
a) and d)

C2 - C5



Find the speed of a tortoise, in metres per hour, if it travels 8cm in 7 minutes.

$$\frac{0.08\text{m}}{7/60} = \frac{0.08}{0.116} = 0.69\text{m/h}$$

## More rates of change

Our photocopier can do about 30 copies in 40 seconds.

Find the rate of copies per minute.

$$40 \text{ sec} = \frac{40}{60} \text{ min}$$

$$R = \frac{30}{\frac{2}{3}} = 45 \text{ c/m}$$



Another photocopier can do about 58 copies in 75 seconds.

Find the rate of copies per minute.

$$75 \text{ secs} = \frac{75}{60} = 1.25$$

$$R = \frac{58}{1.25} = 46.4 \text{ c/m s}$$

The best copiers seem to do about 156 copies per minute. How long would it take me to copy a set of worksheets for you (32)?

$$R = 156 = \frac{32}{t} \quad \begin{matrix} \text{m/h} \\ \text{m} \\ \text{h} \end{matrix}$$

$$t = \frac{32}{156} = 0.21 \text{ min}$$

$$0.21 \times 60 = 12.3 \text{ secs}$$

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