

9 a	Number of years, n	0	1	2	3	4
	Value, y	3000	3100	3200	3300	3400

b Graph plotted from the table of values; points joined with a line.

c 3.5 years

10 C

11 a Sam is correct. Exterior angle $\times$ number of sides = constant, so if number of sides is doubled exterior angle is halved

b 18°

12 148

13 1 hour 45 minutes

11 Unit test

1 $4u = u + 20a$ [1]

$3u = 20a$ [1]

$a = \frac{3u}{20}$ [1]

2 a speed = $100 \div 7.19$ [1] = 13.9 m/s (3 s.f.) [1]

b $13.9 \div 1000 \times 60 \times 60$ [1] = 50.1 km/h (3 s.f.) [1]

3 $P = \frac{7}{\pi \times 0.04^2}$ [3] [1 mark for 0.04 seen] = 1392.6 N/m² (1 d.p.) [1]

4 Area of cross-section = $\frac{1}{2}(12 + 8) \times 6 = 60 \text{ cm}^2$ [1]

Volume of prism = $60 \times 20 = 1200 \text{ cm}^3$ [1]

Mass = 5×1200 [1] = 6000 g [1] = 6 kg [1]

5 a $45 = 20k$ [1]

$k = 45 \div 20 = 2.25$ [1]

$D = 2.25t$ [1]

b $D = 2.25 \times 48 = 108$ [1]

c $12 = 2.25t$ [1]

$t = 5.33$ (3 s.f.) [1]

6 a $\pounds 12\,000 \times 0.25 = \pounds 3000$; $\pounds 12\,000 - \pounds 3000 = \pounds 9000$ [1]

$\pounds 9000 \times 0.25 = \pounds 2250$; $\pounds 9000 - \pounds 2250 = \pounds 6750$

$\pounds 6750 \times 0.25 = \pounds 1687.50$; [1] $\pounds 6750 - \pounds 1687.50 = \pounds 5062.50$ [1]

OR $\pounds 12\,000 \times (0.75)^3$ [2] [1 for $n = 2$ or 4] = $\pounds 5062.50$ [1]

b $0.8 \times 0.8 \times 0.8 \times 0.8$ or 0.8^4 [1] = 0.4096 [1]

7 950×0.96^6 [2] [1 for 0.96 seen] = $\pounds 743.62$ [1]

8 a $5 = \frac{k}{8}$ [1]

$k = 40$ [1]

$P = \frac{40}{A}$ [1]

b $P = \frac{40}{2} = 20$ [1]

9 $4000 \times 0.038 = 152$ [1], $152 \times 0.2 = 30.40$ [1], $4000 + 152 - 30.40 = 4121.6$ [1]

$4121.6 \times 0.038 = 156.62$, $156.62 \times 0.2 = 31.32$, $4121.6 + 156.62 - 31.32 = \pounds 4246.90$ [1]

10 a $\pounds 8000 \times 0.05 = \pounds 400$; $\pounds 8000 + \pounds 400 = \pounds 8400$ [1]

$\pounds 8400 \times 0.05 = \pounds 420$; $\pounds 8400 + \pounds 420 = \pounds 8820$

$\pounds 8820 \times 0.05 = \pounds 441$; [1] $\pounds 8820 + \pounds 441 = \pounds 9261$ [1]

OR $\pounds 8000 \times (1.05)^3$ [2] [1 for $n = 2$ or 4] = $\pounds 9261$ [1]

b A [1]

c $3885 = \text{original amount} \times 1.05$ [1] [or 1 for 1.05 or 105 seen]

original amount = $3885 \div 1.05$ [1] = $\pounds 3700$ [1]

Sample student answers

Student B gives the better answer as they have written a sentence at the end answering the question. It is also easier to follow Student B's working as they have labelled their working as 'International Bank' and 'Friendly Bank'.