Answers

Basic Skills Practice 3

Rounding, Estimating and Significant Figures

1   a) Round 5743.3457 to the nearest hundred. **5700**

      b) A rectangular field is 73.54m by 94.26m. Estimate its area. $70 \times 90 = 6300 \text{ m}^2$

      c) Round 20913.523 to two significant figures. **21,000**

Fractions

2   a) $\frac{5}{8} \times 120 = \frac{5}{2} \times 30 = \frac{150}{2} = 75$

      b) $\frac{2}{5} \div \frac{3}{8} = \frac{2}{5} \times \frac{8}{3} = \frac{16}{15} = 1\frac{1}{15}$

Mixed Numbers

3   a) $27\frac{1}{6} - 18\frac{5}{8} = \frac{163}{6} - \frac{149}{8} = \frac{1304 - 894}{48} = \frac{410}{48} = 8\frac{13}{24}$

      b) $5\frac{10}{11} \times 5\frac{7}{9} = \frac{65}{11} \times \frac{52}{9} = \frac{3380}{99} = 34\frac{14}{99}$

Multiplication

4   a) $82 \times 57 =$ **4674**

      b) $8.4 \times 7.2 =$ **60.48**

      c) $(7.41 \times 10^8) \times (8.43 \times 10^5) = 7.41 \times 8.43 \times 10^8 \times 10^5 = 62.4663 \times 10^{13}$

          $= 6.24663 \times 10^{14}$

Division

5   a) $4572 \div 9 =$ **508**

      b) $6665348 \div 15 = 444{,}356\frac{8}{15}$

      c) $\frac{35 \times 42 \times 24 \times 56}{25 \times 64 \times 32 \times 66} = \frac{7 \times 7 \times 3 \times 7}{5 \times 32 \times 4 \times 22} = \frac{7^3 \times 3}{80 \times 22} = \frac{343 \times 3}{1760} = \frac{1029}{1760}$

Squaring and Cubing Numbers

6   a) $12^2 - 4^3 = 144 - 64 = 80$

      b) $5^3 + 8^2 = 125 + 64 = 189$

Ratio

7   a) Mary, Mungo and Midge split some sweets in the ratio 11:3:6. Mungo got 45 sweets. How many did the others get?

      Mary: $11 \times 15 = 165$

      Midge: $6 \times 15 = 90$

$45 \div 3 = 15$ for one part.

      b) Freda, Bill and Murray split 80 sweets in the proportion 5:2:8. How many more sweets did Murray get than Freda?

$8 + 5 + 2 = 15$; $80 \div 15 = 5\frac{1}{3}$ Murray: $8 \times 5\frac{1}{3} = 42\frac{2}{3}$

      c) Rodney, Raquel and Del raised some money in the proportion of 2:5:8. If Raquel raised £7.20 more than Rodney, how much did the three of them raise altogether?

Raquel − Rodney = 7.20

    5 − 2   = 3

One part = $\frac{7.20}{3} = 2.4$

$2 + 5 + 8 = 15$ altogether.

$2.4 \times 15 = £36.00$

Direct Proportion

8   A is directly proportional to B.
When A is 7, B is 13.
a) Find a formula relating A to B
b) Calculate B when A = 15.
c) Calculate A when B = 39.

Volume

9   a)   A box has the dimensions 8cm by 124cm by 76cm. Calculate the volume of the box.

b)   A sphere has a radius of 56cm. What is the volume of the sphere?

c)   A triangular prism has a cross sectional area of 35cm^2 and a length of 45cm. What is the volume of the prism?

⑧ a) $A \propto B$

$\therefore A = kB$

$\therefore k = \dfrac{A}{B} = \dfrac{7}{13}$

$\therefore A = \dfrac{7}{13} B$

b) $B = \dfrac{13}{7} A$

$= \dfrac{13}{7} \times 15$

$= \dfrac{195}{7}$

$= 27\dfrac{6}{7}$

c) $A = \dfrac{7}{13} B$

$= \dfrac{7}{13} \times 39$

$= 21$

⑨ ⓐ $V = l \times b \times h = 8 \times 124 \times 76 = 75{,}392 \text{ cm}^3$

ⓑ $V_{sphere} = \dfrac{4}{3} \pi r^3 = \dfrac{4}{3} \times 56^3 \times \pi = \dfrac{4}{3} \times 175616 \, \pi$

$= \dfrac{702464}{3} \pi \text{ cm}^3$

$= 234{,}154\dfrac{2}{3} \pi \text{ cm}^3$

$\backsim 735619 \text{ cm}^3$

(to nearest whole no.)

ⓒ $V_{prism} = X \text{ sectional area} \times \text{height} = 35 \times 45 = 1575 \text{ cm}^3$