

Converting speed units

(1) You must know the basic conversion factors

- 5 miles = 8 km (or 1 mile = 1.6 km)
- 1 km = 1000 m
- 1 minute = 60 seconds, 1 hour = 60 minutes = 3600 seconds

(2) two possible methods, either:

- convert both units
- unit multiplier method

➤ To convert 400 metres/minute into miles/hour

We know 1 mile = 1.6 km = 1600 metres, also 60 minutes = 1 hour.

either:

$$400 \text{ m} = \frac{1}{4} \text{ mile}$$

$$1 \text{ minute} = \frac{1}{60} \text{ hour}$$

"if the journey lasted 1 minute, the distance would be $\frac{1}{4}$ mile"

$$\text{speed} = \frac{\text{distance}}{\text{time}} = \frac{\left(\frac{1}{4}\right) \text{ mile}}{\left(\frac{1}{60}\right) \text{ hour}} = \frac{\left(\frac{1}{4}\right)}{\left(\frac{1}{60}\right)} \times \frac{60}{60} = \frac{60}{4} \text{ mph} = 15 \text{ mph}$$

or:

$$400 \text{ m/min} = 400 \text{ m/min} \times \frac{5 \text{ mile}}{8000 \text{ m}} \times \frac{60 \text{ min}}{1 \text{ hour}} = \frac{120000}{8000} \text{ miles/h} = 15 \text{ miles/hour}$$