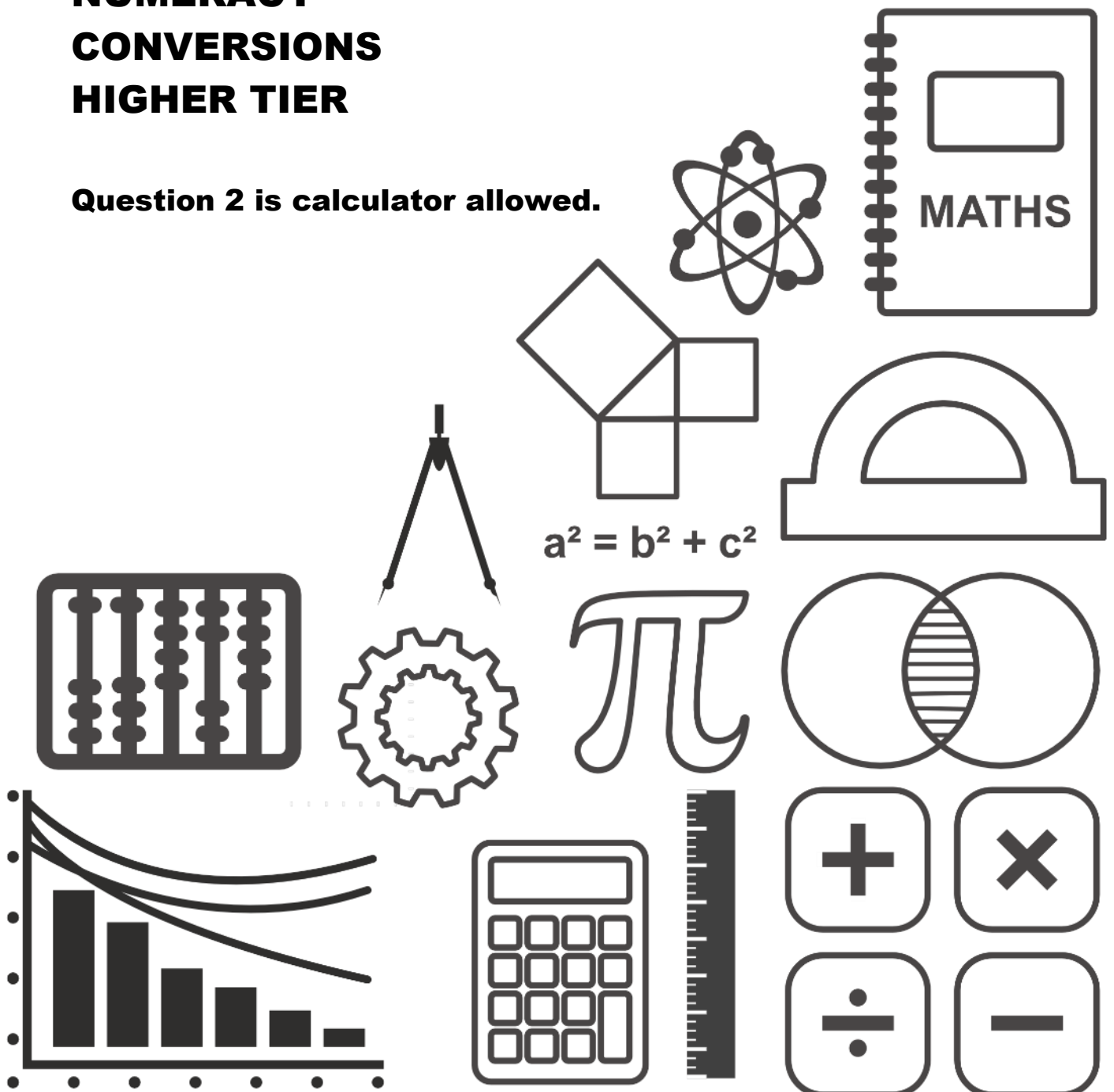


# MATHSDIY

## GCSE TOPIC BOOKLET NUMERACY CONVERSIONS HIGHER TIER

Question 2 is calculator allowed.



1.

Siân usually finds cycling at a velocity of 18 km/h very comfortable.  
Express 18 km/h in metres per second.

[2]

km → metres × 1000

h → mins × 60

h → seconds × 60 × 60

$$\therefore \frac{18 \times 1000}{60 \times 60} = \frac{30}{6} = \underline{\underline{5 \text{ metres/second}}}$$

2. Gwen fills a 10-litre bucket with water from a tap.

When the tap is fully open, water flows out at 2 litres per second.

(i) Express 2 litres per second in gallons per minute.  
You must show all your working.

[3]

Remember  
1 gallon = 8 pints

→ this one will be given

2 litres/second

→ need to know this conversion

1 litre ≈ 1.75 pints

$$\begin{aligned} \therefore 2 \text{ litres/second} &\approx 2 \times 1.75 \text{ pints/second} \\ &= 3.5 \text{ pints/second} \\ &= 3.5 \times 60 = 210 \text{ pints/minute} \\ &= 210 \div 8 \text{ gallons/minute} \\ &= \underline{\underline{26.25 \text{ gallons/minute}}} \end{aligned}$$

(ii) Can a fully open tap fill a 90-gallon tank in under  $3\frac{1}{2}$  minutes?

You must show all your working.

[2]

Rate of water flow is 26.25 gallons/minute  
so see how much in  $3\frac{1}{2}$  mins

$$26.25 \times 3.5 = 91.875$$

so yes a 90 gallon tank can be filled  
in under  $3\frac{1}{2}$  minutes