

Fully-Worked Solutions

PRACTICE 2

Section A

1 $0.0654 = 0.065$ (2 s.f.)

Answer: C

2 $0.006018 = 0.00602$ (3 s.f.)

Answer: D

3 $90647 = 90600$ (3 s.f.)

Answer: A

4 6.80 (3 s.f.)

Answer: B

5 $1.74 = 1.70$ (3 s.f.)

Answer: C

6 $(3 - 0.415) \div 50$

$= 2.585 \div 50$

$= 0.0517$

$= 0.052$ (2 s.f.)

Answer: D

7 A $\underline{53\ 149} = 53\ 100$ (3 s.f.)

B $\underline{53\ 162.3} = 53\ 200$ (3 s.f.) ✓

C $\underline{53\ 289} = 53\ 300$ (3 s.f.)

D $\underline{53\ 129.9} = 53\ 100$ (3 s.f.)

Answer: B

8 A $\underline{7950} = 8000$

B $\underline{7982} = 8000$

C $\underline{8034} = 8000$

D $\underline{8051} = 8100$ ✓

Answer: D

9 $6.753 \times 10^{-5} = 0.00006453$

Answer: C

10 $\frac{0.006}{1\ 200\ 000} = \frac{6 \times 10^{-3}}{1.2 \times 10^6}$

$= \frac{6}{1.2} \times \frac{10^{-3}}{10^6}$

$= 5 \times 10^{-9}$

Answer: D

11 $129000 = 1.29 \times 10^5$

Answer: B

12 $3.5 \times 10^{-5} - 0.0000021 = 3.5 \times 10^{-5} - 2.1 \times 10^{-6}$
 $= 3.5 \times 10^{-5} - 0.21 \times 10^{-5}$
 $= 3.29 \times 10^{-5}$

Answer: C

13 $\sqrt{2.5 \times 10^{-9}} = \sqrt{25 \times 10^{-10}}$
 $= 5 \times 10^{-5}$

Answer: B

14 Let the length of each side of the land = x cm

Hence $x^2 = 6.4 \times 10^5$

$x = \sqrt{6.4 \times 10^5}$

$= \sqrt{64 \times 10^4}$

$= 8 \times 10^2$ m

Perimeter of the land = $4x$

$= 4 \times 8 \times 10^2$

$= 32 \times 10^2$

$= 3.2 \times 10^1 \times 10^2$

$= 3.2 \times 10^3$ m

Answer: C

15 Number of tiles = $\frac{30\text{ m} \times 40\text{ m}}{25\text{ cm} \times 25\text{ cm}}$
 $= \frac{3\ 000\text{ cm} \times 4\ 000\text{ cm}}{25\text{ cm} \times 25\text{ cm}}$
 $= 1.92 \times 10^4$

Answer: B

Section B

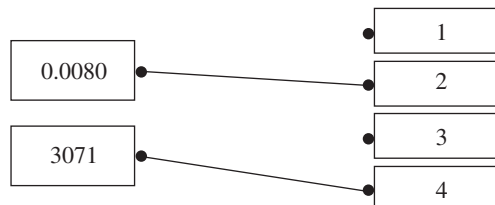
1 (a) (i) 4

(ii) 3

(b) (i) TRUE

(ii) FALSE

2 (a)

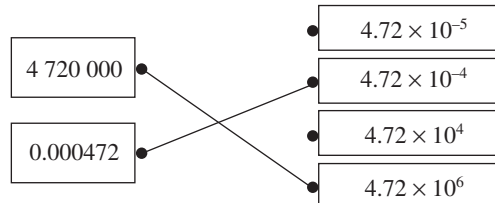


(b)

Number	1 s.f.	2 s.f.
7995	8000	8000

3 (a) 9.11×10^7 8.3×10^{-3}

(b)



4 (a) $59730 = 5.973 \times 10^4$

(b) (i) FALSE

(ii) TRUE

$$\begin{aligned}
 5 \quad (a) \quad & 3.51 \times 10^{-8} - 9.61 \times 10^{-9} \\
 &= 3.51 \times 10^{-8} - \boxed{0.961} \times 10^{-8} \\
 &= \boxed{2.549} \times 10^{-8}
 \end{aligned}$$

- (b) (i) FALSE
(ii) TRUE

Section C

$$\begin{aligned}
 1 \quad (a) \quad & 0.0006905 = 0.00069 \\
 &= 6.91 \times 10^{-4} \\
 (b) \quad & \text{Time} = 30 \text{ minit} \\
 &= 30 \times 60 \text{ s} \\
 &\text{Distance} = \text{speed} \times \text{time} \\
 &= 3 \times 10^8 \times 30 \times 60 \\
 &= 5.4 \times 10^{11} \text{ m} \\
 &= 5.4 \times 10^8 \text{ km} \\
 (c) \quad & F = \frac{5.8 \times 10^{24} \times (2.98 \times 10^4)^2}{1.496 \times 10^{11}} \\
 &= 3.4429 \times 10^{22} \\
 &= 3.44 \times 10^{22} \\
 2 \quad (a) \quad & 4.5 \times 10^{-6} - 0.00000065 = 4.5 \times 10^{-6} - 6.5 \times 10^{-7} \\
 &= 4.5 \times 10^{-6} - 0.65 \times 10^{-6} \\
 &= (4.5 - 0.65) \times 10^{-6} \\
 &= 3.85 \times 10^{-6}
 \end{aligned}$$

$$\begin{aligned}
 (b) \quad \text{Volume} &= \frac{2}{3}\pi r^3 \\
 &= \frac{2}{3} \times \frac{22}{7} \times 12.5^3 \\
 &= 4\,092.26 \\
 &= 4\,090 \text{ cm}^3 \\
 (c) \quad \text{Volume} &= 4 \text{ m} \times 6.5 \text{ m} \times 5 \text{ m} \\
 &= 400 \text{ cm} \times 650 \text{ cm} \times 500 \text{ cm} \\
 &= 130\,000\,000 \\
 &= 1.3 \times 10^8 \text{ cm}^3
 \end{aligned}$$

$$\begin{aligned}
 3 \quad (a) \quad & (i) \quad 7 \\
 & (ii) \quad 4 \\
 (b) \quad & \frac{4.8 \text{ cm}}{450} = 0.0107 \text{ cm} \\
 &= 0.000107 \text{ m} \\
 &= 1.07 \times 10^{-4} \text{ m} \\
 (c) \quad & 1.5 \text{ milicoulomb} = \frac{1.5}{1\,000} \text{ coulomb} \\
 &= 0.0015 \text{ coulomb} \\
 &\text{Number of electrons} \\
 &= \frac{0.0015}{1.602 \times 10^{-19}} \\
 &= 9.3633 \times 10^{15} \\
 &= 9.36 \times 10^{15}
 \end{aligned}$$