PERCENTAGE CHANGE

Pearson Edexcel - Tuesday 19 May 2020 - Paper 1 (Non-Calculator) Higher Tier

1.

5	20	P1 P1 A1	for process to find SP of 24 chocolate bars, eg. 0.50×24 (= 12) oe **or** for process to find the overall profit eg $(24 \times 0.5) - 10$ (= 2) **or** for process to find CP of one chocolate bar, eg. $1000 \div 24$ (= 41.66…) oe (dep) for start to a process to find percentage profit, eg. using $\frac{"12"-10}{10}$ **or** $\frac{"12"}{10}$ **or** $\frac{50-"41.66..."}{"41.66..."}$ oe with consistent units cao	Working can be carried out in either pounds or pence.

Pearson Edexcel - Tuesday 19 May 2020 - Paper 1 (Non-Calculator) Higher Tier

2.

18	20	P1 P1 A1	for a statement of proportionality eg $x = k\sqrt{y}$ **or** 1.44 oe for using $\sqrt{1.44}$ as multiplier eg $(x_2 =) k\sqrt{1.44y}$ **or** 1.2 oe cao	Must be written in the form of an equation with a constant term, accept $x \propto k\sqrt{y}$

Pearson Edexcel - Monday 12 November 2018 - Paper 3 (Calculator) Higher Tier

3.

2	260 to 260.5	M1 M1 A1	for 883 – 245 (=638) **or** 883 ÷ 245 (=3.60..) **or** 883 ÷ 245 × 100 (=360(.408...)) oe for a complete method to find the percentage increase eg "638" ÷ 245 × 100 (=260(.408..)) **or** 883 ÷ 245 × 100 − 100 (=260(.408..)) oe Accept answers in the range 260 to 260.5	

Pearson Edexcel - Tuesday 12 June 2018 - Paper 3 (Calculator) Higher Tier

4.

9 (a)	4.52×10^3	M1	for $2.04.... \times 10^7$ oe eg $2.04....\times 10^{-5} \div 10^{-12}$ or $20.4... \times 10^6$ or 204(08163.27) **or** for correct value of T, 4517.(53....), not written in standard form, eg 4520	May be given correct to 3 sig figs or more
		A1	for answer in the range 4.51×10^3 to 4.52×10^3 (SC B1 for $6.32...\times 10^{-1}$)	
(b)	Explanation	M1	for method to find the scale factor or decreased value in T, eg $\sqrt{\frac{1.1}{1.05^3}}$ (= 0.97.....) oe or $\sqrt{\frac{5.6\times 10^{-5}\times 1.1}{(1.4\times 10^{-4}\times 1.05)^3}}$ (= $4.40....\times 10^3$) oe	Award mark for a correct method to calculate the scale factor or the percentage increases in w and d^3 or the decreased value of T
		C1	(dep M1) for explanation eg value of scale factor less than 1, so a decrease in T **OR** compares $4.40...\times 10^3$ with their value of T from (a) provided answer to (a) is greater	This mark may only be awarded if supported by numerical evidence

Pearson Edexcel - Monday 6 November 2017 - Paper 2 (Calculator) Higher Tier

5.

13 (a)		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
(b)		4.5	P1	for a process to find multiplier for 6 year period, eg $325 \div 250$ oe (= 1.3) or 130(%) or for $250000 \times y^6 = 325000$
			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

Pearson Edexcel - Specimen Papers Set 1 - Paper 2 (Calculator) Higher Tier

6.

15		18.3	P1 P1	for a start to the process interpreting the information correctly, eg. $T = k\sqrt{L}$ oe for a correct scale factor of $\sqrt{1.4}$
			A1	for 18.3 to 18.4

Pearson Edexcel - Sample Paper 1 - (Non-Calculator) Higher Tier

7.

15		No with reason	C1	Starts to formulate reason eg. No with partial explanation or 0.8×0.7 or starts to use figures
			C1	No with full explanation eg. $0.8 \times 0.7 = 0.56$ so only 44% reduction

Pearson Edexcel - Friday 6 November 2015 - Paper 2 (Calculator) Higher Tier

8.

14	(a)		76	3	M1 for 89% = 68 M1 for 68 ÷ 0.89 oe A1 for 76 – 76.41
	(b)		11.8	2	M1 for (68 – 60) ÷ 68 × 100 oe A1for 11.7 - 12

Pearson Edexcel - Thursday 8 November 2012 - Paper 2 (Calculator) Higher Tier

9.

16		$\frac{64.8-59.3}{64.8}\times 100$ (=8.487...) **OR** $\frac{59.3}{64.8}\times 100 = 91.512$ 100 – '91.512' =8.487...)	8.49	3	M1 64.8 – 59.3 (=5.5) M1 (dep) $\frac{'5.5'}{64.8}\times 100$ oe A1 8.48 – 8.49 **OR** M1 $\frac{59.3}{64.8}\times 100$ oe (= 91.5(12...)) M1 (dep) 100 – '91.5' A1 8.48 – 8.49 **OR** M1 $\frac{59.3}{64.8}$ (=0.915(12...)) M1 (dep) 100 × (1 – '0.915') A1 8.48 – 8.49

OCR GSCE – Thursday 5 November 2020 – Paper 5 (Non-Calculator) Higher Tier

10.

10			90 with correct working	**5**	**M4** for 36 ÷ (0.8 × 0.5) **oe** or **M3** for 0.4[*t*] [= 36] **oe** or **M2** for 0.8 × 0.5 [*t*] [= 36] **oe** OR **M1** for 36 ÷ 0.8 **oe** or 36 ÷ 0.5 **oe** **A1** for 45 or 72 **M1** for *their* 45 ÷ 0.5 **oe** or *their* 72 ÷ 0.8 **oe** If 0 scored, **SC1** for answer 90 with no working	"Correct working" requires evidence of at least M3 or M1A1M1 or alternate convincing method where [Thurs =] *t* A1 implies previous M1

OCR GSCE – Thursday 7 November 2019 – Paper 5 (Non-Calculator) Higher Tier

11.

4			12	**3**	**M2** for $\frac{250-220}{250}[\times 100]$ **oe** or $\frac{220}{250}\times 100$ **oe** or **M1** for $\frac{220}{250}$ **oe** or 250 - 220	M2 implied by 0.12 or 88[%] M1 implied by 0.88 or 30

OCR GSCE – Tuesday 11 June 2019 – Paper 6 (Calculator) Higher Tier

12.

10			[0].88% [increase] <u>Alternative method</u> The two answers are different oe dep on **B5**	**6**	**B5** for 1.0088 or [0].0088 seen or **B4** for 1.0088x where x is any letter or **M4** for $k \times 1.04 \times [0].97 \div k$ oe or $(k \times 1.04 \times [0].97 - k) \div k$ oe or **M3** for $k \times 1.04 \times [0].97$ oe or **M2** for $k \times 1.04$ oe or $k \times [0].97$ oe or **M1** for 1.04 or [0].97 or 4% of k found or 3% of k found If **0** scored then **SC3** for figs 10088 or 88 seen <u>Alternative method</u> **B5** for correct answers to both $k \times 1.04 \times [0].97$ and $k \times 1.01$ OR **M3** for $k \times 1.04 \times [0].97$ oe or **M2** for $k \times 1.04$ oe or $k \times [0].97$ oe or **M1** for 1.04 or [0].97 or 4% of k found or 3% of k found and **M1** for $k \times 1.01$ oe	accept [0].9% increase after 1.0088 found For M marks, k is any seen starting value or a letter. eg **M4** for $1.04 \times [0].97$ as k assumed to be 1. eg **M3** for $104 \times [0].97$ as k assumed to be 100. **M2 or M1** may be embedded in an incorrect calculation, or in stages eg **M2** for $\underline{k} \times 1.4 \times \underline{[0].97}$ eg **M1** for $k \times 1.4 \times \underline{[0].03}$ <u>Alternative method</u> Answers to these calculations must be checked

OCR GSCE – Thursday 8 November 2018 – Paper 5 (Non-Calculator) Higher Tier

13.

7			2000	**3**	**M2** for $2400 \div \frac{100+20}{100}$ **oe** or **M1** for 1.2(0) **oe seen** or for 2400 associated with 120[%]	

OCR GSCE – Thursday 8 November 2018 – Paper 5 (Non-Calculator) Higher Tier

14.

11			He has subtracted the two percentages **oe** or He used the same price for both percentages **oe** Increase of 4 [%]	**1** **5**	 **B4** for answer 104% or for 1.04 **seen** or **M3** for [$k \times$] 0.8×1.3 **oe** OR **M1** for 0.8 used correctly **oe** **M1** for 1.3 used correctly **oe**	e.g. He does not calculate 30% of the sale price. He calculates 30% of the original price For 5 marks, condone 'increase' omitted Allow method marks if contained in correct method involving any invented starting price e.g. **M3** for $400 \times 0.8 \times 1.3$ **oe**

OCR GSCE – Thursday 7 June 2018 – Paper 5 (Non - Calculator) Higher Tier

15.

6			60	**4**	**B3** for [Feb =] 400 or **M2** for $460 \div \left(\frac{100+15}{100}\right)$ **oe** or **M1** for 115% **oe**	400 as answer implies B3 e.g. 1.15, $\frac{23}{20}$

OCR GSCE – Sample Papers – Paper 4 (Calculator) Higher Tier

16.

15			20 [decrease](%)	**4** **1 AO1.1** **1 AO1.3b** **2 AO3.1d**	**M1** for pV = constant **oe** **M1** for $p_{initial}V_{initial} = p_{after}V_{after}$ **oe** **M1** for $1 \times 1 = p_{after} \times 1.25$ **oe**	

AQA GSCE – Thursday 4 June 2020 – Paper 2 (Calculator) Higher Tier

17.

14	**Alternative method 1**		
	6500×1.05 or 6825	M1	oe eg $6500 + 0.05 \times 6500$ or $6500 + 325$ may be implied eg 7475
	6500×1.05^3 or 7524.(...) or 7525	M1dep	oe eg their 6825×1.05 or 7166.25 and their 7166.25×1.05 6825×1.05^2 is M2
	7524.(...) and Yes or 7525 and Yes	A1	oe eg 7524.(...) which is more than 7500
	Alternative method 2		
	1.05^3 or 1.157... or 1.158 or 1.16 or $\frac{7500}{6500}$ or 1.15(3...) or 1.154	M1	oe
	1.05^3 or 1.157... or 1.158 or 1.16 and $\frac{7500}{6500}$ or 1.15(3...) or 1.154	M1dep	oe
	1.157... or 1.158 or 1.16 and 1.15(3...) or 1.154 and Yes	A1	

Additional Guidance is on the next page

14 cont	**Additional Guidance**	
	Working is implied by a correct value 7524.(…) and Yes with no working 7525 and Yes with no working 7524.(…) with no working 7525 with no working	 M1M1A1 M1M1A1 M1M1A0 M1M1A0
	7525 > 7500	M1M1A1
	7525 < 7500	M1M1A0
	For year on year working allow truncation/rounding eg 6825 × 1.05 = 7166 7166 × 1.05 = 7524.30 Yes	 M1 M1A1
	Increasing by 5% four or more times can score a maximum of M1M1A0	
	Increasing by 5% two times can score a maximum of M1M0A0	
	Do not allow misreads of 5%	

AQA GSCE – Tuesday 6 November 2018 – Paper 1 (Non - Calculator) Higher Tier

18.

10	**Alternative method 1**		
	280 – 80 or 200	M1	
	their 200 ÷ 80 (× 100) or 2.5 (× 100)	M1dep	oe
	250	A1	
	Alternative method 2		
	280 ÷ 80 or 3.5	M1	oe
	280 ÷ 80 × 100 (– 100) or their 3.5 × 100 (– 100) or 350 (– 100) or (their 3.5 – 1) (× 100) or 2.5 (× 100)	M1dep	oe
	250	A1	

AQA GSCE – Monday 12 November 2018 – Paper 3 (Calculator) Higher Tier

19.

8	**Alternative method 1**		
	(600 ×) 0.8 or 480	M1	oe
	600×0.8^2 or 384 or 600×0.8^3 or 307.2(0) or 600×0.8^4 or 245.76 or 600×0.8^5 or [196, 197]	M1dep	
	[196, 197] and incorrect	A1	oe eg 196.61 and no 196.61 still owed
	Alternative method 2		
	600 × 0.2 or 120	M1	oe
	120 × 0.8 or 96 or 96 × 0.8 or 76.8(0) or 76.8(0) × 0.8 or 61.44 or 61.44 × 0.8 or [49.15, 49.16]	M1dep	oe eg (600 – 120) × 0.2 or 480 × 0.2
	[403, 404] and incorrect	A1	oe eg paid off 403.39(2)
	Alternative method 3		
	0.8	M1	
	0.8^5 or 0.327 68 or 0.3277 or 0.328 or 0.33	M1dep	
	0.327 68 (or 0.3277 or 0.328 or 0.33) and incorrect	A1	oe
	Additional Guidance		
	Ignore units		
	Full marks can be awarded for a correct explanation eg 120 and 96 calculated with a comment 'as soon as the payment is below 120 a month it cannot be paid off in five months'		

AQA GSCE – Tuesday 12 June 2018 – Paper 3 (Calculator) Higher Tier

20.

9	1.1 seen or 110% = 19.25 seen or 19.25 ÷ 110	M1	oe eg 10% = 1.75 1% = 0.175
	19.25 ÷ 1.1 or 0.175 × 100 or 17.5	M1dep	oe
	17.50	A1	correct money notation
	Additional Guidance		
	Condone £17.50p		M1M1A1
	Answer £17.5		M1M1A0