Percentages – Marking Scheme

1.

344 580.48	P1	for a start to the process to find the initial investment eg 344 605 ÷ 1.025 oe (= 336 200) **or** for 1.025^3 (= 1.07689….)	
	P1	for complete process to find original investment, eg 344 605 ÷ 1.025^3 oe (= 319 078 to 320 265)	
	P1	for [initial investment] × 1.02^2 × 1.035 oe	[initial investment] must be clearly what they believe to be that and cannot be 344605
	A1	for answer in the range 343 587 to 344 581	

2.

580	M1	for method to find value before increase eg 551 ÷ 0.95	
	A1	cao	
6354.67	M1	for 6000 × 1.024 oe (= 6144)	
	M1	for "6144" × 1.017^2 oe	6000 × 1.024 × 1.017^2 scores M2
	A1	for 6354.66 **or** 6354.67 **or** 6354.68	If correct answer is stated then subsequently rounded isw and award 3 marks If correct answer stated and then interest only given as the answer award M2A0

3.

(a)	100 : 81	M1	for a scale factor of 0.9 oe used; **OR** for 10 : 9 oe **OR** 81 : 100 oe **OR** 81%	
		A1	for 100 : 81 oe	eg. 1 : 0.81, accept 1.23(4...) : 1
(b)	6 : 5	P1	for 1.44 oe used as the scale factor **or** 1.2 oe **OR** for 144 : 100 oe or $\sqrt{144} : \sqrt{100}$ oe **OR** 5 : 6 oe	
		A1	for 6 : 5 oe	eg 1.2 : 1, accept 1 : 0.83(3...)

4.

12272.70 12272.71 or 12272.72	M1	for evidence of using a correct first step eg 200000 × 0.015 (= 3000) or 200000 × 1.015 (= 203000)	
	M1	for evidence of a compound interest method eg 203000 × 0.015 (= 3045) or 203000 × 1.015 (= 206045) **or** 206045 × 0.015 (= 3090.675) or 206045 × 1.015 (= 209135.675) **or** 209135.675 × 0.015 (= 3137.035...) or 209135.675 × 1.015 (212272.710...) **or** 200000 × 1.015^t, $t \geq 2$	values may be rounded or truncated to 2 dp
	A1	for 12272.7(0) or 12272.71 or 12272.72 SC B2 for 212272.7(0) or 212272.71 or 212272.72	

5.

260 to 260.5	M1	for 883 – 245 (=638) **or** 883 ÷ 245 (=3.60..) **or** 883 ÷ 245 × 100 (=360(.408...)) oe
	M1	for a complete method to find the percentage increase eg "638" ÷ 245 × 100 (=260(.408..)) **or** 883 ÷ 245 × 100 − 100 (=260(.408..)) oe
	A1	Accept answers in the range 260 to 260.5

6.

£6 − £5.64 = 36p or 50p – 47p = 3p	6.4	P1	for a strategy to compare the same number of bottles e.g. £5.64 ÷ 12 (= 47 or 0.47) or 12 × 50p (= 6 or 600) or 36 or 0.36 or 3 or 0.03
		P1	for start of process to find percentage profit e.g. $\frac{"36"}{564}$ or $\frac{"3"}{"47"}$ or $\frac{"6"}{5.64}$ or $\frac{50}{"47"}$ oe with consistent units
6.3829787…%		A1	for answer in the range 6.3 to 6.4

7.

Answer	Mark	Notes
15	P1	for a process to find the interior or exterior angle of a regular 12 sided polygon e.g. $\frac{10\times180}{12}$ (= 150) or $\frac{360}{12}$ (= 30), must be no contradictions
	P1	for process to find angle *STR*, eg $\frac{180-"150"}{2}$ or $\frac{"30"}{2}$
	A1	cao
58600	M1	for a complete method, eg 50000 × 1.02^8 (= 58582(.969...)) or for finding the increase in value of the company after 8 years, eg 8582(.969...) or 8600
	A1	cao
4.5	P1	for a process to find multiplier for 6 year period, eg 325 ÷ 250 oe (= 1.3) or 130(%) or for 250000 × y^6 = 325000
	P1	for a process to find multiplier for one year, eg $("1.3")^{\frac{1}{6}}$ or 1.044…or 1.045
	A1	4.4 – 4.5

8.

5	M1	evaluates $(0.85)^n$ or $12\,500 \times (0.85)^n$ for at least one value of n
	A1	cao
2.4	P1	for a process to find the amount of interest before tax, eg $79.20 \div 0.6$ (= 132)
	P1	for a process to find value of R, eg "132"÷5500×100
	A1	cao