

# STANDARD FORM

9. (a) Write **each** of the following numbers in standard form.

(i) 8370000000.

$$8.37 \times 10^9$$

(ii) 0.00059

$$5.9 \times 10^{-4}$$

[2]

- (b) Find, in standard form, the value of

$$(4.7 \times 10^{-5}) \div (8.3 \times 10^{-8}).$$

$$566.265$$

$$5.7 \times 10^2$$

(184-10)

[2]

13. (a) Write **each** of the following numbers in standard form.

(i) 23 million

$$23000000 = 2.3 \times 10^7$$

(ii) 0.00098

$$9.8 \times 10^{-4}$$

[2]

- (b) Find, in standard form, the value of  $(5.4 \times 10^3) \times (3 \times 10^5)$ .

$$1620000000$$

$$= 1.62 \times 10^9$$

[2]

7. (a) Write the number twenty million in standard form.

$$20000000$$

$$2 \times 10^7$$

[1]

- (b) Calculate, giving your answers in standard form correct to 2 significant figures.

(i)  $(4.6 \times 10^{-7}) \times (7.2 \times 10^{14})$

$$3312000000$$

$$= 3.3 \times 10^8$$

[2]

(ii)  $\frac{4.56 \times 10^3}{9.24 \times 10^{14}}$

$$4.9 \times 10^{-12}$$

[2]

16. (a) Write **each** of the following numbers in standard form.

(i) 3500

$$3.5 \times 10^3$$

(ii) 0.3

$$3 \times 10^{-1}$$

[2]

(b) Arrange the following in ascending order.

$3 \times 10^4$

$3 \times 10^{-4}$

$10^2 \times 10^5$

$10^0$

$= 10^7$

$1.$

Smallest

$3 \times 10^{-4}$

$10^0$

$3 \times 10^4$

$10^2 \times 10^5$

Largest  
[2]

9. (a) Write **each** of the following numbers in standard form.

(i) 0.0047

$$4.7 \times 10^{-3}$$

(ii) 32000

$$3.2 \times 10^4$$

[2]

(b) Find, in standard form, the value of

$$(2.1 \times 10^{-5}) \times (3 \times 10^8).$$

$$2.1 \times 3 = 6.3 \times 10^{-5} \times 10^8$$

$$6.3 \times 10^3$$

[2]

(iv)  $3.4 \times 10^3 + 1.2 \times 10^2$

$$3.400 = 3400$$

$$1.20 = 120$$

$$3400 + 120 = 3520$$

$$= 3.52 \times 10^3$$

[2]

9. (a) Write each of the following numbers in standard form.

(i) 5800

$$5.8 \times 10^3$$

(ii) 0.004

$$4 \times 10^{-3}$$

[2]

(b) Find, in standard form, the value of  $\frac{5.6 \times 10^6}{2 \times 10^{-3}}$ .

$$5.6 \div 2$$

$$2.8$$

$$2 \overline{) 5.6}$$

$$10^6 \div 10^{-3} = 10^{6-(-3)} = 10^{6+3} = 10^9$$

$$2.8 \times 10^9$$

[2]

(c) Find the value of  $(8 \times 10^3) - (2 \times 10^3)$ .

$$8000 - 2000 = 6000 = 6 \times 10^3$$

[1]

### NUMERACY STYLE QUESTION

(b) Water flows into the pond at a rate of 50 litres per minute. Complete the following statement by inserting a value written in standard form, correct to 3 significant figures. [4]

'Water flows into the pond at a rate of .....  $\text{m}^3$  per second.'

$$1 \text{ litre} = 1000 \text{ cm}^3$$

$$50 \text{ litres} = 50000 \text{ cm}^3$$

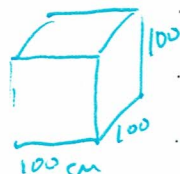
$$1 \text{ m}^3 = 100 \times 100 \times 100 = 1000000 \text{ cm}^3$$

$$\text{Volume in m}^3 \text{ flowing per minute} = 50000 \div 1000000 = 0.05 \text{ m}^3 \text{ per minute}$$

$$0.05 \text{ m}^3 \text{ in 60 sec}$$

$$\text{In 1 second } 0.05 \div 60 = 0.0008333...$$

$$8.33 \times 10^{-4} \text{ m}^3 \text{ per second}$$



CALC  
OK



14.



In the UK, some soft drinks are sold in cans.  
 75% of all these cans are made of aluminium.  
 In 2008, 5 billion aluminium cans were sold.

Given that 1 billion is 1000 million, calculate how many of the cans that were sold in 2008 were **not** made of aluminium.

Give your answer in standard form correct to two significant figures.

$$\begin{array}{l}
 75\% \text{ made of aluminium} = 5\,000\,000\,000 \\
 \text{so } 25\% \text{ not made of aluminium} = 1\,666\,666\,667 \quad (\div 3) \\
 = 1.7 \times 10^9 \text{ cans.}
 \end{array}$$

[5]

