Question			Answer	Marks	Part marks and guidance	
1			3×5^2 **oe**	2	**B1** for only 3 and 5 or **M1** for any correct factor pair of 75	Condone inclusion of 1 for B1 Not 1 and 75
2	(a)		2.5 **oe**	2	**M1** for $4x = 13 - 3$ or for $x + \frac{3}{4} = \frac{13}{4}$	Accept $\frac{10}{4}$ or $\frac{5}{2}$ isw Embedded answer scores M1 max
2	(b)		$12x + 7$ final answer	3	**M1** for $10x + 15$ **M1** for $2x - 8$	
3	(a)		5	2	**B1** for 225 [min] or for 0.75 and 3.75 **oe** seen	
3	(b)		$\frac{9}{9+16}$ [x k] or $\frac{16}{9+16}$ [x k] **oe** or better Correct method to convert *their* fraction to a percentage or a fraction with 100 as denominator or a decimal or correct method for 60% of 25 64[%] or 15 or a pair of other correctly calculated comparative values with a correct conclusion and no error seen	**M1** **M1** **A1**	or [60% =] 0.6 **oe** or $0.6 \times k$ **oe** eg 64 > 60 64%, so Reece is correct	Where k is a chosen value implied by 64, 0.64, $\frac{64}{100}$, 15 and all imply previous M1 k is same value as used previously. Same k must be used in both parts to get this second mark accept 0.64 and 0.6[0], $\frac{64}{100}$ and $\frac{60}{100}$ or equivalent fractions with same denominator or with correctly evaluated values from using k

Question			Answer	Marks	Part marks and guidance	
4	(a)		Correctly completes table 7 6 7	1		
4	(b)	(i)	$\frac{13}{25}$ **oe**	2	**B1FT** for *their* correct numerator **B1** for fraction with denominator 25	In (b)(i) and (ii), not ratio or words, eg $\frac{13}{25}$, likely but not $\frac{13}{25}$, unlikely isw cancelling/conversion to other forms FT numerator 12 + any evens in *their* (a)
4	(b)	(ii)	$\frac{14}{25}$ **oe**	2	**FT** *their* correct numerator / 25 **B1FT** for *their* correct numerator but denominator incorrect	FT numerator 13 + any multiples of 3 or 4 in *their* (a)

Question			Answer	Marks	Part marks and guidance	
5			5.6[0] with correct working	6		"Correct working" requires full evidence of M1A1 AND M1 or convincing pictoral/alternate convincing approach For method accept equivalent decimals or percentages (to 2 sf)
					M2 for $\left(\frac{1}{3}+\frac{2}{5}\right)\times 10$ **oe**	M2 could be split into $\frac{1}{3}\times 10+\frac{2}{5}\times 10$
					or **M1** for $\frac{1}{3}\times 10$ or $\frac{2}{5}\times 10$	The method may be shown pictorally
					A1 for $\frac{110}{15}$ **oe** or	For A1 eg 7⅓ , accept 4 + 3⅓ oe , 733[..]% A1 implies M2
					M1 for $\frac{1}{3}+\frac{2}{5}$ **oe**	The method may be shown pictorally
					A1 for $\frac{11}{15}$ **oe**	Implies M1
					AND	
					M1dep for *their* improper fraction/decimal/mixed number rounded up to next integer	Dep on their improper fraction ≠ integer Must show a more accurate value first, could be in two parts eg 4 + 3⅓ then 8
					M1 for *their* integer multiplied by 70 or 0.7	This may be earned by those with wrong working then doing eg 8 x 0.7. Must see a calculation implying an integer × 70 or 0.7, could be in several parts
					If 0 scored, **SC1** for answer 5.6[0] or 5.6	

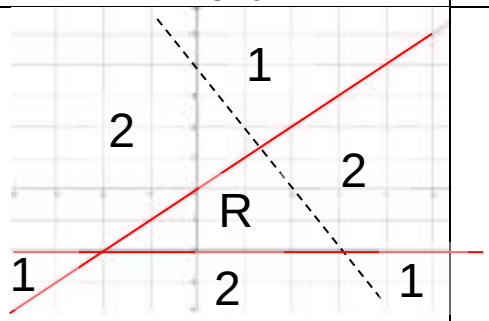
Question			Answer	Marks	Part marks and guidance	
6			6 with correct working	5		"Correct working" requires evidence of at least B2 AND B1 or alternate convincing approach
					B2 for 40 [LCM] identified or **M1** for multiples of 8 and 20 up to at least 40	eg attempts to count in 40 May be seen as clock times eg 0808, 0816, 0824,… 8.20, 8.40, 9.00,… condone 1 error in either list FT other values Accept also if starting from 0801
					AND	
					B2 for indicates 40, 80, 120, 160, 200, 240	Implies previous B2 Accept as times [0800], 8.40, 9.20, 10.00, 10.40, 11.20, 12.00 Condone [0801], 8.41, 9.21, 10.01, 10.41, 11.21, 12.01
					or **B1** for [time =] 269 **oe** or 270 **oe** **M1** for *their* time ÷ 40 **oe**	eg Accept 4 hours 30 mins For M1 accept 4 correct multiples of 40 listed condone 1 error FT other values Accept as times as above
					If 0 scored, **SC1** for answer 6	

Question			Answer	Marks	Part marks and guidance	
7			C (24, 9) D (10, 2)	5	**B4** for three correct ordinates or **B3** for two correct ordinates or **B2** for one correct ordinate from 24, 10, 2 or for longer length of triangle = 7 **soi** or **B1** for 9 as *y*-coordinate for C or for shorter length of triangle = 3 **soi** OR **M1** for long = 17 – 4 – 2 × *their* short **oe** **A1FT** for C ((4 + 2 × *their* short + 2 × *their* long) , 9) **A1FT** for D (4 + 2 × *their* short , 9 – *their* long)	For part marks, check ordinates first (may be on diagram if answer line blank). If B2 or fewer check alt method and mark to candidates' advantage B4, B3, B2, B1 May be on diagram For M1 and A1FT, *their* short and *their* long needs to be clear in working or on diagram
8			For Monday, does not rain should be 1 – 0.55 **oe** For Tuesday, 0.25 is incorrectly placed on the does not rain branch **oe** A pair of branches is missing for Tuesday after does not rain on Monday **oe**	3	**B1** for each	After each correct statement isw eg 0.55 + 0.35 does not equal 1 Monday not rain should be 0.45 eg For Tuesday the probabilities are placed the wrong way around 0.25 should be on the rain branch eg There should be two more branches for Tuesday See AG

Question			Answer	Marks	Part marks and guidance	
9			Angle ABD = Angle CDB (alternate) BD is common **oe** AB = CD given **oe** SAS so triangles are congruent and Angle DAB = angle BCD	**M3** **A1**	**M2** for 2 correct statements with reason[s] or 3 correct but no/incorrect reason[s] **M1** for 1 correct statement with reason or 2 correct but no/incorrect reasons If 0 scored, **SC1** for any attempt to prove congruency	Not alternative angles Accept BD = BD, BD is shared Accept same length oe for 'given' eg attempt to list pairs of equal sides or equal angles (2 or more even if incorrect)
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
11	(a)		$\frac{1}{4}$ or 0.25	2	**B1** for 4 in answer or answer $\frac{1}{n}$ (*n* is an integer > 1) or answer – 4	For B1 accept decimal equiv provided $\frac{1}{n}$ seen first

Question			Answer	Marks	Part marks and guidance	
11	(b)		$3\sqrt{2}$ final answer	2	**B1** for $\sqrt{18}$ or [$\sqrt{6} =$]$\sqrt{3} \times \sqrt{2}$	Accept eg 3 × $\sqrt{2}$ as final answer for 2 marks
12	(a)		She has reduced the price by 10% **oe** 18 050	B1 B3	 **M2** for 20 000 × 0.95^2 **oe** or **B1** for 1000 or 19 000 **seen**	e.g. She has decreased by 1000 each year She took 10%/ found 90% [of 20 000] See AG
12	(b)	(i)	20 000 × 0.95^n **oe**	2	**M1** for 0.95 **oe** or for 20 000 × k^n ($k \neq 0$)	
12	(b)	(ii)	Second graph indicated	1		
13	(a)		Correct sketch with max at (90, 1) and min at (270, –1) and crossing *x*-axis at 0, 180 and 360	2	**M1** for correct shape starting at (0, 0) but inaccurate at roots and max/min. Needs at least one cycle, but may have more than one.	Mark intention
13	(b)		120 300	1 1	 **FT** *their* 120 + 180	 For FT both must be in range 0 to 360
14	(a)		$12a^{\frac{5}{2}}$ **oe** final answer	2	**B1** for $ka^{\frac{5}{2}}$ **oe** or $12a^k$ ($k \neq 0$)	For B1 accept 12*a*
14	(b)		$8a^{15}$ final answer	3	**B2** for $8a^5$ or $\frac{8a^6}{a^{-9}}$ or ka^{15} ($k \neq 0$) or **B1** for ka^5 or $\frac{ka^6}{a^{-9}}$ or 8 **seen** ($k \neq 0$)	

Question			Answer	Marks	Part marks and guidance	
15			–7.5 or $-7\frac{1}{2}$ or $-\frac{15}{2}$	3	**M1** for $x = 5(x + 6)$ **M1** for $x - 5x = 30$ **oe** FT *their* first step	Condone $-\frac{30}{4}$ as final answer Embedded answer scores M2 maximum
16	(a)		Refers to overlapping intervals	1		eg 10 could go into 2 intervals The same number can go in 2 places Upper value in interval should be < Both inequalities are ≤ when only one should be
16	(b)	(i)	5 × 6 and 2 × 20	2	**M1** for 5 × 6 or 2 × 20	Could be written on graph Allow eg 2 × 10 + 2 × 10 for 2 × 20 Not just 30 + 40, must show products
16	(b)	(ii)	50.25 with correct working	5	**B1** for frequencies 10, 20, 30, 40 **M1** for mid-interval values 35, 42.5, 47.5, 60 **soi** **M1** for $\sum ft$ where *t* is in the interval including boundaries FT *their* frequencies **M1** for $\sum ft \div \sum f$ dep on previous M1 FT *their* frequencies If 0 scored, **SC2** for answer 50.25 or **SC1** for 5025 with no working	"Correct working" requires evidence of at least B1M1M1 Condone 1 error, could be on graph, Condone 1 error 10 × 35 + 20 × 42.5 + 30 × 47.5 + 40 × 60 350 + 850 + 1425 + 2400 [= 5025]

Question			Answer	Marks	Part marks and guidance	
17				5	**B2** for $y = 4 - 2x$ broken line or **B1** $y = 4 - 2x$ solid line AND **B1FT** for R correct side of $y = 4 - 2x$ **B1** for R correct side of $y = -2$ **B1** for R correct side of $y = x$	See marks on diagram for next 3 marks Grid assumes $y = 4 - 2x$ is correct FT dep on sloping line drawn
18	(a)		5000	4	**M2** for $2.5 \times \frac{1}{2} \times 80 \times 100 \times \sin 30$ **oe** or **M1** for $\frac{1}{2} \times 80 \times 100 \times \sin 30$ **oe** **B1** for sin 30 = $\frac{1}{2}$ **oe soi**	Area of triangle = 2000 implies M1B1
18	(b)		Conditions for growing may have been different in 2019 **oe**	1		e.g. extremes in weather oe disease in the carrots oe 2019 may not have been an “average” year oe 2019 may not have harvested the same number as other years Assumes the same amount will grow [in 2019]
19	(a)		$(x - 5)^2 - 3$ final answer	3	**B1** for $(x - 5)^2$ **B2 FT** for -3 or **M1** for $22 - (-5)^2$ **oe**	M1 FT $22 - (\textit{their} -5)^2$ oe

Question			Answer	Marks	Part marks and guidance	
19	(b)		Correct sketch with TP at (5, −3) in 4th quadrant and *y* – intercept at (0, 22)	4	FT *their* (a) for TP **M1** for U shaped curve **B2FTdep** *their* (a)for TP at (5, –3) in correct quadrant or **B1FTdep** for turning point at (*k*, –3) or (5, *k*) **soi** FT for B2 or B1 dep on answer of form $(x - a)^2 - b$ in part (a), $a, b \neq 0$ **B1** for *y* – intercept at 22 indicated	Be generous for the U shape condone broken line Values for *y* - intercept and TP must be shown but could be marked on axes. Mark intention Accept turning point = (5, –3)FT written in working provided no contradiction on sketch If point (5, –3)FT only plotted on graph in 4th quadrant and no sketch then B2 only
20			144 with correct working	7	**B2** for [AD =] 10, [AB =] 24, [DC =] 12 and [BC =] 10 or **M1** for 56 ÷ (5 + 12 + 6 + 5) **oe** AND **M2** for $h^2 + 6^2 = 10^2$ or ref to 3, 4, 5 or 6, 8, 10 triangle or **B1FT** for deducing perpendicular from D to AB is 6 cm from A (or B) **A1** for height = 8 AND **M1** for $\frac{8}{2}(12 + 24)$ or better If 0 scored **SC2** for answer 144 with no working or **SC1** for height = 8 with no working	"Correct working" requires evidence of at least B2 AND M2 AND M1 Could be written on diagram For M2 FT *their* BC and ½ (AB – DC) used condone $h^2 + 3^2 = 5^2$ (using ratio values) FT ½ (*their* AB – *their* DC) FT *their* AB, CD and *h* provided *h* is not *their* AD or 5