Answers

Basic Skills Practice

Rounding, Estimating and Significant Figures

1   a) Round 348.967 to the nearest ten. **350**

      b) A rectangular field is 104.56m by 87.36m. Estimate its area. $100 \times 90 = 9000 \, m^2$

      c) Round 2038.9987 to two significant figures. **2000**

Fractions

2   a) $\frac{3}{5} \times 72 = $ **43.2**

      b) $\frac{4}{7} \div \frac{3}{4} = \frac{4}{7} \times \frac{4}{3} = \frac{16}{21}$

Mixed Numbers

3   a) $4\frac{5}{6} + 3\frac{7}{8} = \frac{29}{6} + \frac{31}{8} = \frac{252 + 186}{48} = \frac{438}{48} = \frac{73}{8} = 9\frac{1}{8}$

      b) $6\frac{5}{9} \times 3\frac{2}{3} = \frac{59}{9} \times \frac{11}{3} = \frac{649}{27} = 24\frac{1}{27}$

Multiplication

4   a) $26 \times 16 = $ **416**

      b) $4.3 \times 7.2 = $ **30.96**

      c) $(2.3 \times 10^3) \times (8.1 \times 10^6) = 2.3 \times 8.1 \times 10^3 \times 10^6 = 18.63 \times 10^9$
$$= 1.863 \times 10^{10}$$

Division

5   a) $279 \div 9 = $ **31**

      b) $18291 \div 33 = 554\frac{9}{33} = 554\frac{3}{11}$

      c) $\dfrac{\overset{14}{\cancel{65}} \times 56 \times 91 \times \overset{70}{\cancel{90}}}{\underset{9}{\cancel{81}} \times \underset{2}{\cancel{26}} \times \underset{6}{\cancel{24}}} = \dfrac{5 \times 14 \times 91 \times 70}{9 \times 2 \times 6} = \dfrac{445900}{108} = \dfrac{111475}{27} = 4128\frac{19}{27}$

Squaring and Cubing Numbers

6   a) $3^3 - 2^2 = 27 - 4 = 23$

      b) $7^2 + 4^3 = 49 + 64 = 113$

Ratio

7   a) Mary, Mungo and Midge split some sweets in the ratio 3:7:15. Mungo got 56 sweets. How many did the others get? Mary $3 \times 8 = 24$

$56 \div 7 = 8$ is one part.   midge $15 \times 8 = 120$

      b) Bill and Murray split 300 sweets in the proportion 7:8. How many more sweets did Murray get?

$300 \div (7+8) = 300 \div 15 = 20$ Murray: $8 \times 20 = 160$

      c) Rodney, Raquel and Del raised some money in the proportion of 2:5:8. If Raquel raised £12.60 more than Rodney, how much did the three of them raise altogether?

Rachel – Rodney = £12.60.   Altogether $2+5+8 = 15$;

    $5 \quad - \quad 2 \quad = 3$ $15 \times 4.2 = £63.00$

∴ one part $= \dfrac{12.6}{3} = 4.2$

Direct Proportion

8   A is directly proportional to B.
     When A is 5, B is 9.
     a)   Find a formula relating A to B
     b)   Calculate B when A = 15.
     c)   Calculate A when B = 30.

$$A \propto B$$

(a) $\therefore A = kB$

$$\therefore k = \frac{A}{B} = \frac{5}{9}$$

$$\therefore A = \frac{5}{9}B.$$

(c) $A = \frac{5}{9}B$

$$= \frac{5}{9} \times \overset{10}{\cancel{30}}{}_{3}$$

$$= \frac{50}{3}$$

$$= 16\,{}^{2}\!/_{3}$$

(b) $A = \frac{5}{9}B \quad \therefore B = \frac{9}{5}A = \frac{9}{5}(15) = 27$

Volume

9   a)   A box has the dimensions 35cm by 45cm by 20cm. Calculate the volume of the box.

     b)   A sphere has a radius of 15cm. What is the volume of the sphere?

     c)   A triangular prism has a cross sectional area of 47cm^2 and a length of 60cm. What is the volume of the prism?

a) $35 \times 45 \times 20 = 31{,}500 \text{ cm}^3$

b) $V_{sphere} = \frac{4}{3}\pi r^3$

$$= \frac{4}{3}\pi (15)^3$$

$$= \frac{4}{3} \times 3375 \times \pi$$

$$= 4500\,\pi \text{ cm}^3 \text{ (exact answer)}$$

$$\approx 14{,}137 \text{ cm}^3 \text{ (to the nearest whole number)}$$

c) $Volume_{prism} = X \text{ sectional area} \times \text{length}$

$$= 47 \times 60$$

$$= 2{,}820 \text{ cm}^3$$