EXPERT TUITION

Maths Questions By Topic:

Ratio, Proportion & Rates of Change

Mark Scheme

Edexcel GCSE (Foundation)

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Question	Answer	Mark	Mark scheme	Additional guidance
1	Yes, supported by correct working	P1	for 36 : 48 oe **OR** $\frac{36}{84}$ oe **or** $\frac{48}{84}$ oe	Relating to drama group 1
		P1	for $\frac{4}{7}$ **or** 3 : 4 oe (for group 2) **OR** ($\frac{36}{84}=\frac{3}{7}$) **or** ($\frac{48}{84}=\frac{4}{7}$) **or** 84 × 3 ÷ 7 (= 36 boys) **or** 84 × 4 ÷ 7 (= 48 girls) **or** *N* × 3 ÷ 7 and *N* × 4 ÷ 7	Relating to drama group 2 *N* can be any number (other than 84) of students in the 2nd group
		A1	for Yes with both ratios 3 : 4 oe **or** for a correct pair of fractions and stating they are equivalent.	Both equivalent forms of the ratios (fractions) must be the same "Yes" may be implied from working

Question	Answer	Mark	Mark scheme	Additional guidance
2	3.3(0)	P1	for a process to find cost of 1 kg of carrots, eg 1.80 ÷ 3 (= 0.60)	Could work in £ or p for P marks Condone incorrect money notation
		P1	for a start to a process to find cost of 1kg of potatoes, eg 3.45 – 2 × "0.60" (= 2.25) **or** (1.80 + 3.45) ÷ 5 (= 1.05) **OR** for a process to find the cost of 4 kg of carrots, eg "0.60" × 4 (= 2.40)	1 kg of potatoes = (£)0.45 or 45p
		P1	(dep on P2) for a complete process to find the cost of 4 kg of carrots **and** the cost of 2 kg of potatoes, eg "0.60" × 4 (= 2.40) **and** ("2.25" ÷ 5) × 2 (= 0.90) **or** "0.60" × 4 (= 2.40) **and** ("1.05 – "0.60") × 2 (= 0.90)	
		A1	cao	Award 0 marks for a correct answer with no supportive working.

Question	Answer	Mark	Mark scheme	Additional guidance
3 (a)	42	P1	for a correct start to the process by finding the number of batches for one ingredient, eg 500 ÷ 125 (= 4) **or** 700 ÷ 200 (= 3.5 or 3) **or** 250 ÷ 50 (= 5) **OR** for a correct start to building up number of batches of **all** ingredients, eg. (24 biscuits or 2 batches =) 250 (butter), 400 (flour) and 100 (sugar) **OR** for a start to the process by finding the amount of one ingredient needed to make 1 biscuit, eg 125 ÷ 12 (= $10\frac{5}{12}$) **or** 200 ÷ 12 (= $16\frac{8}{12}$) **or** 50 ÷ 12 (= $4\frac{2}{12}$)	
		P1	for a correct process to find the number of batches for all 3 ingredients, eg 500 ÷ 125 (= 4) **and** 700 ÷ 200 (= 3.5 or 3) **and** 250 ÷ 50 (= 5) **OR** for a build-up process reaching a point where there is not enough of one ingredient, eg. (36 biscuits or 3 batches =) 375 (butter), 600 (flour) and 150 (sugar) **or** (48 biscuits or 4 batches =) 500 (butter), 800 (flour) and 200 (sugar) **OR** for a correct process to find the amount of each ingredient needed to make 1 biscuit, eg 125 ÷ 12 (= $10\frac{5}{12}$) **and** 200 ÷ 12 (= $16\frac{8}{12}$) **and** 50 ÷ 12 (= $4\frac{2}{12}$)	

Question	Answer	Mark	Mark scheme	Additional guidance
		P1	(dep on P2) for a process to find the number of biscuits, eg "4" × 12 (= 48) **or** "3.5" × 12 (= 42) **or** "3" × 12 (= 36) **or** "5" × 12 (= 60) **OR** (dep on P2) for (700 – 600) ÷ 200 × 12 (= 6) or "3" × 12 (= 36) **OR** (dep on P2) for a process to find the number of biscuits, eg 500 ÷ "$10\frac{5}{12}$" (= 48) **or** 700 ÷ "$16\frac{8}{12}$" (= 42) **or** 250 ÷ "$4\frac{2}{12}$" (= 60)	
		A1	cao	
(b)	Explanation	C1	(dep on P3) for a correct explanation, ft (a) for the critical ingredient identified **Acceptable examples** No, since flour is the critical value No, since flour gives you the least number of batches No since she needs more flour to make more biscuits. **Not acceptable examples** Yes … No (no reason given) No, since we would need more of the other ingredients too	

Question	Answer	Mark	Mark scheme	Additional guidance
4	30	M1	for 80 – 56 (= 24) **or** for $\frac{56}{80}\times 100$ (=70) **or** (loss of) 10% = 80 ÷ 10 (= 8)	
		M1	for a complete method, eg "24" ÷ 80 × 100 **or** 100 – "70" **or** (80 – 56) ÷ "8" × 10	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
5	Rahim (supported)	P1	for start to the process to find 20% for Tamara, eg 220000 × 0.2 oe (= 44000) **or** 30% for Rahim, eg 160000 × 0.3 oe (= 48000) **OR** for 1 – 0.2 (= 0.8) **or** 100 – 20 (= 80) **or** 1 + 0.3 (= 1.3) **or** 100 + 30 (= 130)	Build up processes are acceptable but must be complete and correct
		P1	for a complete process to find at least one new value, eg 220000 – "44000" (= 176 000) **or** 160000 + "48000" (= 208000) **OR** 220000 × "0.8" (=176000) **or** 160000 × "1.3" (=208000)	
		A1	for one correct value, 176 000 or 208 000	
		C1	for correct conclusion supported by correct figures eg Rahim, 176 000 and 208 000	Award 0 marks for a correct answer with no supportive working.
6	33	P1	for relating 24 to 8 parts, **or** (1 part =) 24 ÷ 8 (= 3) **or** 15 – 7 (= 8) **or** starts to use a build-up method, eg (8 :) 14 : 30	8 parts = 24
		P1	for (15 – 4) **and** (24 ÷ 8) **or** 15 × 3 (= 45) **and** 4 × 3 (= 12) **or** for 12 (: 21) : 45	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
7 (a)	$\frac{3}{7}$	B1	oe	
(b)	1 : 2.5	M1	for appropriate method shown eg 30 ÷ 12 (= 2.5) **or** for a method that involves simplification of 12 : 30 approaching 1 : *n* , eg. 4 : 10 or 6 : 15 or 2 : 5 **or** for 2.5 : 1 or $2\frac{1}{2}$: 1	
		A1	for 1 : 2.5 or 1 : $2\frac{1}{2}$ **or** for *n* = 2.5	Accept a fraction equivalent to $2\frac{1}{2}$, eg. 1 : $\frac{30}{12}$ 2.5 alone gets M1A0
8	Conclusion (supported)	P1	for process to find 1/10 of 500 eg. 500 ÷ 10 (= 50) **or** 1 – 0.1 (= 0.9) oe	
		P1	(dep) for process to reduce 500 by 1/10 eg. 500 – "50" **or** 500 × "0.9" (= 450)	
		P1	for process to calculate 20% of [Monday sale price] eg. "450" × $\frac{20}{100}$ (= 90) oe **or** for use of 100 – 20 (= 80) or 1 – 0.2 (= 0.8) in relation to [Monday sale price]	
		P1	(dep on P3) for a fully correct process to find the cost of the TV on Tuesday eg. "450" – "90" (= 360) or "450" × "0.8" (= 360)	
		C1	for conclusion (Yes) supported by correct figures.	eg Yes, the TV will cost 360 Yes, he will have 40 over left

Question	Answer	Mark	Mark scheme	Additional guidance
9	20	P1	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 × 0.5) – 10 (=2) **or** for process to find CP of one chocolate bar, eg. 1000 ÷ 24 (= 41.66…) oe	
		P1	(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	
		A1	cao	
10	450	M1	for 18 ÷ 3(=6)	Ignore units
		M1	for substitution eg. $75 = \frac{F}{"6"}$ or 75 × "6"	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
11	6 : 15 : 20	P1	chooses a multiplier to equate the two fractions in terms of b eg $\frac{2}{5}\times\frac{3}{3}\left(=\frac{6}{15}\right)$ **or** $\frac{3}{4}\times\frac{5}{5}\left(=\frac{15}{20}\right)$ **or** lists equivalent fractions to $\frac{2}{5}$ up to at least $\frac{6}{15}$, eg. $\frac{2}{5},\frac{4}{10},\frac{6}{15},\ldots..$ **or** lists equivalent fractions to $\frac{3}{4}$ up to at least $\frac{15}{20}$, eg. $\frac{3}{4},\frac{6}{8},\frac{9}{12},\frac{12}{16},\frac{15}{20},\ldots..$ **or** (*a* : *b* =) 2 : 5 **and** (*b* : *c* =) 3 : 4 **or** for 6 : 15 or 15 : 20 seen	
		P1	puts into related terms ready for ratio eg $\frac{2}{5}\times\frac{3}{3}=\frac{6}{15}$ **and** $\frac{3}{4}\times\frac{5}{5}=\frac{15}{20}$ **or** for (*a* : *b* =) 6 : 15 **and** (*b* : *c* =) 15 : 20 **or** lists equivalent ratios up to a common element for *b*, eg *a* : *b* = 2 : 5, 4 : 10, 6 : <u>15</u> **and** *b* : *c* = 3 : 4, 6 : 8, 9 : 12, 12 : 16, <u>15</u> : 20	Need not be written in ratio form
		A1	for 6 : 15 : 20 oe	Accept equivalent ratios Accept *a* = 6. *b* = 15 and *c* = 20

Question	Answer	Mark	Mark scheme	Additional guidance
12	0.15	B1	cao	
13	10	M1	for converting $1\frac{1}{4}$ hours or $\frac{1}{4}$ hour to minutes eg. $1\frac{1}{4}$ hours = 60 + 15 (= 75) or $\frac{1}{4}$ hour = 15 minutes or for converting 1 hour 25 minutes to minutes eg 60 + 25 (= 85)	Condone absence of units in the working
		A1	cao	
14	2 (supported)	P1 P1	for a process to find the number of men, eg. (60 ÷ 2) ÷ 3 (= 10) for a process to find the number of children, eg. 60 – "30" – "10" (= 20)	 60 ÷ 3 = 20 scores no marks.
		P1	for a start of a process to find the value of *n*, eg. ("20" : "10") ÷ 5 or 20 : 10 = 10 : 5 or "20" ÷ "10"	Any ratio must come from correct processes to find the number of children and the number of men
		A1	for 2 with supportive working	Award 0 marks for 2 with no correct supportive working Award full marks for 2 : 1 given as final answer from correct supportive working

Question	Answer	Mark	Mark scheme	Additional guidance
15 (i)	Distance in the range 20 to 23	P1	for a process to draw a bearing of 070°, eg. a line drawn 70° from the North line at P	Accept a line of any length as long as the intention is clear.
(ii)	Bearing in the range 317 to 330	P1	for a process to work out the distance PQ, eg. 12×1.5 (= 18)	
		P1	(dep previous P1) for the process to use the given scale eg. "18" ÷ 4 (= 4.5 cm)	Award P3 for Q shown in the correct place on the diagram. 4.5 scores 2 marks provided there is a link to 12×1.5 (= 18)
		A1	(dep P3) for distance in the range 20 to 23	Award no marks if no supportive processes
		A1	(dep P3) for bearing in the range 317 to 330	Award no marks if no supportive processes Award A0A0 if Q is not in the correct place
16 (a)	6	M1	for stating a similar triangle relationship eg $\frac{AB}{PQ} = \frac{AC}{PR} = \frac{CB}{RQ}$ or equivalent set of similar triangle expressions or for substitution giving a fraction form for a scale factor eg $\frac{10}{15}\left(=\frac{2}{3}\right)$ or $\frac{15}{10}\left(=\frac{3}{2}\right)$ or $\frac{9}{15}\left(=\frac{3}{5}\right)$ or $\frac{15}{9}\left(=\frac{5}{3}\right)$	Accept any equivalent fractions or decimal equivalents given to at least 2 dp truncated or rounded
		A1	cao	
(b)	2	P1	for showing understanding of the properties of congruent triangles by finding an unknown length using matching of two sides, eg EG, KG and 6, or HG, FG and 4 **or** matching corresponding angles eg HEG with FKG **and** EHG with KFG	Can be shown by any complete statements that are unambiguous Can be shown in working using algebraic statements, or given by unambiguous marking on the diagram to confirm the relationship.
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
17	3	B1	cao	
18	73	B1	cao	
19 (a)	6	M1	for method to find distance, eg 4 × time difference **or** 30 mins = 2 miles	10.30 am – 9 am may be seen as 1.5(hr) or 1(hr) 30 (min) or 90 (min) or $\frac{3}{2}$(hr) or $1\frac{1}{2}$ (hr)
		A1	cao	
(b)	12 35 pm	M1	for method to add time using consistent units eg 11 20 **or** 50 + 75 **or** 2 hours 5 mins	
		A1	12 35 pm or 12 35 (h)	Allow 12 35 but not 12 35 am
20	10*x*	B1	for 10*x* oe	
21	Accurate figures with supportive working	M1	for a correct first step eg 600 ÷ 30 (= 20) **or** 120 ÷ 30 (=4) **or** 600 × 120 (=72 000) **or** 30 × 30 (=900)	Could work in m or cm
		M1	for finding an appropriate cost 2.5 × "20" (=50) **or** 2.5 × "4" (=10) **OR** number of tiles required "72 000" ÷ "900" (=80) **or** "4" × "20" (=80) **OR** number they can afford 220 ÷ 2.5 (=88)	Units must be consistent
		M1	for full **method** to get figures to compare eg cost to tile whole area eg "80" × 2.5 **OR** number of tiles they need and number they can afford eg "72 000" ÷ "900" and 220 ÷ 2.5	
		A1	for 200 **OR** 80 and 88 **OR** 72 000 and 79 200 **OR** 132 (cm) **OR** 660 (cm) SC B2 for answer of 60	

Question	Answer	Mark	Mark scheme	Additional guidance
22	12.5	P1	starts to process the problem, eg assigns lengths of sides to squares **A** and **B** in the ratio 1 : 2 oe **and** calculates at least one area **OR** fits 4 of square **A** into square **B** **OR** for ratio of areas of squares eg 1 : 4 oe	May be seen in a diagram
		P1	for process to express relationship between area of shaded triangle and area of square B, eg 1 : 8, $\frac{1}{8}$ **OR** 0.125	May be seen in a diagram with figure given
		A1	for 12.5 oe	
23 (a)	600	P1	for starting process to calculate amount of flour eg 60 ÷ 15 (= 4) **or** 3 × 50 (= 150)	4 implied by 200g of sugar
		P1	for complete process eg $\frac{60}{15}$ × "150"	
		A1	cao	
(b)	2	P1	for process to calculate amount of butter eg $\frac{60}{15} \times 2 \times 50$ (= 400)	
			OR for process to calculate the number of packs of butter needed eg [butter] ÷ 250	[butter] must be clearly stated or calculated, may be seen in part (a)
		A1	cao	2 must not come from incorrect working

Question	Answer	Mark	Mark scheme	Additional guidance
24	96	P1	for process to find the ratio of the number of pens of each colour sold, eg $2 \times 7 : 5 \times 3 : 6 \times 4$ (= 14 : 15 : 24)	Does not have to be seen as a ratio but all three needed
		P1	for process to find the proportion of green pens sold, eg $\frac{212}{"14"+"15"+"24"}$ **or** $\frac{"24"}{"14"+"15"+"24"}$	
		P1	for a complete process to find the number of green pens sold, eg $\frac{212}{"14"+"15"+"24"} \times$ "24" **or** $\frac{"24"}{"14"+"15"+"24"} \times 212$	P3 can be implied by the values 56, 60 and 96
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
25	60	B1	cao	
26 (a)	10	B1	cao	
(b)	30	M1	for using the graph to take one correct reading	May be shown on graph
		A1	30 or ft from correct use of graph	
27	4 : 1 : 2	M1	for start to express the statements as a ratio eg 4 : 1, 1 : 4, 1 : 2 or 2 : 1 with clear and correct link to Azmol, Ryan, Kim **OR** as algebraic expressions, two of $4x$, x and $2x$ eg $4x : x$, $1x : 4x$, $1x : 2x$ or $2x : 1x$ with clear and correct link to Azmol, Ryan, Kim	Allow any equivalent ratio, integers only May be seen as part of an incorrect answer. May be seen as integer multiples of these algebraic expressions. Any letter may be used.
		A1	4 : 1 : 2 oe	Accept 8 : 2 : 4 or equivalent ratios involving integers
		(SCB1	3 integer numbers in correct ratio but no ratio notation, eg 4, 1, 2 or 20, 5, 10)	

Question	Answer	Mark	Mark scheme	Additional guidance
28 (a)	420	P1	starts process, eg 300 ÷ 5 (= 60) **or** 200 ÷ 2 (= 100) **OR** builds up ratio to at least 300 ml orange juice with one error	
		P1	complete process, eg "60" × 5 + "60" × 2 or 300 : 120	May be seen as "60" × 7 "60" must come from correct method
		A1	cao	
(b)	explanation	C1	explains that it will have no effect with reason, eg because he only needs 120 m*l* of lemonade because he has no more orange juice to use	
29	No and explanation	C1	'No' and explanation with reference to multiplication or division eg No he's incorrect as you would multiply the sides by a number rather than add	
30	Jan's store (supported)	P1	process to reduce £5 by 20% (= £4) **or** increase 400 by 30% (= 520)	May work in pence throughout Accept any correct appropriate percentage process
		P1	process to reduce £5 by 20% (= £4) **and** increase 400 by 30% (= 520)	
		P1	(dep P2) process to find comparable values, eg 400 ÷ "4" **and** "520" ÷ 5	May use £/g or any other comparable values
		C1	'Jan's store' fully supported by correct comparative values, eg 100 (g/£) and 104 (g/£)	Do not award without correct comparable values and full working.

Question	Answer	Mark	Mark scheme	Additional guidance
31	No (supported)	P1	for start to process, eg $2100 \times \frac{40}{100}$ (= 840) **or** 100 – 40 (= 60)	May compare bonus shares of a single salesman or total bonus share for all 7 salesmen.
		P1	for process to find the 7 salesmen's share of bonus, eg 2100 – "840" (= 1260) **or** $2100 \times \frac{"60"}{100}$ (= 1260)	
		P1	for process to find bonus amount each salesman gets eg "1260" ÷ 7 (= 180) **OR** process to find the total bonus for all salesmen if shared equally, eg $\frac{2100}{10} \times 7$ (= 1470)	
		P1	for process to compare what a single salesman gets under each scheme, eg "180" $\times \frac{25}{100}$ (= 45) and "$\frac{2100}{10}$" – "180" (= 30) **or** "180" $\times \frac{25}{100}$ (= 45) and "180" + "45" (= 225) oe and $\frac{2100}{10}$ (= 210) **or** ($\frac{2100}{10}$ – "180" ÷ "180" × 100 (= 16.6...) **OR** process to compare what all salesmen gets under each scheme, eg "1260" $\times \frac{25}{100}$ (= 315) and "1470" – "1260" (= 210) **or** "1260" $\times \frac{25}{100}$ (= 315) and "1260" + "315" (= 1575) oe and "1470" **or** ("1470" – "1260") ÷ "1260" × 100 (= 16.6...)	
		A1	'No' supported by correct figures, eg 45 and 30, 225 and 210, 315 and 210 **or** 1575 and 1470 **or** 16.(6...)(% and 25%)	Do not award unless correct figures have been shown to support a statement made that the salesman was not correct.

Question	Answer	Mark	Mark scheme	Additional guidance
32 (a)	200	M1	for 120 × 5 ÷ 3 oe	
		A1	cao	
(b)	statement	C1	Statement that each tap fills at the same rate or that the rate does not change over time Examples **Acceptable responses:** Taps are running at the same speed They (clearly referring to taps) all fill the pool with the same volume of water The amount of water is the same in the same time (again referring to taps) Each tap is doing a fifth of the filling That all taps take equal time to fill the pool All taps produce the same amount of water That the water flow stays at the same rate over the whole time. **Non acceptable responses** It will take more time because there are less taps The less taps used the longer it takes to fill the pool That 1 tap can take up to 24 mins each 3 taps will take longer to fill the pool	Any statement referring to the same amount of water flowing from each tap is acceptable.
33 (a)	16 to 20	P1	for using time = $\frac{\text{distance}}{\text{speed}}$, eg $\frac{1}{200}$ or $\frac{1}{213}$ **or** for 1 hour = 60 × 60 (= 3600) seconds	
		P1	complete process, eg $\frac{1}{200} \times 60 \times 60$ oe or $\frac{1}{213} \times 60 \times 60$	Calculation could be done in stages.
		A1	for answer in range 16 to 20	

Question	Answer	Mark	Mark scheme	Additional guidance
34	$\frac{20}{100}$	B1	$\frac{20}{100}$ oe, eg $\frac{2}{10}$ or $\frac{1}{5}$	Ignore any incorrect simplification of $\frac{20}{100}$ oe and award the mark if $\frac{20}{100}$ oe is seen
35	36	M1 A1	for method to find cost of 1 kg, eg $54 \div 3$ $(= 18)$ or $54 \div 3 \times 2$ oe cao	
36	Isabel (supported)	P1 P1 A1 C1	for process to work with $\frac{3}{4}$ eg $1 - \frac{3}{4}$ $(= \frac{1}{4})$ oe, eg 25% or $\frac{25}{100}$ **or** $\frac{3}{4}$ = 75% or $\frac{75}{100}$ **or** value of salary (say 1000) × 3 ÷ 4 (= 750) for process to work with ratio 3 : 7 eg $\frac{3}{3+7}$ oe **or** $\frac{7}{3+7}$ oe **or** value of salary (say 1000) ÷ (3+7) (= 100) for (28(%)), 25(%) and 30(%) **or** 72(%), 75(%), 70(%) **or** 0.28, 0.25, 0.3 **or** for using value of salary (say 1000) giving 280, 250, 300 **or** 720, 750, 700 (dep P2) for Isabel or ft their comparative values	"Isabel" alone without supported evidence, gets 0 marks.
37	24	M1 A1	for method to find 15% of 160, eg $160 \times \frac{15}{100}$ oe (= 24) **or** 10% = 160 ÷ 10 (= 16) plus 5% = "16" ÷ 2 (= 8) (= 24) cao SC B1 for answer of 136 or 184 if M0 scored	When using partitioning methods, the method to find individual %s must be clear including the need to show an intention to sum eg. 10% = 16 + 5%=8

Question	Answer	Mark	Mark scheme	Additional guidance
38	1 : 3	M1	for $\frac{1}{4} : \frac{3}{4}$ oe **OR** for any correct un-simplified ratio, eg 25 : 75	
		A1	cao SC: B1 for an answer of 3 : 1 or 1 : $\frac{1}{3}$ if M0 scored	Ignore 'units' such as 1 nuts : 3 no nuts 1 : 3*n* gets M1A0
39	140	P1	for beginning to solve the problem eg 50 ÷ 5 × 8 (= 80) **or** 14 : 8 : 5 oe **or** 14 : 8 and 8 : 5 oe (linked)	80 may be seen in the ratio 80 : 50
		P1	for a full process to solve the problem eg "80" ÷ 4 × 7 **or** $\frac{50}{5}$ × "14" **or** 140 : 80 : 50	
		A1	cao	If 140 clearly identified as houses in working award full marks
40	30	P1	for full process to find the number of bags sold eg 5 × 1000 ÷ 250 (= 20) **OR** for process to find selling price of 1 kg of sweets eg 0.65 × 4 (= 2.60)	This could be by repeated addition Calculations can be in £ or pence
		P1	for [number of bags] × 0.65 **or** "20" × 0.65 (= 13) **or** "2.60" × 5 (= 13) **OR** for 10 ÷ "20" oe (= 0.50) **OR** for 0.65 × 4 (= 2.60) **and** 10 ÷ 5 (= 2)	[number of bags] can only come from 5 × 10 ÷ 250 (= 0.2) or 5 × 100 ÷ 250 (= 2) or 5 ÷ 250 (= 0.02)
		P1	(dep on previous P1) for a process to find the percentage profit eg ("13" – 10) ÷ 10 × 100 **or** (0.65 – "0.50") ÷ "0.50" × 100 **or** ("2.60" – "2") ÷ "2" × 100 **OR** "13" ÷ 10 ×100 (= 130) oe	3/10 or 0.3 is not enough but should be awarded 2 marks Award P3 for 130(%)
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
41 (a)	Estimated value	P1	for using a rounded value in a correct process eg 3000 ÷ 15 **or** 15 × 8 **or** 20 × 8	Their rounded value must be used in a calculation Rounding may appear after a correct process eg 15.12 × 8 = 120.96 ≈ 100 followed by eg 3069.25 ÷ 100
		P1	for a full process to find the number of days eg "3000" ÷ "15" ÷ "10" (= 20) **or** "3000" ÷ "15" ÷ 8 (= 25)	Accept 3069.25 ÷ 15.12 ÷ 8 oe
		A1	for a correct answer following through their rounded values	
(b)	Explanation	C1	eg less days required **or** it doesn't affect the answer because I would still round 16.27 down to 15 (or up to 20)	Refers to time taken

Question	Working	Answer	Mark	Notes
42 (a)		3.65	B1	cao
(b)		2700	B1	cao
43		4 × 8 rectangle drawn	M1	Draws a rectangle with side lengths in the ratio 2:1 **or** lists possible dimensions in the ratio 2:1 **or** gives two numbers which multiply to 32
			A1	for correct diagram on grid
44 (a)	30 ÷ 8	4	P1	for 30 ÷ 8 **or** 3.75 **or** 3 **or** counting up 8s towards 30 to at least 3 lots of 8 **or** 4 × 8(=32) oe
			A1	cao
(b)		No with reason	C1	No with 32 ÷ 8 **or** ft from (a)
45		45	M1	for a correct first step eg $\frac{9}{7+4+9}$ (=$\frac{9}{20}$) **or** $\frac{100}{7+4+9}$ (=5) **or** a full method for one of the other colours
			A1	cao
46 (a)		Explanation	C1	eg States over-estimated for both values
(b)		182.7(0)	P1	for a process to find 10% of a value stated in the question eg $\frac{10}{100}$ ×5.80 (=0.58) **or** $\frac{10}{100}$ × 35 (=3.5) oe **or** 35 × 5.80 (=203), allow 30 × 5.80 (=174) **or** 35 × [reduced price]
			P1	for a process to find 90% of a value stated in the question eg 35 – "3.5" (=31.5) **or** 0.9 × 5.80 (=5.22) oe **or** $\frac{10}{100}$ × "203" (=20.3) **or** $\frac{10}{100}$ × "174" (=17.4) oe
			P1	for a complete process to find actual cost of 35 eg 0.9 ×5.80 × 35 oe
			A1	cao
				SC B2 156.6(0)

Question	Working	Answer	Mark	Notes
47		135	M1	for 450 ÷ "2+3+5" (=45) **or** $\frac{3}{10}$ × 450 (=135) **or** 5 parts are 225 **or** 2 parts are 90 indicated
			A1	Cao
48		180, 210, 375, 3	M1	for $\frac{24}{16}$ **or** 1.5 **or** $\frac{16}{24}$ oe **or** 0.5 of any figure in the recipe calculated **or** amount of any ingredient for 1 flapjack or 3 (tablespoons)
			M1	for method to scale at least one ingredient in grams eg 120 × 1.5 **or** 140 × 1.5 **or** 250 × 1.5
			A1	for all quantities correct
49		4	M1	for a complete method eg 2.80 × 100 ÷ (100−30) oe **or** 2.80 ÷ 0.7 oe **or** for build up method but must show all intermediate steps unless all figures are correct eg 2.8 ÷ 7 = 0.4 and "0.40" × 10 (=4)
			A1	cao

Question	Working	Answer	Mark	Notes
50		80	B1	cao
51		126	P1	for working with time,eg 10 – 8(=2) **or** 12 × 8(=96) **or** 12 × 10(=120)
			P1	for working with overtime, eg 12 ÷ 4(=3) **or** 1.25 × "2" (=2.5) **or** 0.25 × "2" (=0.5) **or** 1.25 × 12(=15)
			P1	for a complete process, eg (10 – 8) × overtime rate + 12 × 8 **or** 12 × 10 + "0.5" × 12
			A1	cao
52		1 : 10	M1	for 12 : (20 × 6) oe **or** 10 : 1 **or** 1 with 10 in incorrect notation
			A1	cao
53 (a		1.5 to 2	B1	in the range 1.5 to 2
(b)		7.5 to 12	M1	for scale factor in the range 5 to 6
			A1	(ft) or for answer in the range 7.5 to 12
54		1110	M1	method to find the weight of 1 tin of soup e.g. 1750 ÷ 5 (=350)
			M1	method to find the weight of 3 packets of soup e.g. 1490 – (4 × "350") (=90)
			M1	method to find the weight of 3 tins and 2 packets e.g. 3 × "350" + "90" ÷ 3 × 2
			A1	cao
55		1545	M1	shows a method to find 3% eg 1500 × 0.03 (=45)
			A1	cao

Question	Working	Answer	Notes
56		7.50	M1 60 ÷ 8 A1 accept 7.5
57		$\frac{2}{7}$	B1
58		loss (supported by correct figures)	P1 process to find total spent eg. 20 × 7 (=140) P1 complete process to find profit from full price oranges eg. $\frac{2}{5}\times 25\times 20\times 40 (=8000)$ P1 complete process to find profit from reduced price oranges eg. $50\times\left(\frac{3}{5}\times 25\times 20\right)\div 3 (=5000)$ P1 complete process to find total income with consistent units A1 loss with £10 **or** −£10 **or** £130 **and** £140
59		75	P1 for start to process eg. linking 20% with 15 or 100 ÷ 5 (=20) A1
60 (a)		48	P1 start to process eg. 3 × 80 (=240) P1 '240' ÷ 5 A1
(b)			C1 eg. she may drive a different distance and therefore her average speed could be different

Question	Working	Answer	Notes
61		28	P1 Process to start to solve problem eg. $\frac{3}{5}\times 40$ **or** divide any number in the ratio 3:2 P1 Second step in process to solve problem eg. $\frac{2}{5}\times 10$ or find number of males/females under 25 for candidate's chosen number P1 for complete process A1

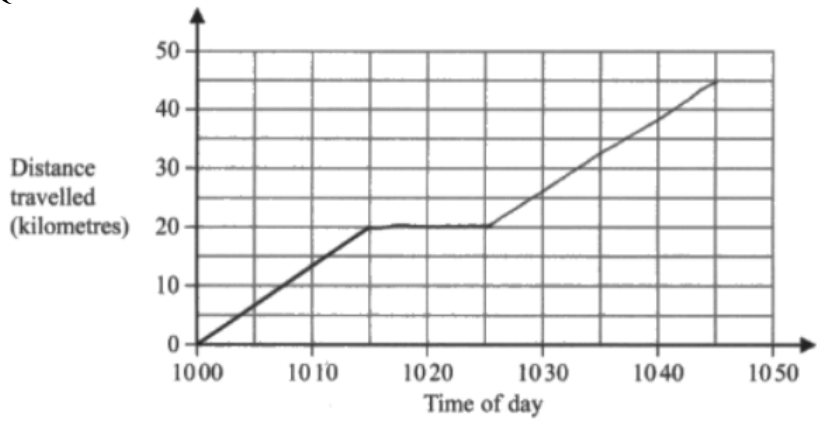
Question	Working	Answer	Notes
62		5.3(0)	B1 cao
63		195	B1 cao
64		1 : 3	M1 for stating a ratio eg 28 : 84 oe, or 3:1 A1 cao
65		125	P1 for process to find 7/20 of 500 (=175) or 7/20 + 4/10 (=3/4) or 40% of 500 P1 for complete process to find the number of children. A1 cao
66 (a)		2.79	P1 method to find amount of milk needed, eg 7× ¾ (=5.25) P1 uses appropriate integer from their working to calculate a cost eg 5.25 as 6 pints and 3 × 2 pints A1 cao
(b)		pay more	C1 deduces he **may** have to pay more [if he uses more than 0.857 pints a day]
67		4 m^2	C1 substitution into formula eg $35 = \frac{140}{A}$ A1 4 stated C1 (indep) units stated

Question	Working	Answer	Notes
68		80	B1
69		5.25 litres	P1 for start to process eg. 5 ÷ 2 (=2.5) P1 for complete process eg. 5000 + 2.5×100 A1 or 5250 m*l*
70		700	P1 for process for total non-fiction books eg $\frac{1}{4} \times 80$ (=20) P1 process for total takings for non fiction eg $20 \times \frac{1}{2} \times 10$ (= 100) P1 process to find total takings "100" + 60 × 10 A1 700
71	£5	£5	P1 for $\frac{25}{100} \times 60$ P1 for process to find difference between totals 20 – "15" A1 cao
72		35	M1 for method to find increase 108 – 80 (= 28) M1 for method to find % increase eg $\frac{28}{80} \times 100$ A1 cao

Question	Working	Answer	Notes	
73	$16 \div 4$ $\frac{1\times4}{2}=2$ or $\frac{1}{2}\times\frac{1}{4}=\frac{1}{8}$ $\frac{2\times4}{2}=4$ or $\frac{1}{2}\times\frac{1}{2}=\frac{1}{4}$ $\frac{1\times4}{2}+\frac{2\times4}{2}=6$ or $\frac{1}{2}\times\frac{1}{4}+\frac{1}{2}\times\frac{1}{2}=\frac{3}{8}$ $16-6=10$ or $1-\frac{3}{8}=\frac{5}{8}$	$\frac{5}{8}$	P1 P1 P1 P1 A1	Using side lengths of 4 Method to find fraction or area for one unshaded triangle Method to complete fraction or area for total unshaded region Method to find total fraction or area for shaded region for $\frac{5}{8}$ oe or 0.625

Question	Answer	Mark	Mark scheme	Additional guidance
74	$\frac{31}{100}$ oe	B1	for $\frac{31}{100}$ or any equivalent fraction	Ignore any attempt at simplification of $\frac{31}{100}$
75	300	B1	cao	
76	7cm by 4cm rectangle drawn	M1 A1	for a rectangle drawn with one correct dimension **or** 35 ÷ 5 (=7) and 20 ÷ 5 (=4) for a fully correct 7cm by 4cm rectangle drawn	Correct calculations/measurements seen the method mark can be awarded even if the drawing is incorrect or not present Accept any orientation of a correct rectangle
77	$\frac{17}{30}$	B1	for $\frac{17}{30}$ or any equivalent fraction	
78 (a)	15	B1	14 to 16	
(b)	540	M1 A1	for a complete method, eg 30 × (36 ÷ 2) **or** 45 × (36 ÷ 3) **or** 60 × (36 ÷ 4) **or** ft "hourly rate from (a)" × 36 for 540 **or** ft (a)	May be seen using a complete build up method for "45" allow 44 to 46 ft for accuracy Condone use of mixed rates eg 75×7 + 16 =541
79 (a)	80	M1 A1	for a complete method eg $\frac{20}{15}$ × 60 **or** 20 × 4 **or** 20 ÷ $\frac{1}{4}$ cao	
(b)	Travel graph	M1 C2 (C1	for method to find distance travelled in last 20 minutes, eg 75 × $\frac{20}{60}$ (= 25) for a fully correct travel graph for horizontal straight line from (10 15, 20) to (10 25, 20) **or** for a line of the correct length and gradient to indicate a speed of 75km/h eg straight line from (10 25, 20) to (10 45, 45))	Can be implied by a distance of 25km drawn on the graph

Question 79



Question	Answer	Mark	Mark scheme	Additional guidance
80	320 000	M1	for a complete method eg $272\,000 \div (\frac{100-15}{100})$	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
81	25	B1	cao	
82	Yes with supporting calculations	M1	for ONE correct time conversion seen or used eg 105 (mins) is 1 (hr) 45 (mins) **or** 16 45 – 14 30 = 2 hr 15 mins **or** 14 30 + 1 (hr) + 45(mins)	May be implied by a correct calculation 1 hr = 60 mins is not enough for this mark
		M1	for a full method to make a comparison eg for adding 20 and 105 to 14 30 (=16 35) **or** for subtracting 20 and 105 from 16 45 (=14 40) **or** for finding the time differences eg 16 45 – 14 30 (= 2 hr 15 mins) and 105 + 20 (=125 mins) **or** adding 105 to 14:30 (= 16 15) **and** 1645 – "16 15" (=30)	Intention to do the correct calculation or calculations is enough for this mark Accept any sensible time notation throughout (pm is not required)
		C1	correct conclusion from the comparison of accurate figure(s) eg Yes and 16 35 or 4.35(pm) 14 40 or 2.40(pm) **or** for 2 hours 5 minutes and 2 hours 15 minutes oe **or** for 10 minutes spare **or** 30 (minutes to get to the bus stop)	Yes may be implied by a statement
83 (a)	25	B1	for 25, accept answer in range 24 to 26	
(b)	24	M1	for 40 ÷ 10 × 6	
		A1	cao	
(c)	Comment	C1	(dep B1 or M1) ft for comment for their results, eg the two answers are quite close **or** answer to (b) is less than answer to (a) **or** the rule gives a smaller answer	

Question	Answer	Mark	Mark scheme	Additional guidance
84 (a)	5	P1	for finding the number of oranges required eg 8 ÷ 2 × 30 (=120) oe **or** for finding the number of oranges left from use of at least 2 boxes eg 24 × 2 – 30 (=18) or 24 × 4 – 90 (=6) **or** finds the correct amount of juice possible from at least two boxes eg 24 + 24 is 2 litres or 24 + 24 + 24 is 4 litres	A build up method with no process shown must use fully correct figures
		P1	for a complete process eg "120" ÷ 24 (=5) oe **or** 30 + 30 + 30 + 30 (=120) **and** 24 + 24 + 24 + 24 + 24 (=120) **or** 24 × 2 − 30 = 18, 18 + 24 = 42, 42 – 30 = 12, 12 + 24 =36, 36 – 30=6, 6 + 24 = 30	May be seen as a mixture of repeated subtraction and addition
		A1	cao with no arithmetic errors seen SCB1 for an answer of 10 supported by working	This mark cannot be awarded if the supporting work has an arithmetic error An answer only and no working is no marks
(b)	9 : 2	M1	for a partially simplified correct ratio eg 126 : 28 or any other equivalent ratio **or** 2 : 9	eg 630:140, 315:70, 63: 14 180:40, 90:20, 45:10, 4.5:1
		A1	cao	
85	$\frac{3}{10}$	P1	for a process to find three amounts in the correct proportions, eg R = 1, L = 3 × 1 = 3, A = 2 × 3 = 6, **or** R : L : A = $\frac{1}{6}$: 0.5 : 1 oe **or** $L=3R$, $L=\frac{A}{2}$ or $L=3R$, $2L=A$	Relationship could be given in algebraic form or in ratio form, using fractional comparison or using their own figures
		A1	for $\frac{3}{10}$ or equivalent fraction	Award P1 for correct answer not given as a fraction

Question	Answer	Mark	Mark scheme	Additional guidance
86	1.75	P1	for an initial process eg 1.80 ÷ 12 (=0.15) or 1.80 ÷ 3 (=0.6)	Accept 1.8 ÷ 12 = 15 (p) They can work in pounds or pence
		P1	for a correct second step eg “0.15” ÷ 3 (=0.05) or “0.6” × 7 (=4.2) or 3÷ “0.15”(=20) or 7 ÷ 3 (=2.3..) or “0.15” × 7 (=1.05)	
		P1	for finding the price of one pen eg-“0.05” × 7 (=0.35) or “4.2” ÷ 12 (=0.35) or 7 ÷ “20”(=0.35) or “2.3.... × “0.15” (=0.35) or “1.05” ÷ 3 (=0.35)	
		A1	cao	
87	No (supported)	P1	for 3000 ÷ (2 + 3) (= 600)	
		P1	for “600” × 2 (= 1200) **or** “600” × 3 (= 1800) **or** “600” ÷ 6 (= 100) **or** “600” ÷ 20 (= 30)	
		P1	for “1200” ÷ 6 (= 200) **or** “1800” ÷ 20 (= 90) **or** “100” × 2 (= 200) **or** “30” × 3 (= 90)	
		P1	for “90” ÷ (“200” + “90”) × 100 (= 31.0...) oe **or** “90” ÷ (“200” + “90”) (= 0.31...) **or** 0.3 × (“200” + “90”) (= 87)oe	Full method to compare
		C1	correct conclusion **and** fully correct calculations with accurate figure eg No and 87 **or** No and 31% **or** No and 0.31	No may be implied by a statement No working, answer only no marks

Question	Answer	Mark	Mark scheme	Additional guidance
88	23	B1	cao	
89	$\frac{13}{20}$	M1	for $20 - 7$ (= 13) **or** $\frac{7}{20}$ oe **or** 0.65 **or** 65%	
		A1	for $\frac{13}{20}$ or equivalent fraction	
90	80	M1	for converting to cm	Can be done at any stage of the problem eg 19.2×100 (=1920) or 0.8×100
		M1	for use of scale eg $19.2 \div 24$ (= 0.8) **or** $1920 \div 24$ **or** [length] $\div 24$	[length] must come from an attempt to change 19.2 metres into cm
		A1	cao	
91	243	M1	for $1.8 \div 100 \times 4500$ oe (= 81) **or** for a complete method eg $4500 \times 1.8 \times 3 \div 100$ oe **or** for 4743 **or** 4257	Award M1 for 4500×1.018^n
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
92	40	P1	for a process to find the maximum number of batches for one ingredient, eg 500 ÷ 175 (= 2.85...) **or** 300 ÷ 75 (= 4) **or** 625 ÷ 250 (= 2.5) **OR** for a process to find the amount of one ingredient for 1 biscuit, eg 175 ÷ 16 (= 10.9375) **or** 75 ÷ 16 (= 4.6875) **or** 250 ÷ 16 (= 15.625) **OR** for multiples of 175 : 75 : 250, eg 175 × 2 (= 350) **and** 75 × 2 (= 150) **and** 250 × 2 (= 500)	Figures may be truncated or rounded
		P1	(dep P1) identifies flour as the limiting factor **OR** for a process to find the maximum number of biscuits for one ingredient, eg butter: "2.85" × 16 **or** 500 ÷ "10.9.." oe (= 45.7...) sugar: "4" × 16 **or** 300 ÷ "4.6.." oe (= 64) flour: "2.5" × 16 **or** 625 ÷ "15.625" oe (= 40)	
		A1	cao SCB2 for answer of 32	
93	18	P1	for 240 ÷ 10 (= 24) **or** 240 ÷ 8 (= 30)	Accept 3 + 7 for 10, 3 + 5 for 8
		P1	for 3 × "24" (= 72) **or** 7 × "24" (= 168) **or** 3 × "30" (= 90) **or** 5 × "30" (= 150)	
		P1	for 3 × "24" (= 72) **and** 3 × "30" (= 90) **or** 7 × "24" (= 168) **and** 5 × "30" (= 150)	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
94	6	M1	for 720 ÷ 40 (= 18) **or** 720 ÷ 30 (= 24)	
		M1	for a complete process eg (720 ÷ 30) – (720 ÷ 40) **or** "18" × 4/3 – "18" **or** "24" – "24" × 3/4	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
95	1.756	B1	cao	
96	2 : 1	B1	cao	
97	3240	P1	for 90 × 60 (= 5400) **OR** 40 ÷ 100 × 90 (= 36) **OR** 40 ÷ 100 ×60 (= 24)	
		P1	for a process to work out area that is flowers eg. 40 ÷ 100 × "5400" (= 2160) **OR** "36" × 60 (= 2160) **OR** 90 × "24" (= 2160)	
		P1	for a full process to find the area that is grass eg. "5400" – "2160" (=3240)	
		A1	cao	
			ALTERNATIVE	
		P1	for 100 – 40 (= 60)	
		P1	(indep) for 90 × 60 (=5400) **OR** 90 × 60 ÷ 100 (= 54) or 60 × 60 ÷ 100 (= 36)	
		P1	for a full process to find the area that is grass eg. "60" ÷ 100 × "5400" (=3240) **OR** "54" × 60 (= 3240) or "36" × 90 (= 3240)	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
98	180.9	P1	for starting to work with proportion eg. 60 ÷ 100 (= 0.6) or 150 ÷ 100 (= 1.5) **OR** 100 ÷ 60 (= 1.66..) or 100 ÷ 150 (= 0.66..) **OR** 84 ÷ 100 (= 0.84) or 87 ÷ 100 (= 0.87) or 84 ÷ 10 (= 8.4) or 87 ÷ 10 (= 8.7) or 84 ÷ 2 (= 42) or 87 ÷ 2 (= 43.5) **OR** 100 ÷ 84 (= 1.19..) or 100 ÷ 87 (= 1.14..)	
		P1	for a complete process to work out the calories in either item eg. “0.6” × 84 (= 50.4) or “1.5” × 87 (= 130.5) **OR** 84 ÷ “1.66..” (= 50.4) or 87 ÷ “0.66..” (= 130.5) **OR** “0.84” × 60 (= 50.4) or “0.87” × 150 (= 130.5) or “8.4” × 6 (= 50.4) or “8.7” × 15 (= 130.5) or “42” × 6 ÷ 5 (= 50.4) or “43.5” × 3 (= 130.5) **OR** 60 ÷ “1.19..” (= 50.4) or 150 ÷ “1.14..” (= 130.5)	
		P1	(dep on P2) for a complete process to find total number of calories in the breakfast, eg. “50.4” + “130.5”	
		A1	for 180.9 or 181	

Question	Answer	Mark	Mark scheme	Additional guidance
99	952	P1	for starting to work with parts, eg. 6 × 60 ÷ 10 (= 36) or 10 ÷ 6 (= 1.66..) or 6 ÷ 10 (= 0.6) or 13 × 60 ÷ 15 (= 52) or 15 ÷ 13 (= 1.15..) or 13 ÷ 15 (= 0.866..) **OR** for 60 ÷ 10 × 12 (= 72) or 10 × 60 ÷ 15 (= 40)	
		P1	for a full process to find the number of parts made by machine A eg "36" × 12 (= 432) or 12 × 60 ÷ "1.66.." (= 432) or 12 × 60 × "0.6" (= 432) **OR** "72" × 6 (= 432)	
		P1	for a full process to find the number of parts made by machine B eg "52" × 10 (= 520) or 10 × 60 ÷ "1.15.." (= 520) or 10 × 60 × "0.866.." (= 520) **OR** "40" × 13 (= 520)	
		A1	for 952 or 432 **and** 520	
100	168	P1	for working with ratio to find the amount for C or D eg. 1.5 × 2 (=3) or (A, B, C, D =) 2 , 7 , 3 , 3 oe **OR** for suitable expressions linking A with C or D, eg. A = x, C = 1.5x	
		P1	for "2 + 3 + 3 + 7" (=15) **OR** adds 4 suitable expressions, eg. "x + 3.5x + 1.5x + 1.5x" (= 7.5x)	
		P1	for a complete process to find the amount of money eg. 360 ÷ "15"× 7 **OR** 360 ÷ "7.5" × 3.5	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
101 (a)	4.56	B1	cao	Accept trailing zeros, eg 4.560
(b)	7300	B1	cao	Accept trailing zeros, eg 7300.0
102	263.2	M1	for using the scale eg 14 × 18.8 **or** 14 × 18 **or** for the digits 2632 **or** an answer of 263	
		A1	cao	
103	4	M1	for $\frac{30}{100}\times 80$ (=24) oe or for 104	
		M1	(dep) for 28 – "24" or 108 – 104	Numbers in subtraction may be reversed
		A1	for 4 or –4	
104	2.5	M1	for $(R=)\frac{100I}{PT}$ **or** 600×5 (= 3000) **or** 75 × 100 (= 7500) **or** 75 ÷ 5 (= 15) **or** 75 ÷ 600 (= 0.125)	
		M1	for $\frac{75\times 100}{600\times 5}$ oe **OR** $\frac{"15"}{600}$ (= 0.025) **or** "0.125" ÷ 5 (= 0.025) **or** 1.025	Calculations may be done in stages. May work in decimals or in percentages
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
105	2 bags of stone	P2	for a complete process to work out how many bags of each material is required eg 180 ÷ 25 (= 7.2 or 8), 375 ÷ 22.5 (= 16.6.. or 17), 1080 ÷ 50 (= 21.6 or 22) **or** a complete process to work out the total weight of each element that he has eg 25 × 10 (= 250), 20 × 22.5 (= 450), 50 × 20 (= 1000)	The correct figures do not need to be seen to award the process marks
		(P1	for a correct start to the process, eg for at least one correct calculation	
		C1	correct conclusion eg 2 bags of stone, with no incorrect working	
106 (a)	explanation	C1	explanation eg should be 1.03, this is 30% (not 3%) **Acceptable examples** Because 1.3 is 130% He is increasing it by 30% 1.3 means 1.30, not 1.03 He needs to put a 0 in front of the 3 1.3 is the wrong decimal He should multiply by 0.03 3% is 0.03, (not 1.3) His answer should be 154.5 He is meant to increase it by 4.5, not by 45 **Not acceptable examples** Because he is increasing by 130%, not 3% He needs to find 1% and then times it by 3	
(b)	(150 ×) 0.97 = 145.5	B1	for 0.97 (or $\frac{97}{100}$ or 97%) and 145.5	

Question	Answer	Mark	Mark scheme	Additional guidance
107 (a)	Ben (supported)	P1	shows how to work interest out for one year eg 2000 × 0.025 (= 50) **or** 1600 × 0.035 (= 56) **or** 150 **or** 168 **or** 2000×1.025 (= 2050**) or** 1600 × 1.035 (= 1656)	Throughout accept figures ±1 pence which do not need to be presented in money notation (to 2dp) or with monetary symbols.
		P1	shows compound interest calculation for one account eg 2050→51.25 **or** 2101.25→52.53 **or** 1656→57.96 **or** 1713.96→59.99 eg 2000×1.025^3 (= 2153.78**) or** 1600 × 1.035^3 (= 1773.95)	Award mark for a correct process shown, for which these figures can be taken as implying the process.
		P1	shows complete compound interest calculation for both accounts eg 2000×1.025^3 (= 2153.78**) and** 1600 × 1.035^3 (= 1773.95) OR one interest stated correctly eg 153.78 **or** 173.95	As above, award mark for both correct processes shown for both accounts, which these figures can be taken as implying the process.
		C1	Ben (shares) supported by 153.78 **and** 173.95	Accept an answer of "shares".
(b)	conclusion	C1	conclusion (ft) eg no change, shares now 182.5… **Acceptable examples** no since shares/Ben now 182.5 Still Ben since 182.5 > Ali No; he only gets 8.57 more No; he gets 68.56 instead of 59.98 (3^{rd} yr) No; Ben already gets more interest, he would just get even more **Not acceptable examples** no shares now 182.5 Still Ben since less than Ali 182.5 > 153.78 no; he needs 20.17 more	Conclusion needs to be supported. ft is from part (a); calculations carried out as part of (b) need to be correct for the comparison to be valid.

Question	Answer	Mark	Mark scheme		Additional guidance
108	No (supported)	P1	calculates area of trapezium eg ½ × 7 × (10+16) (= 91)		
		P1	for division by coverage eg ÷2 or [area of trapezium] ÷ 2 (= 45.5) or process to find coverage per tin eg 5 × 2 (= 10)	for process to find number of tins bought eg 160 ÷ 16.99 = 9 tins	[area of trapezium] needs to be clearly stated if the process of finding the area is not clear
		P1	for division to find the number of tins eg ÷5 or "45.5" ÷ 5 (= 9.1) **or** [area of trapezium] ÷ "10" (= 9.1)	for using whole no. of tins to find total litres eg 9 × 5 (= 45)	
		P1	(dep on at least P2) for a process to multiply a whole number of tins (rounded up) by 16.99	(dep on at least P2) for a process to find the total coverage eg "45" × 2 (= 90)	
		C1	for 'No' supported by correct figures eg 169.9 or 90 **and** 91		There must be a conclusion ("No" or equivalent wording) including the figure 169.9 and working showing processes followed.

Question		Answer	Mark	Mark scheme	Additional guidance
109		8	B1	cao	
110	(a)	350	B1	cao	Accept trailing zeros eg 350.0
	(b)	7.7	B1	cao	Accept trailing zeros eg 7.70
	(c)	320	B1	cao	Accept trailing zeros eg 320.0
111	(a)	62	M1 A1	for distance ÷ time eg 186 ÷ 3 **or** 186 ÷ (3× 60)(=1.03..) cao	May use hours or minutes at this point
	(b)	232	M1 A1	for speed × time eg 58 × 4 **or** 58 × 4 × 60 (=13920) cao	May use hours or minutes at this point
112		90	P1 P1 A1	for a process to find the number of batches for at least 2 ingredients, eg 900 ÷ 225 (= 4) **or** 1000 ÷ 110 (= 9.09..) **or** 1000 ÷ 275 (= 3.6.….) **or** 225 ÷ 75 (= 3) **OR** A full method to find the maximum number of biscuits for 1 ingredient eg 900 ÷ 225 × 30 **OR** Amount required for 1 biscuit for at least 2 ingredients eg 225 ÷ 30 (= 7.5) **or** 110 ÷ 30 (= 3.6..) **or** 275 ÷ 30 (= 9.1..) **or** 75 ÷ 30 (= 2.5) **OR** Amount required for 3 batches for at least 2 ingredients eg 225 × 3 (= 675) **or** 110 × 3 (= 330) **or** 275 × 3 (=825) **or** 75 × 3 (= 225) (dep P1) for a complete process to find the maximum number of biscuits after considering at least 3 different ingredients eg "3" × 30 (dep P2) cao from fully correct working	 They must use their smallest multiplier after considering at least 3 different ingredients 90 without working award no marks

Question		Answer	Mark	Mark scheme	Additional guidance
113		3 : 5	P1	for process to find 20% **or** 120% of the cost, eg 8500 × 0.2 (= 1700) oe **or** 8500 × 1.2 (= 10 200) oe	When partitioning all figures quoted must be correct or a full method shown eg 10% = 8500 ÷ 10 (=850) and 20% = "850" + "850" (=1700)
			P1	for process to find total cost of payments, eg 12 × 531.25 (= 6375)	
			P1	for complete process to find value of deposit, eg "10 200" – "6375" (= 3825) **or** 8500 – "6375" (=2125) **and** "2125" + "1700" (=3825) **OR** the deposit as a proportion of the total cost, eg $1 - \frac{"6375"}{"10200"}$ $(=\frac{3}{8})$	May be seen as a fraction of the total eg $\frac{3825}{10200}$ $(=\frac{3}{8})$
			P1	for finding a correct un-simplified ratio, eg "3825" : "6375" oe **or** 5:3 **or** 1.$\dot{6}$: 1 **or** $\frac{5}{3}$: 1	Figures at this stage must be expressed as part of a ratio eg 51:85, $\frac{3}{8} : \frac{5}{8}$
			A1	Accept 1: 1.$\dot{6}$, 1: $\frac{5}{3}$	Ignore consistent units

Question		Answer	Mark	Mark scheme	Additional guidance
114		No (supported)	P1	For a process to calculate the initial or new pressure, eg (70 +10) ÷ (20+10) (=2.6 to 2.7) **or** 80 ÷ 30 (=2.6 to 2.7) **or** 70 ÷ 20 (=3.5)	Accept any value in the range 2.6 to 2.7 if unsupported by working
			P1	For a complete process to make a comparison eg. 0.8 × "3.5" (=2.8) **OR** $\frac{("3.5"-"2.6")}{"3.5"}$ ×100 (=22 to 26) **OR** "3.5" × 0.2 (=0.7) **and** 80 ÷ 30 (=2.6 to 2.7) **OR** $\frac{"2.6"}{"3.5"}$ (× 100) (=0.74 to 0.78 **or** 74 to 78)	
			A1	for a correct conclusion supported by accurate figures eg 2.8 **and** 2.6(6…) **OR** decrease is 24% (or 22% to 26%) **OR** 0.7 **and** 2.6 to 2.7 **and** 3.5 **OR** 0.7 **and** 0.9 **OR** 0.76 (or 0.74 to 0.78) **OR** 76% (or 74% to 78%)	Allow truncation or rounding of figures

Question	Working	Answer	Mark	Notes
115 (a)		$\frac{33}{60}$	M1	for method to find number of students who did not walk to school eg 15 + 12 + 6 or 60 – 27 (=33) or 0.55 or for $1-\frac{27}{60}$
			A1	for $\frac{33}{60}$ or equivalent fraction
(b)		Pie chart drawn	M1	for method to find the angle for at least one sector eg $\frac{27}{60}\times 360$, $\frac{12}{60}\times 360$, $\frac{6}{60}\times 360$, $27\div\frac{60}{360}$, $12\div\frac{60}{360}$, $6\div\frac{60}{360}$ oe (0.166..) NB: could be implied by one angle drawn accurately.
			M1	for drawing at least one sector accurately (from 4 sectors) eg 162°or 72°or 36°
			A1	for an accurately drawn pie chart
			B1	(dep on 4 sectors with at least one accurately drawn) for showing labels Walk Car Bicycle
116 (a)		$\frac{3}{7}$	B1	for $\frac{3}{7}$ or equivalent fraction
(b)		3 : 1	B1	for 3 : 1 or equivalent ratio
117 (a)		2.75	M1	for accurately measuring the distance between Backley and Cremford as 5.3 cm – 5.7 cm oe or their measurement × 0.5 oe
			A1	for answer in the range 2.65 to 2.85
(b)		130	B1	for answer in the range 128 to 132

Question	Working	Answer	Mark	Notes
118		5 : 2 : 10	P1	for process to calculate total for quiz or total of membership fees eg. 13 × 5 + 35 (=100), 25 × 20 (=500)
			P1	for complete process to write (correct) figures as a ratio, eg 250 : 100 : 500 oe in any order (condone inclusion of units or words)
			A1	cao
119		Shown	M1	for method started to find comparable amounts, eg 17 × 46 (=782) or 17 × 0.46 (=7.82) or 17 × 35 (=595) or 266 ÷ 35 (=7.6) or 26600 ÷ 35 (=760)
			M1	for complete method to find comparable figures eg 17 × 46 (=782) or 17 × 0.46 (=7.82) AND 266 ÷ 35 (=7.6) or 26600 ÷ 35 (=760) eg 17 × 46 × 35 (=27370) or 17 × 0.46 × 35 (=273.7)
			C1	Shows correct comparable figures eg 7.82 and 7.6(0), 782 and 760 OR 273.7(0)
120	£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

Question	Working	Answer	Mark	Notes
121		$\frac{1}{11}$	P1	for starting the process, eg by writing down a correct ratio or using a given number of cubes for one relationship, eg 2B 1Y or B:Y = 2:1 or 4G 1B or G:B = 4:1 or 8G, 1Y or G:Y = 8:1 oe or yellow = 2, blue = 4, or states 2:1:8 oe in any order (can be algebraic)
			P1	for complete process to find possible number of each colour or equivalent ratio, eg 8G 2B 1Y or G:B:Y = 8:2:1 oe or yellow = 2, blue = 4, green = 16 oe (can be algebraic)
			A1	$\frac{1}{11}$ oe

Question	Working	Answer	Mark	Notes
122		Yes (supported)	P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
			P1	(dep P1) for process to work out total number of adults or the total number of people, e.g. "468" × 5 ÷ 2 (= 1170) or "468" × 7 ÷ 2 (= 1638)
			A1	for 1170 or 1638
			P1	for process to work out the percentage of theatre full, e.g. $\frac{"468"+"1170"}{2600}\times 100$ (= 63) or for a process to work out 60% of 2600 (= 1560)
			C1	for a correct conclusion supported by correct figures e.g. 63% or 1560 **and** 1638
			P1	OR for a process to work out 60% of 2600, eg. $\frac{60}{100} \times 2600$ (= 1560)
			P1	(dep P1) for process to work out total number of children, e.g. "1560" × 2 ÷ 7 (= 445(.7...)
			A1	for 445(.7...)
			P1	for process to work out number of children in the circle, eg. "445(.7...)" ÷ 4 (= 111 to 112)
			C1	for a correct conclusion supported by correct figures e.g. 111 to 112
				[Where appropriate, accept rounded or truncated values]

Question	Working	Answer	Mark	Notes
122 cont.				OR
			P1	for a process to find the maximum number of children, eg. 2600 × 2 ÷ 7 (= 742(.8…))
			P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
			A1	for 468 and 742(.8...)
			P1	for $\frac{"468"}{"742(.8..)"}$ × 100 (= 63) or process to work out 60% of "742.8.." (= 445(7..))
			C1	for a correct conclusion supported by correct figures e.g. 63% or 468 and 445(.7...)
				[Where appropriate, accept rounded or truncated values]

Question	Working	Answer	Mark	Notes
123 (a)		57.1	P1	for a process to find time from Liverpool to Manchester, eg. 56 ÷ 70 (= 0.8 (hrs) or 48 (mins))
			P1	for a process to find the total distance, eg 56 + 61 (= 117) or the total time, eg"48" + 75 (= 123) or "0.8" + $\frac{75}{60}$ (= 2.05), with consistent units of time
			P1	(dep P2) for a correct process to find average speed with consistent units of time, eg."117" ÷ "2.05" or ."117" ÷ "123"
			A1	for answer in the range 57 to 57.1
(b)		explanation	C1	for explaining that the time taken for the two parts of the journey must be the same or the distance from Leeds to York is $\frac{3}{4}$ the distance from Barnsley to York oe
124 (a)		3.9	M1	for a ratio of $\frac{8.1}{5.4}$ (= 1.5) oe or $\frac{5.4}{8.1}$ (= 0.66..) oe or $\frac{2.6}{5.4}$ (= 0.48..) oe or $\frac{5.4}{2.6}$ (= 2.07..) oe
			A1	cao
(b)		2.05	M1	for $\frac{5.4}{8.1} \times 6.15$ (= 4.1) or $\frac{2.7}{8.1} \times 6.15$ oe or ft "scale factor" from (a)
			A1	cao

Question	Working	Answer	Mark	Notes
125		Secure Bank (supported)	P1	for a process to work out the interest after one year e.g. 0.02 × 25000 (= 500) or 0.043 × 25000 (= 1075) or for 1.02 or 25500 or 1.043 or 26075
			P1	for process to find value of the investment after 3 years or the multiplicative factor for 3 years at one of the banks, e.g. 25000 × 1.02 × 1.02 × 1.02 oe (= 26530...) or 1.02^3 (= 1.0612...) or 25000 × 1.043 × 1.009 ×1.009 oe (= 26546...) or 1.043 × 1.009 ×1.009 (= 1.0618.....) [accept total interest of 1530...or 1546...if final values of investment are not found]
			C1	for Secure Bank from correct figures eg 26530.. and 26546..or 1530.. and 1546.. or 1.0612.. and 1.0618

Question	Working	Answer	Notes
126		$\frac{53}{64}$	P1 for interpreting information e.g. recognising that the shaded area = $\frac{3}{4}+\left(\frac{1}{4}\times\frac{1}{4}\right)+\left(\frac{1}{4}\times\frac{1}{4}\times\frac{1}{4}\right)$ or adding in lines to diagram to show 64ths A1 cao
127 (a)		graph	C1 introduce a scale for the *y* axis C1 plots at least 2 points correctly C1 fully correct and complete graph
(b)		15 miles (supported)	M1 reads off graph eg 20 km = 12-13 miles or 15 miles = 24 km or uses table C1 states 15 miles (24 km) with appropriate evidence
128	£ per kg: 1.89÷2 = 0.945 (94.5); 4.30÷5 = 0.86 (86); 8.46÷9 = 0.94 (94) kg per £: 2÷1.89 = 1.058(2..) ; 5÷4.30 = 1.162(79…); 9÷8.46 = 1.0638(297…) Price per 90 kg: 1.89×45 = 85.05; 4.30×18 = 77.4(0); 8.46×10 = 84.6(0)	5 kg (supported)	P1 for a process (for at least two boxes) of division of price by quantity or division of quantity by price or a complete method to find price of same quantity or to find quantity of same price P1 for a complete process to give values that can be used for comparison of all 3 boxes C1 for 5 kg and correct values that can be used for comparison for all 3 boxes and a comparison of their values

Question	Working	Answer	Notes			
129		720	P1	attempt to find the maximum biscuits for one of the ingredients e.g. 5000 ÷ 15 (=33.3..) or 2500 ÷ 75 (=33.3..) or 3000 ÷ 100 (=-30) or 320 ÷10 (=32)		
			P1	for identifying butter as the limiting factor or 30 × 24 (=720) seen		
			A1			
130		96	P1	a strategy to start to solve the problem eg 18 ÷ (7 −4) (=6)		
			P1	for completing the process of solution eg “6” × (4 + 5 + 7)		
			A1	cao		
131		conclusion	P1	30 ÷ 70 (=0.428)	26 ÷ 60 (=0.4333…)	30 ÷ 26 (=1.153…)
		(supported)	P1	60 × “0.428…”	70 × “0.4333…”	60× “1.153…”
			C1	for conclusion linked to 25.7 mins, 30.3 miles or 69.2 mph		

Question	Working	Answer	Notes
132		for No with supporting evidence	P1 for correct process to find price in week 1, eg 65 × 0.8 (= 52) P1 for process to find the price in week 2, eg "52" – 10 (= 42) C1 for No with correct supporting evidence
133		butter = 1080 flour = 1575 sugar = 450 mincemeat = 1260	M1 for correct use of a correct scale factor, 72 ÷ 16 (= 4.5) on at least one ingredient M1 for complete method applied to all ingredients A1 cao
134		Jardins of Paris	P1 correct process to convert one price to another currency, eg 1980 ÷ 1.34 P1 for a complete process leading to 3 prices in the same currency C1 for 3 correct and consistent results and a correct comparison made.
135 (a)		graph	M1 for method to start to find distance cycled in 36 mins, eg. line drawn of correct gradient or 15 Ò $\frac{36}{60}$ C1 for correct graph from 9.00 am to 9.36 am C1 for graph drawn from "(9.36, 9)" to (10.45, "9" + 8)
(b)		4.5	M1 for 18 × 0.25 A1 cao
136		8112	M1 for complete method, eg 7500×1.04^2 A1 cao
137		No with supporting evidence	P1 for the start of a correct process, eg two of x, 2x and 2x+7 oe or a fully correct trial, eg. 5 + 10 + 17 = 32 P1 for setting up an equation in x, eg x + 2x + 2x + 7 = 57 or a correct trial totalling 57, eg 10 + 20 + 27 = 57 C1 for a correct deduction from their correct answers, eg Chris has 20 so it is impossible for all to have 20 since 60 marbles would be needed.

Question	Working	Answer	Notes
138		46	M1 for process to find value after 1 year M1 for process to find value after 4 years A1 cao
139		3p	M1 for method to find gradient of line A1 for 3p oe
140 (a)		10	P1 for process to find number of people that Ellie can make mousse for using the sugar available P1 for process to find number of people that Ellie can make mousse for using the chocolate available A1 for correct answer with supportive working
(b)		correct explanation	C1 for "can only make mousse for 6 people" oe
141		8	B1 cao
142		3 : 4	M1 for 32 – 8 (= 24) M1 (dep) for "24" : 32 A1 cao
143		1.52	M1 for 20 4.55 60 A1 for 1.52 or 1.516(....)

Question	Answer	Mark	Mark scheme	Additional guidance
144	0.45	B1	cao	
145 (a)	3 hrs 16 mins	P1	196 − 60 − 60 − 60 (=16) oe **or** 196 ÷ 60 (= 3.26.. or 3.27…) **or** states 3 hours in their answer (with an incorrect number of minutes or minutes left blank)	
		A1	3 hours 16 minutes	
(b)	$\frac{x}{2}$	B1	$\frac{x}{2}$ oe	
146 (a)	50	M1	[2.5] × 20 (=50)	[2.5] a number in the range 2.3 to 2.7 or identified as the distance from Shelton to Trilby
		A1	for an answer in the range 46 to 54	
(b)	60	M1	5 × 1200 (=6000) **or** 1200 ÷ 100 (=12) **or** conversion 5 ÷ 100 (=0.05)	
		A1	cao	
147 (a)	40	M1	2 ÷ (2+3) × 100 (=40) or build up to (and shows) 40:60 oe **or** for sight of $\frac{2}{5}$ oe **or** 100 ÷ 5 (=20)	
		A1	cao	
(b)	20 : 80	M1	100 − 20 (=80) or 80 : 20 oe	
		A1	20 : 80 oe	Accept any equivalent ratio; award full marks if an acceptable ratio is given and then incorrectly simplified.
148	10 000	B1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
149	12.85 or 12.86 or 13.5(0)	P1	for 9 + 2 + 1 (=12)	Award this mark for sight of 4500, 1000 or 500
		P1	for working out how many lots of 175g are needed eg 6000 ÷ "12"× 2 ÷ 175 (=5.71..)	Process may lead to 5 or 6 instead of 5.71
		P1	for a complete process eg "5.71…" × 2.25 (=12.857..)	"5.71…" (ft) or a figure rounded or truncated eg "6"
		A1	for 12.85 or 12.86 or 13.5(0)	

Question	Answer	Mark	Mark scheme	Additional guidance
150	260	P1	conversion to common units of capacity eg 2.2 × 4.54 (= 9.988) **or** 8 ÷ 4.54 (= 1.76...) **OR** **for company A** 2400 ÷ 4.54 (= 528.63...) **OR** 2400 ÷ 8 (= 300) **OR** a rate per minute 8 ÷ [time for Company A] (= 4.8…) oe	[time for Company A] could be 1 min 40 sec or 1.66… or 1.6 or 1.40 etc as long as it is clear it relates to 1 min 40 sec Results of calculations may be truncated or rounded.
		P1	for a complete process to find the time for one water rate in minutes. eg in litres Company A 2400 ÷ "4.8.." (= 500) or "300" × [1 min 40 sec] (= 500) **or** Company B 2400 ÷ "9.988" (= 240.28...) **OR** eg in gallons Company A "528.63.." ÷ ("1.76. .." ÷ [1 min 40 sec]) (= 500) **or** Company B "528.63…" ÷ 2.2 (= 240.28…)	
		P1	for complete processes to find the times for both company A and company B in minutes. Company A eg in litres 2400 ÷ "4.8…" (= 500) or "300" × [1 min 40 sec] (= 500) or in gallons "528.63.." ÷ ("1.76. .." ÷ [1 min 40 sec]) (= 500) **AND** Company B eg in litres 2400 ÷ "9.988" (= 240.28...) or in gallons "528.63…" ÷ 2.2 (= 240.28…)	
		A1	for an answer in the range 259 to 260	If the answer is given within the range but then rounded incorrectly award full marks.

Question	Answer	Mark	Mark scheme	Additional guidance
151	3	B1	cao	
152	$\frac{40}{100}$	B1	for $\frac{40}{100}$ or any equivalent fraction	
153	$\frac{3}{4}$	M1	for method to find fraction shaded, eg 12 out of 16 squares shaded or unsimplified answer eg $\frac{12}{16}$ **or** for $1-\frac{1}{4}$ oe or for an answer of $\frac{1}{4}$	May be expressed in a wide variety of ways.
		A1	cao	
154	258 to 275	M1	for taking a correct reading from the graph that shows conversion of an amount in $ to £	
		M1	for a complete method eg attempts to read from the graph at using numbers that sum to 345 **and** finds the sum of their readings eg 6 × 50 + 45	Must be a complete method to get to 345
		A1	for answer in the range 258 to 275	Condone incorrect money notation if the meaning is clear
155 (a)	140	M1	for complete method eg 56 ÷ 40 × 100	May be seen in different ways, eg 2.5 × 56
		A1	cao	
(b)	32	M1	for method to find percentage, eg $\frac{18}{56} \times 100$ (=32.14…)	
		A1	for an answer in the range 32 to 32.2	

Question	Answer	Mark	Mark scheme	Additional guidance
156	2 hours 45 minutes	P1	for 30 ÷ 24 (= 1.25) or 12 ÷ 8 (= 1.5)	May be written in hours and/or minutes
		P1	for finding the sum of their two times eg "1.25" + "1.5" (= 2.75) or 165 (minutes)	or 3 h 15 min or 2 h 75 min
		A1	cao	
157 (a)	Yes (supported)	P1	for start of process, eg 5 × 9 (= 45) **or** 10 × 14 (= 140) **or** 5 × 2 (= 10 (kg)) **or** 3 ÷ 2 (= 1.5 (boxes))	Accept values rounded or truncated to 1dp in both (a) and (b). Ignore units
		P1	for process using ratio of areas, eg "140" ÷ "45" (= 3.1...) **or** for using ratio of amount of seed eg "10" ÷ 3 (= 3.3...) **or** for finding coverage for 1 kg of grass seed, eg "45" ÷ 3 (=15 (m^2))	
		P1	for process to find amount of seed needed, eg "140" ÷ "45" × 3 (= 9.3...kg) **or** "140" ÷ "45" × "1.5" (= 4.6...(boxes)) oe **or** "15" × 2 (= 30 (m^2 per box)) **and** "140" ÷ "30" (= 4.6...(boxes)) **or** for process to find area that can be seeded, eg "10" ÷ 3 × "45" (= 150 (m^2)) **or** "140" ÷ "10" (= 14 (m^2)) oe	Accept 9.4 Accept 4.7
		C1	for "Yes" supported by correct figures eg 4.6...(and 5), **or** 9.3...and 10 **or** 150 and 140 (or 140 to 148.5) **or** 15 and 14	
(b)	Yes, (does not have enough) (supported)	C1	for reasoning supported with correct figures, eg does not have enough seed and compares 9 (kg) with 9.3…(kg) or 4.5 (boxes) with 4.6… (boxes) or 135 (m^2) with 140 (m^2) or 14 (m^2) with 15 (m^2) ft from (a)	Values used in (a) do not need repeating in (b) as long as intention is clear
158	96	M1	for a complete process to find the volume eg 6 × 4 × 10 ÷ 2 (= 120)	
		M1	for a complete process, eg (6 × 4 × 10 ÷ 2) × 0.8	
		A1	cao SC B1 for 192	

Question	Answer	Mark	Mark scheme	Additional guidance
159	4000	B1	cao	
160	3 : 5	B1	for 3 : 5 or for any other equivalent ratio	
161 (a)	2.5(0)	P1	for 13 × 7.5(0) (=97.5(0)) **or** 5 × 20 (=100)	
		P1	for "100" – "97.5(0)"	
		A1	cao	
(b)	96	M1	for $\frac{1}{5}$ × 120 (= 24) oe **or** $\frac{4}{5}$ × 120 oe	
		A1	cao	
162	6	P1	process to find the weight of small boxes eg 3 × 450 (=1350)	
		P1	complete process to find the number of large boxes, eg (5850 – "1350") ÷ 750 **or** 5850 – "1350" (=4500) **and** 6 × 750 (=4500)	
		A1	cao	Cannot award this mark if 6 comes from a rounded value due to error in calculating

<table>
<tr><th>Question</th><th>Answer</th><th>Mark</th><th>Mark scheme</th><th>Additional guidance</th></tr>
<tr><td>163</td><td>72</td><td>P1

P1

P1

A1</td><td>for a correct process to find the number of boys or girls,
eg boys = 0.55 × 800 (=440) or girls = 0.45 × 800 (=360)

or process to find proportion that are boys having packed lunch,
eg 0.55 × 0.4 (=0.22)

for a correct process to find the total number of school dinners or packed lunches,
eg SD = 800 × 0.69 (=552) or PL = 800 × 0.31 (=248)

or process to find proportion that are girls having packed lunch,
eg 0.31 – “0.22” (=0.09)

or process to find the number of boys having school dinner,
eg “440” × 0.6 (= 264)
or number of boys having packed lunch, eg “440” × 0.4 (=176)

for a correct process to find the number of girls having packed lunches,
eg “800” × “0.31” – (440 × 0.4)

or “0.45” × “800” – (“800” × “0.69” – “440” × 0.6) or “0.09” × 800

cao</td><td><table><tr><td></td><td>PL</td><td>SD</td><td>Total</td></tr><tr><td>Boys</td><td>176</td><td>264</td><td>440</td></tr><tr><td>Girls</td><td>72</td><td>288</td><td>360</td></tr><tr><td>Total</td><td>248</td><td>552</td><td>800</td></tr></table></td></tr>
<tr><td>164</td><td>8</td><td>M1

M1

A1</td><td>for 158220 – 146500 (=11720) or 158220 ÷ 146500 (=1.08)

for complete method,
eg (158220 – 146500) ÷ 146500×100 oe
or 1.08×100 – 100

cao</td><td>0.08 as an answer implies M1</td></tr>
<tr><td>165</td><td>37 000</td><td>B1</td><td>cao</td><td></td></tr>
</table>

Question	Answer	Mark	Mark scheme	Additional guidance
166	50	B1	for finding the time difference, eg, 1hr 18 mins or 78 mins oe	Allow 1.18 for this mark 118 scores B0
		P1	for correct process to convert minutes to hours, eg 18 ÷ 60 (=0.3) **or** 78 ÷ 60 (=1.3) **or** for a correct process to convert speed in miles per minute to mph eg "0.833..." × 60	For a conversion of time or speed
		P1	for using speed = distance ÷ time eg, 65 ÷ [time] **or** 65 ÷ 78 (=0.833...)	[time] is what the candidate clearly indicates as time difference
		A1	cao SCB2 for 83(.333…) seen as the answer	

Question	Answer	Mark	Mark scheme	Additional guidance
167	1500	B1	cao	
168	$\frac{19}{100}$	B1	or any other equivalent fraction.	
169	16	M1 A1	for a complete method to find 20% of 80 eg 80 × 0.2 oe cao SC B1 for an answer of 64 or 96	
170	$\frac{3}{5}$	M1 M1 A1	for a start in the method eg 35 + 50 + 75 (= 160) **or** 400 – 35 – 50 – 75 (= 240) or $\frac{160}{400}$ oe for eg $\frac{400-"160"}{400}$ or $\frac{2}{5}$ or $1-\frac{160}{400}$ **or** for an unsimplified answer eg $\frac{"240"}{400}$ oe or as 60% oe cao	
171	$\frac{9}{25}$	M1 A1	for $\frac{n}{6+9+10}$ where n is an integer < 25 for $\frac{9}{25}$	 Or equivalent fraction
172	9	M1 A1	for a method to find the scaling factor eg "10.8" ÷ "1.8" (= 6) or "1.8" ÷ 1.5 (=1.2) or 1.5 ÷ "1.8" (=0.833..) **or** a sf given from 5.5 to 6.5 or from 1.06 to 1.4 or from 0.75 to 0.94 eg used with 1.5 accept an answer in the range 8 to 10	Could be shown on the diagram by appropriate working eg 6 steps Allow 10.6 to 11.0 and 1.6 to 2.0 for their measured lengths.

Question	Answer	Mark	Mark scheme	Additional guidance
173	78	P1 P1 A1	for process to find the number of rand, eg 850 × 18.53 (= 15750.5) **OR** for process to find number of £, eg 200 ÷ 18.53 (= 10.79 …) (dep P1) for process to find the number of rand notes, eg "15750.5" ÷ 200 (= 78.7...) **OR** 850 ÷ "10.79.." (= 78.7...) cao	
174	79.76	P1 P1 P1 A1	process to find number of gallons eg 560 ÷ 34.5 (=16.23…) OR finding the miles per litre eg 34.5 ÷ 4.55 (=7.582…) process to convert from gallons to litres eg "16.23" × 4.55 (=73.855….) OR to work out the cost per gallon eg 4.55 × 1.08 (=4.914) OR finding the number of litres eg 560 ÷ "7.582…." (=73.859…) (dep P2) for a complete process to work out the cost using the operations (560 ÷ 34.5) × 4.55 × 1.08 eg "73.855…" × 1.08 (=79.763…) or "4.914" × "16.23…" (=79.763…) or "73.859…" × 1.08 (=79.763....) for 79.69 to 79.79	For P marks allow use of truncated/rounded values To 2 dp but accept 79.7

Question	Answer	Mark	Mark scheme	Additional guidance
175	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	

Question	Answer	Mark	Mark scheme	Additional guidance
176	$\frac{3}{100}$	B1	cao	
177	1.94 m or 194 cm	M1	for 188 **or** 0.06 **or** 194 **or** 1.94	
		A1	1.94 m **or** 194 cm	Do not accept numerical answers without the correct unit shown.
178	Yes with correct figures	P1	begins to work with proportion eg 20 ÷ 2 (=10) **or** 20 ÷ 5 (=4) **or** 2.38 ÷ 2(=1.19) **or** 5.60 ÷ 5 (=1.12)	Throughout monetary units not required; trailing zeros not needed. Can work in pence throughout
		P1	full process to find the cost of 20 pens **or** 20 folders eg. 20 ÷ 2 × 2.38 (=23.8) **or** 20 ÷ 5 × 5.60 (=22.4) **or** 2.38 ÷ 2 × 20 (=23.8) **or** 5.60 ÷ 5 × 20 (=22.4)	
		P1	full process to find total price **or** amount remaining eg "23.8" + "22.4" (=46.2) **or** 50 − "23.8" − "22.4" (=3.8)	
		C1	Yes with correct figures eg 46.2 **or** 3.8 (left)	'Yes' might be implied from working eg 46.2<50 or a statement that 3.8 is left, but 46.2 alone must also show an answer such as 'Yes' (may be written elsewhere). Working leading to 46.2 must be shown for this mark.
179 (a)	Trapezium	B1	cao	
(b)	C and D	B1	cao	Accept in either order.
180	40	P1	for 100 − 30 (=70) **or** 1 – 0.3 (=0.7) **or** $1 - \frac{3}{10}$ $(= \frac{7}{10})$ **or** 28 ÷ 7 × 3 (=12)	
		P1	for a complete process eg 28 ÷ ("70" ÷ 10) × 10 oe **or** 28 + "12"	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
181	30:1	M1	for stating 450 : 15 oe **or** 450 ÷ 15 (=30) oe **or** 1 : 30	90 : 3
		A1	cao	Ignore units throughout.
182	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	
183 (a)	2, −4, 2, 8	B2	all 4 values correct	
		B1	for 2 or 3 correct values)	
(b)	Graph	M1	(dep B1) for at least 5 points plotted correctly ft from part a	
		A1	for a fully correct curve drawn	Accept freehand curves drawn that are not line segments; there must be some attempt to draw the minimum point below $y = -4$.
(c)	−2.6 or 1.6	B1	for 1 correct value, ft a non linear graph	Award for −2.6 or 1.6 or both values but do not award the mark if a correct value is given with an incorrect value. Accept 1.56 or −2.56 Note for ft to be applied the graph may be joined by line segments.
184	5	M1	"2" ÷ 40 × 100	"2" comes from their reading of the height of the 20 to 24 column
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
185 (a)	2 mins 48 secs	P1	for an appropriate first step eg 700 ÷ 475 (=1.47..) **or** 475 ÷ [time] (= 4.16.. m/s) **or** [time] ÷ 475 (= 0.24 s/m)	[time] what candidate indicates as time of first race Units are not needed and can be ignored if given
		P1	for a complete process to find the required time eg 700 ÷ 475 × [time] (=168) **or** 700 ÷ (475 ÷ [time]) (=168) **or** [time] ÷ 475 ×700 (=168)	Allow calculation in stages and appropriate rounding.
		A1	cao	
(b)	Statement	C1	eg takes less time **Acceptable examples** Quicker time Faster time Reduces my answer to part (a) **Not acceptable examples** It is an underestimate The amount of time could/may increase Laura goes faster	

Question	Answer	Mark	Mark scheme	Additional guidance
186	30	B1	cao	Accept 30.0
187	24	M1	for a complete method eg 6 × 2 × 2 or sight of 6, 2, 2 ready for calculation, or with the wrong operation	Could be seen as two separate calculations
		A1	cao	SC:B1 for a answer of 1.5 oe
188	Shows earnings	M1	for a method to start to work out earnings eg 11.2 × 8 (= 89.6) **or** 20 – 8 (= 12) **or** 8.4 × 12 (= 100.8)	Accept calculations in pence, or £ written in decimal form.
		M1	for a complete method eg 11.2 × 8 + 8.4 × (20 – 8) **or** "89.6" + "100.8" **or** 200 – "89.6" – "100.8" (= 9.6)	
		C1	Shows earnings eg 190.4(0) **or** 9.6(0) with fully correct arithmetic	Conclusion in figures; ignore written conclusion.
189	$\frac{40}{560}$ oe	M1	for correct start to method eg 600 – 560 (= 40) **or** $\frac{600}{560}$ oe (= 1.07(14…)) **OR** correct answer but not a fraction eg 0.07(14…)	
		A1	for any equivalent fraction to $\frac{40}{560}$ eg $\frac{1}{14}$	
190	69.2	B1	for a correct measurement of either length or width, eg 11.5 (cm) **or** 5.8 (cm)	Allow measurements 11.3 to 11.7 cm and 5.6 to 6.0 cm NB: could work in mm
		P1	for process to find actual dimensions, eg [length] × 200 (= 2300) **or** [width] × 200 (= 1160)	[length] in the range 11.0 to 12.0 [width] in the range 5.0 to 6.5 NB: could work in mm
		P1	(indep) for process to convert to metres [length in cm] ÷ 100 eg "2300" ÷ 100 (= 23) **or** "1160" ÷ 100 (= 11.6)	This mark can be awarded for the conversion of any amount in cm to m (ie not from an area)
		P1	(indep) for process to find the perimeter, eg"23" × 2 + "11.6" × 2 (= 69.2) **or** "11.5" × 2 + "5.8" × 2 (= 34.6)	calculations could be in cm or in m and could be scaled or unscaled figures
		A1	for an answer in the range 67.6 to 70.8	SC: award 3 marks for an answer in the range 67.6 to 70.8 using measurements outside the above ranges

Question	Answer	Mark	Mark scheme	Additional guidance
191 (a)	10	M1	for a start of method to find Bispah's share, eg 2.50×8 (= 20) **or** $\frac{1}{2} \div \frac{1}{8}$ (= 4)	
		A1	cao	Accept 10.00
(b)	1 : 3	P1	for a process to find Chan's share, eg "20" – 2.5 – [Bispah's money] (=7.5) **or** $1 - \frac{1}{8} - \frac{1}{2}$ $(= \frac{3}{8})$	Accept working in pence, or in £ given as a decimal oe NB: award this mark if the working is seen in part (a)
		P1	for a correct ratio eg 2.5 : "7.5" **or** $\frac{1}{8}$: "$\frac{3}{8}$" **or** 3 : 1 oe	Accept 3:1 (correct answer in reverse order) which can also be an equivalent ratio to 3:1
		A1	for 1 : 3 oe eg 5 : 15	Award full marks for 1 : 3 or an equivalent ratio. If an equivalent ratio to 1:3 is shown and then simplified incorrectly award full marks.
192 (a)	9.6	M1	for a correct ratio, eg $\frac{12.6}{8.4}$ (= 1.5) **or** $\frac{8.4}{12.6}$ (= 0.66..) **or** $\frac{6.4}{8.4}$ (= 0.76..) **or** $\frac{8.4}{6.4}$ (= 1.31) oe	Decimal equivalents can be truncated or rounded to 2 dp Accept equivalent methods to use a sf eg $\frac{6.4}{2}$ + 6.4 (indicative of 1.5)
		A1	cao	
(b)	10	M1	for 15 ÷ "1.5" **or** 15 × "0.66.." or ft their ratio from part (a) oe	Award the method mark for any (equivalent) complete method shown.
		A1	cao	

Question	Working	Answer	Mark	Notes
193 (a)	5.80 × 3 + 7.80 = 25.20	90p or £0.90	M1	for a correct first step from which a complete method could be developed, eg. 5.8(0) × 3 (= 17.4(0)) or 24.3(0) – 7.8(0) (= 16.5(0))
			M1	for complete method, eg. 7.8(0) + 5.8(0) × 3 − 24.3(0) (= 0.9(0))
			A1	for answer in correct notation with correct units, eg. 90p or £0.90 (accept £0.90p and £0.9) [SC: B1 for an answer of £2.90]
(b)		8.27pm	M1	for using 60 mins = 1 hour in the conversion of 102 minutes, eg. 1 h 42 mins or 1.42 or 1.7 or (60 + 42) mins or 102 − 60 or 102 ÷ 60 or for an answer of 8.27am or 08.27
			A1	for 8.27(pm) oe
194		30	M1	for 12 m = 1.9 to 2 cm or for a scale factor of 2.25 to 2.75 (comparing length of bus with height of the building) or a **complete** method using the height of the bus to compare with the height of the building.
			A1	answer in range 27 to 33
195	Complete methods 3.60 ÷ 2.5 × 3.5 or 3.60 ÷ 5 × 7 or 3.5 ÷ (2.5 ÷ 3.6) or $\frac{3.5}{2.5} \times 3.6$ or $3.6 \div \frac{2.5}{3.5}$	5.04	M1	for a correct first step to find the cost of a unit of weight (eg. 1 kg or 0.5 kg) eg 3.60 ÷ 2.5 (= 1.44) or 3.60 ÷ 5 (= 0.72) or a complete alternative method
			A1	for 5.04 (accept £5.04p)

Question	Working	Answer	Mark	Notes
196		(£6), 18, 24, 27	M1	demonstrates a proportional method to find at least one cost for cotton, eg. £6 ÷ 2 × 9 (= (£)27) or a correct entry in the table.
		15, 45, 60, 67.50	M1	demonstrates a proportional method to find at least one cost for silk, eg. £6 ÷ 2 × 5 (= (£)15) or a correct entry in the table.
			A1	for a fully correct table (accept 67.5(0))
197		New York (supported)	P1	for changing between £ and $, eg 1.089×1.46 (= 1.58(9.)) or 2.83÷1.46 (= 1.93(8.)) or between litres and gallons, eg 1.089×3.785 (= 4.12(1.)) or 2.83÷3.785 (= 0.74(7.))
			P1	for a complete process to give values that can be used for comparison, eg "1.938..." ÷ 3.785 (= 0.51(2.)) **or** "1.589..."...× 3.785 (= 6.01(7.)) **or** 1.089 × 3.785 = (4.12(1.)) and 2.83 ÷ 1.46 (= 1.93(8.))
			C1	for New York and correct comparative values.
198		648	M2	a complete method, eg 12.5 × 1000 ÷ 19.3
			[M1	for using volume = mass/density, eg 12500 ÷ 19.3 (condone inconsistent units or incorrect conversions) may be implied by digits 647... or 648...]
			A1	for answer in range 647 to 648
199		15	P1	strategy to start the problem, eg $8:20$ and $20:5$
			P1	process to solve the problem, eg $\frac{5}{33}\times 100$ or $24:60:15$
			A1	cao

Question 197

London	1.089 × 1.46 = $1.58(9..) per litre	→	1.589... × 3.785 = $6.01(7..) per gallon
	1.089 × 3.785 = £4.12(1..) per gallon	→	4.121... × 1.46 = $6.01(7..) per gallon
New York	2.83 ÷ 1.46 = £1.93(8..) per gallon	→	1.938... ÷ 3.785 = £0.51(2..) per litre
	2.83 ÷ 3.785 = $0.74(7..) per litre	→	0.747... ÷ 1.46 = £0.51(2..) per litre

The table shows the most commonly used approaches. There are of course other approaches that can be used.

Question	Working	Answer	Mark	Notes
200 (a)		1 : 3	B1	oe
(b)		42	M1	ft 56 ÷ 4 (= 14) or complete method to find number of grey tiles eg 56 – (56 ÷ 4), 56 ÷ 4 × 3 oe (= 42)
			A1	for 42 or ft
201		No (supported)	P1	for finding a time difference e.g. length of day (=7 h or 420 min) or adding at least two of the five times on to 9 am or adding all the room times given (= 5 h 55 min or 355 min) or adding all five times given (=7 h 10 min or 430 min)
			P1	for a complete process to inform final decision eg finds length of day (= 7 h) and total of all five times (=7 h 10 min) **or** starts at 9am and adds on all five times to find finishing time (= 4.10 pm)
			C1	NO supported by correct values eg 4.10 pm **or** 7 h and 7 h 10 min **or** 420 min and 430 min
202		75	P1	for 90 ÷ 6 (= 15) or for connecting *AB* and *BC* by ratio or proportion eg 5 and 1 on the diagram
			P1	for a complete method to find the length *AB* eg 90 ÷ 6 × 5 (= 75)
			A1	cao
203 (a)	$ £ 5 2.631... 60 31.578... 196 103.157... 2744 1444.21... 2804 1475.789...	2975.79	P1	for process to find total room cost eg 196 × 14 (= 2744)
			P1	for process to find total wifi cost eg 5 × 12 (= 60)
			P1	for using exchange rate appropriately (could be used earlier in the question), eg "2804" ÷ 1.90 (= (£)1475.789...) or 1500 × 1.90 (= ($)2850)
			P1	for process to find the total cost in £, eg "1475.79(..)" + 1500 or in $, eg "2850" + "2804" (= 5654)
			A1	2975 to 2976
(b)		Statement	C1	Statement about the total price rising May comment that flights will not change but the rest will rise

Question	Working	Answer	Mark	Notes
204		1.01	P1	fruit syrup 15 × 1.4 (= 21) or water 280 × 0.99 (= 277.2) or apple juice 25 × 1.05 (= 26.25)
			P1	(dep P1) for complete process to find the total mass e.g. “277.2” + “26.25” + “21” (= 324.45) or a weighted density eg 15 × 1.4 ÷ 320 (= 0.065625) or 280 × 0.99 ÷ 320 (= 0.86625) or 25 × 1.05 ÷ 320 (= 0.08203125)
			P1	(dep P2) for complete process to find the density eg “324.45” ÷ 320 (=1.01..) or “0.065625” + “0.86625” + “0.08203125” (= 1.0139..)
			A1	1.01 to 1.014
205		200 000	M1	for recognising that 210 000 = 105% or a full method to find the original price eg 210 000 ÷ 1.05 oe (= 200 000)
			A1	cao

Question	Working	Answer	Notes
206		1230	P1 for start to process eg. 6760 – 3879 – 1241 (=1640) P1 for use of fraction eg. "1640"÷4 or $1-\frac{1}{4}\left(=\frac{3}{4}\right)$ A1
207	2000 ÷ 5 = 400 2080 − 3 × 400 = 880 880 ÷ 4	400, 220	B1 for 400 (weight of beans) P1 Process to find total weight of 4 jars of jam P1 Process to find weight of 1 jar of jam A1
208		20	M1 for conversion of km to metres or hours to minutes M1 for conversion of hours to seconds A1 cao
209 (a)	550 × 3.5601	1958	M1 550 × 3.5601 A1
(b)	210 ÷7 × 2 = 30 × 2 Or 60 ÷2 = 30 and 30 × 7 = 210	Shown	M1 For correct method to convert cost in UK to lira or vice versa, using Asif's approximation C1 Shown with correct calculations
(c)		Correct evaluation	C1 For an evaluation e.g. It is a sensible start to the method because he can do the calculations without a calculator and 3.5 lira to the £ is a good approximation
210		Have a water meter (from working with correct figures)	P1 Process to find number of litres eg. 180 ÷ 1000 P1 Full process to find cost per day P1 Full process to find total cost of water used per year (accept use of alternative time period for both options) P1 Full process with consistent units for total cost of water A1 Correct decision from correct figures (88.13154 or correct figure for their time period)

Question	Working	Answer	Notes
211 (a)	$\frac{388-320}{320}\times 100 =$	21.25	M1 For a complete method A1 21.25%
(b)	A 388 (million) ÷ 3200 = £0.12125 million (£121 250) B 57(million) ÷ 640 = £0.0890625 million (£89062.50)	Company A + evidence	M1 Method to find sales/person for A **or** B for 2014 A1 £121 250 or £89062.50 C1 Company A with £121 250 and £89062.50

Question	Working	Answer	Notes
212		1.75l or 1750 ml	B1 for knowledge of 1 litre is 1000 millilitres P1 for adding their two amounts C1 for 1.75l or 1750 ml (must include units)
213		2	P1 for correct process to find fibre for 400g OR to find weight of 1 slice P1 for a complete process to find the fibre per slice A1 cao
214 (a)		1:1.5	M1 for 40 : (100 – 40) oe or 1.5:1 A1 cao
(b)		$\frac{3}{4}$	B1
215	3.69 Ò 2 = 7.38	19	P1 for 50 ò 7.38 or 50 ò 3.69 (or repeated addition) P1 for 6 Ò 7.38 + 3.69 or ě6Ė Ò 3 + 1 A1 19 boxes
216	176 tiles 20 packs	Supported statement	P1 finding the number of packs for 10% more tiles or 10% of their number of packs, ft from (a) C1 Statement, eg. increase in packs is 2 more which is more than 10%
217		1.0625	P1 for a complete process to find the density of liquid A, eg $\frac{19}{22} \times 1.1$ (= 0.95) P1 for a complete process to find the mass of liquid C, eg $5 \times 0.95 + 15 \times 1.1$ P1 for a complete process to find the density of liquid C, eg $\frac{21.25}{20}$ A1 cao

Question	Working	Answer	Notes
218		4.5	B1 cao
219 (a)		3	P1 start of process eg 8×2×28 (= 448) P1 eg '448' ÷ 200 (= 2.24) or build up method A1 cao
(b)		No change with reason	P1 process to evaluate effect of 2.5g C1 explanation that number of jars is unchanged
220		34	M1 for first step in process eg 17×200 (= 3400) A1 cao
221		60 litres with evidence	M1 reads from graph, eg 30*l* = 6.6 gals or 6 gals = 27*l* C1 60 litres with sufficient evidence
222		2.70	P1 start of process 1.95×3 (= 5.85) P1 complete process eg (6.93 – '5.85') ÷ 0.4 A1 cao
223 (a)		$\frac{20}{35}$	B1 $\frac{20}{35}$ oe
(b)		3 : 4	M1 15 20 A1 cao
224		Sophie and correct values	P1 process leading to two comparable values eg 75÷15×8 (= 40) or 56÷100×75 (=42) oe P1 complete process leading to 3 comparable values C1 correct deduction with correct comparable values

Question	Working	Answer	Notes
225		171	P1 for process to find one share P1 for process to find total A1 cao
226 (a)		1.95	M1 method to find one temperature eg 4500 ÷ 1200 M1 for complete method A1 cao
(b)		D	B1 cao
227 (a)		36.4	P1 start process eg method to find area of trapezium P1 complete process to find volume of tank P1 process to find time eg volume × 1000 ÷ 300 P1 process to find 85% of volume or of time A1 for 36.4 or 36 mins 24 secs
(b)			C1 explanation eg if the average rate was slower it would take more time, if the average rate was faster it would take less time

Question	Working	Answer	Mark	Notes
228 (a)		8	1	B1 7.8 – 8.2
*(b)		No with working	3	M1 for complete method to change 90 gallons to litres e.g. 10 gallons = "45" litres **and** 9 × "45" = 405 (litres) or 9 gallons = "40" litres **and** 10 × "40" = 400 (litres) A1 for answer in range 396 - 414 (litres) **or** room for 36 – 54(litres) C1 (dep on M1) for conclusion ft their answer. **or** M1 for complete method to change 450 litres to gallons e.g. 50 litres = "11" gallons **and** 9 × "11" (= 99 (gallons)) **or** 45 litres = "10" gallons **and** "10" × 10 (= 100 (gallons)) A1 for answer in range 99 to 100 (gallons) **or** room for 9 or 10 (gallons) C1 (dep on M1) for conclusion ft their answer.
229		485	5	M1 for a method to find weekly basic pay e.g. 7 × 10 (= 70) **and** "70" × 5 (= 350) M1 for a method to find overtime rate e.g. 10 + 5 or 1½ × 10 (=15) M1 for a method to find total overtime pay e.g. (3 + 2 + 1 + 3) × "15" (=135) M1 for a method to find total pay e.g. "350" + "135" A1 cao **or** M3 for method to calculate pay per day for 5 days e.g. Mon 70 + 45 (= 115), Tues = 70 + 30 (= 100), Wed = 70, Thurs = 70 + 15 (= 85), Fri = 70 + 45 (= 115) (M2 for method to calculate pay per day for 3 or 4 days) (M1 for method to calculate pay per day for 1 or 2days except Wednesday) M1 for totalling all five days e.g. "115" + "100" + "70" + "85" + "115" A1 cao **or** M1 for a method to find overtime hours e.g. 3 + 2 + 1 + 3 (= 9) **and** weekday hours 7 × 5 (=35) M1 for a method to find equivalent time on overtime e.g "9" + "9" ÷ 2 M1 for a method to find total equivalent time e.g. "13.5" + "35" M1 for a method to find total pay e.g "48.5" × 10 A1 cao **SC** B2 for answer of 575

Question	Working	Answer	Mark	Notes
*230		Yes (supported)	5	M1 for method to calculate profit on one laptop e.g.400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for method to calculate selling price of one laptop e.g. 400 × 1.3 oe (= 520) **or** 400 × 1.15 oe (= 460) M1 for method to calculate the total selling price in one of the two deals e.g.40 × 400 × 1.3 oe (= 20 800) **or** for 10 × 400 × 1.15 oe (= 4600) M1 for total income e.g. "20 800" + "4600" C1 for Yes **and** (£)25 400 **or** Yes with £400 more **or** M1 for a method for the profit on one laptop e.g. 400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for a method for the total profit in one of the two deals e.g.40 × "120" (= 4800) **or** 10 × "60" (= 600) M1 for a method for total profit "4800" + "600" (= 5400) M1 for a method for target profit e.g. 25 000 − 400 × 50 (= 5000) C1 for Yes with (£)5400 **and** (£)5000 **or** Yes with £400 more **or** M1 for a method for the profit on one laptop e.g. 400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for a method for the total profit for one of the two deals e.g.40 × "120" (= 4800) **or** 10 × "60" (= 600) M1 for 50 × 400 +"4800" or 50 × 400 + "600" or "4800" + "600" M1 for 50 × 400 +"4800" + "600" (= 25 400) C1 for Yes **and** (£)25 400 **or** Yes with £400 more
231 (a)		40, 100	3	M1 method to find unit weight e.g. 60 ÷ 3 (= 20) M1 for complete method to find weight of **one** of the other ingredients e.g "20" × 2 (= 40) **or** "20" × 5 (= 100) A1 cao
(b)		1.44	3	M1 for a complete method to work out the weight of nuts needed e.g. 300 ÷ (3 + 2 + 5) × 3 (= 90) **or** 300 ÷ (60 + "40" + "100") × 60 (= 90) M1 for a complete method to work out the cost eg (800 ÷ 500) × "90" (= 144) A1 cao

Question	Working	Answer	Mark	Notes
232 (a)		Correct explanation	2	M1 for working out area of triangle (=6) and area of rectangle (=24) **or** for dividing rectangle into eighths or other comparable areas A1 for explaining that that 24 ÷ 6 is 4 **or** $\frac{2}{8} = \frac{1}{4}$ **or** that ½ × ½ = ¼ from symmetry of shape
(b)		75	1	B1 cao
233 (a)		$\frac{1}{6}$	1	B1 cao
(b)		4	2	M1 for 20 ÷ 5 (=4) Allow build up method to 4 lots of 1:5 A1 cao
(c)		6	2	M1 for a full method to find the number of red counters needed eg 20 ÷ 2 – "4" A1 ft from (b)
*234		Bathroom Mart and correct figures	4	M1 for $\frac{1}{3} \times 1500$ (= 500) or $\frac{2}{3} \times 1500$ (= 1000) M2 for a correct method to reduce 1500 by 60% **and then** by a further 15% eg 1500 × "0.4" × 0.85 (= 510) oe (M1 for method to find 60% or 40% of 1500 e.g. $\frac{60}{100} \times 1500$ (= 900) C1 for 510 and 500 with a correct conclusion.

Question		Working	Answer	Mark	Notes
235	(a)		42	5	M1 for 300 × 3 (= 900) or 150 ÷ 3 (= 50) M1 (dep) for "900" ÷ 150 (= 6 jars) or 300 ÷ "50" (= 6 jars) M1 for 500 ÷ 160 (= 4 boxes) M1 for "6" × 4.00 (=24) + "4" × 4.50 (18) A1 cao
	(b)		168	3	M1 for 6 × 30 M1 (dep) for "180" – 12 A1 cao
236	(a)		30	1	B1 cao
	(b)		120	2	M1 for $\frac{15}{100} \times 800$ oe A1 cao

Question		Working	Answer	Mark	Notes
237	(a)		12	2	M1 for correct first step, eg 37 – 13 (=24) or (37 + 13) ÷ 2 (=25) oe or two weights with a difference of 13 or two weights with a total of 37 A1 cao
	(b)		44 pounds or 20 kg	4	M1 for 30 × 2.2 (=66) M1 (dep) for 110 – "66" (=44) A1 for 44 A1 (dep on first M1) for pounds **OR** M1 for 110 ÷ 2.2 (=50) M1 (dep) for "50" – 30 (=20) A1 for 20 A1 (dep on first M1) for kg
238			69	4	M1 for finding 15% of £720 (=108) M1 (dep) for finding total of £720 plus interest (=828) or 115% of 720 M1 (dep on previous M1) for dividing by 12 A1 cao **OR** M1 for finding 720 ÷ 12 (=60) M1 (dep) for finding 15% of 60 (=9) M1 (dep on previous M1) for adding, eg 60 + 9 (=69) A1 cao
239			20	3	M1 for 330÷120 (=2.75) or 200÷60 (=3 $^{1}/_{3}$) or 450 ÷180 (=2.5) M1 for 450÷180 (=2.5) AND 8×"2.5"(=20) A1 cao **OR** M1 for 120 ÷ 8 (=15) or 60 ÷ 8 (=7.5) or 180 ÷ 8 (=22.5) M1 for 330 ÷ (120 ÷ 8) (=22) or 200 ÷ (60 ÷ 8) (=26.6...) or 450 ÷ (180 ÷ 8) (=20) A1 cao **OR** M1 for multiples of 120:60:180, eg 240:120:360 M1 for multiples linked to 450 and 8+8+4 or scaling 2.5 oe A1 cao

Question		Working	Answer	Mark	Notes
240	(a)		50	1	B1 cao
	(b)		$\frac{3}{8}$	1	B1 cao
	(c)		2 squares shaded	1	B1 cao
	(d)		$\frac{2}{8}$ and $\frac{5}{20}$	2	B2 for both correct (B1 for one correct)
*241		1195 4780 5975 2 3 9 0 4 | 0 6 | 1 8 | 2 5 1 0 | 1 5 | 4 5 | 5 9 7 5 | | 200 | 30 | 9 | | 20 | 000 | 600 | 180 | | 5 | 000 | 150 | 45 | 4000 + 1000 + 600 + 150 + 180 + 45 = 5975	Kirsty's Plants with correct calculations	5	M1 for complete method with relative place value correct. Condone 1 multiplication error, addition not necessary. M1 (dep) for addition of all the appropriate elements of the calculation or digits 5975 M1 for a complete method to find 120% of £52.50 A1 for 59.75 and 63(.00) C1 (dep on M2) for correct conclusion for their figures OR M1 for the start of a method to divide £52.50 by 25, eg. 2 rem 2 M1 for a complete method to divide £52.50 by 25, condone one arithmetic error, or digits 21 M1 for a complete method to find 120% of "£2.10" A1 for 2.52 C1 (dep on M2) for correct conclusion for their figures OR M1 for a complete method to find 120% of £52.50 M1 for the start of a method to divide "63" by 25, eg. 2 rem 13 M1 for a complete method to divide "63" by 25, condone one arithmetic error, or digits 252 A1 for 2.52 C1 (dep on M2) for correct conclusion for their figures

Question	Working	Answer	Mark	Notes
242		48	2	M1 for method to find 15% of 320 A1 cao
243		4	3	B1 for 11.8 − 12.2 (cm) or 1180 − 1220 (km) M1 for "12" × 100 ÷ 300 oe A1 for 3.9 – 4.1 from correct figures or ft from "12" × 100 ÷ 300 oe
244		25	4	M1 for 600 ÷ 4 (= 150) M1 for 4500 ÷ "150" (= 30) M1 for 750 ÷ "30" A1 for 25 with supporting working **OR** M1 for 4500 ÷ 750 (= 6) M1 for 600 ÷ 4 (= 150) or 600 ÷ "6" (= 100) M1 for "150" ÷ "6" or "100" ÷ 4 A1 for 25 with supporting working **OR** M1 for 4500 ÷ 750 (= 6) or 750 ÷ 4500 (= $\frac{1}{6}$) M1 for $\frac{1}{4}\times"\frac{1}{6}"$ $\left(=\frac{1}{24}\right)$ M1 for $"\frac{1}{24}"\times 600$ A1 for 25 with supporting working

Question		Working	Answer	Mark	Notes
245			25.60	4	M1 for a correct method to find $\frac{1}{3}$ of 24 (=8) or $\frac{2}{3}$ of 24 (=16) M1 for a correct method to find 60% (= 7.2) or 40% (= 4.8) of 12 or 60% (= 14.4) or 40% (= 9.6) of 24 M1 (dep on at least M1) for a method to find the sum of their discounted adult ticket + 2 × their discounted child ticket A1 25.6(0)
*246		1.18 ÷ 4 = 0.295 (118 ÷ 4 = 29.5) 1.74 ÷ 6 = 0.29 (174 ÷ 6 = 29) 1.18 ÷ 2 = 0.59 1.74 ÷ 3 = 0.58 1.74 × 4 = 6.96 1.18 × 6 = 7.08 1.74 × 2 = 3.48 1.18 × 3 = 3.54 1.18÷2×3=1.77 1.74÷3×2=1.16 4÷1.18=3.3(....) 6÷1.74=3.4(…)	6 pints	3	M1 for division of price by quantity for both bottles or division of quantity by price for both bottles or a complete method to find the price of the same quantity of milk. A1 for two correct values that could be used for a comparison C1 ft (dep on M1) for comparison of their values with a correct conclusion.
247	(a)		120	2	M1 4 × 30 A1 cao
	*(b)		Tuesday 125 miles > 120 miles 200 km > 192 km	3	M1 for 200 ÷ 8 × 5 or "120" ÷ 5 × 8 A1 for 125 or 192 or ft from "a" C1 (dep M1) Correct conclusion for their calculated figure with its correct units stated. of "125" miles and "a" miles **or "**192" km and 200 km

Question		Working	Answer	Mark	Notes
248			1.83 m or 183 cm	2	M1 for 178 + 5 **or** 1.78 + 0.05 **or** 183 **or** 1.83 A1 for 1.83 m or 183 cm (units must be correct)
249	(a)		50	3	M1 for $\frac{6}{8}$ × 80 oe (= 60) **or** $\frac{1}{8}$ × 80 oe (= 10) (may be seen on gauges eg. 10 by $\frac{1}{8}$ position **or** 60 by $\frac{6}{8}$ position on either gauge) M1 (dep) for a complete correct method eg.“60” – “10” **or** 5 × "10" A1 for 50 (accept answers in the range 49 - 51) or M1 for $\frac{6}{8}-\frac{1}{8}(=\frac{5}{8})$ M1 (dep) for “$\frac{5}{8}$”× 80 A1 for 50 (accept answers in the range 49 - 51)
	(b)		12	2	M1 for 180 ÷ 15 oe A1 cao
250			£1.12	3	M1 for use of 1000 g in 1 kg eg. 1000 ÷ 200(=5) **;** 200 ÷ 1000(=0.2) oe **;** 20% **;** 500g costs £2.80 **;** 100g costs 56p M1(dep) for a fully correct method eg. 5.60 ÷ “5” (= 1.12) **or** 56 × 2 A1 £1.12 or 112p

Question		Working	Answer	Mark	Notes
251			24	4	M1 for 0.15 × 240 oe (= 36) M1 for $\frac{3}{4}$ × 240 oe (= 180) M1 (dep on both prev M1) for 240 – "180" – "36" A1 cao **OR** M1 for 15(%) + 75(%) (= 90(%)) M1 for 100(%) – "90"(%) (= 10(%)) M1 (dep on both prev M1) for "$\frac{10}{100}$" × 240 oe A1 cao **OR** M1 for 0.15 + 0.75 oe(= 0.9) M1 for "0.9" × 240 oe (= 216) M1 (dep on both prev M1) for 240 – "216" A1 cao **OR** M1 for 0.15 + 0.75 oe(= 0.9) M1 for 1 – "0.9" oe (= 0.1) M1 (dep on both prev M1) for "0.1" × 240 = 24 A1 cao

Question		Working	Answer	Mark	Notes
*252	(a)		20 45	1	B1
	(b)	Example of figures for comparison 7min 30 sec with 7 min 28 secs 3 mins 43 secs with 3mins 45 secs 224 secs with 225 secs 3mins 44 secs with 3 mins 45 secs	No	3	M1 for doubling Seeta's time or halving Ninal's time or finding the difference between the two times Eg 3 min 45 sec × 2 or (7m 28s) ÷ 2 or 7m 28s-3min 45 secs M1 for a complete method to convert their time(s) to common units with the units stated C1 for No and **correct** figures compared (could be in secs or mins and secs)
253	(a)		32	2	M1 for $4 \times 5 + 12$ oe A1 cao
	(b)		7	3	M1 for $40 - 12$ or 28 seen M1 (dep) for '28' ÷ 4 A1 cao OR M1 for $12 + 4 + 4 + ...$ M1 for $12 + 7 \times 4$ oe A1 cao OR M1 for $12 + 4x = 40$ oe M1 for $4x = 40 - 12$ oe A1 cao NOTE: A correct embedded answer scores M2 A0 OR M1 ft for '32' + 4... or 40–'32' M1 ft for 5 + 1 ... oe A1 ft Note: Do not follow through from part a an answer of 40

Question		Working	Answer	Mark	Notes
254	(a)		8	1	B1 for 8 (.00)
	(b)		550	4	M1 for 600 – 200 (= 400) M1 for correct method to convert '$400' to £ M1 (dep on the previous M1) for 800 – '$400' in £s A1 for value in the range 540 –560 OR M1 for correct method to convert $600 **and** $200 to pounds M1 for '375'–'125' M1 (dep on the previous M1) 800 –'250' A1 for a value in the range 540-560 OR M1 for correct method to convert £800 to dollars M1 for '1280' + 200 – 600 M1 (dep on the previous M1) for attempt to convert '$880' back to £ A1 for value in the range 540 – 560
255			required region	4	M1 arc radius 5 cm centre *C* M1 bisector of angle *BAD* M1 line 3 cm from *DC* A1 for correct region identified (see overlay)

Question		Working	Answer	Mark	Notes
256			730	5	M1 for $\frac{5}{100}\times 200$ (= 10) oe M1 for $\frac{10}{100}\times 350$ (= 35) oe M1 for 6 × '10' **or** 4 × '35' M1 (dep on M1 earned for a correct method for a percentage calculation) for '60' + '140'+ 530 A1 cao **Or** M1 for 6 × 200(= 1200) **or** 4 × 350(= 1400) M1 for $\frac{5}{100}\times "1200"(=60)$ oe M1 for $\frac{10}{100}\times "1400"(=140)$ oe M1(dep on M1 earned for a correct method for a percentage calculation) for '60' + '140'+ 530 A1 cao
257			240	4	M1 for 16 × 2 (= 32 girls) M1 for 16 + '16 × 2' (= 48) M1 (dep on the previous M1) for (16 + '32') × 5 **or** (16 + '32') × (4 + 1) A1 cao OR M1 for 1 : 2 = 3 parts M1 for 5 schools × 3 parts (= 15 parts) M1 (dep on the previous M1) for '15' parts × 16 A1 cao **SC B2** for 176 given on the answer line

Question		Working	Answer	Mark	Notes
258	(a)		$\frac{3}{5}$	2	B2 cao (B1 for $\frac{9}{15}$ oe) [SC: B1 for an answer of $\frac{2}{5}$]
	(b)		0.9	1	B1 for 0.9 or 0.90 or .9
	(c)		No + reason	1	B1 for no and 0.75 or 80% or $\frac{75}{100}$ and $\frac{80}{100}$
259	(a)		32	1	B1 cao
	(b)	e.g. \$20 = £12.50 \$100 = 5×£12.50 = £62.50 £62.50 – 60 = £2.50	£2.50 OR \$4	3	M1 for a correct method to convert \$100 to £, e.g. 5× '12.50' (= 62.50) ('12.50' is their reading from the graph at \$20) M1 (dep) for '62.50' – 60 A1 for £2.5(0) (units must be stated) **OR** M1 for correct method to convert £60 to \$, e.g. 3×32 (=96) or ft their answer to part (a) M1 (dep) or 100 – '96' A1 for \$4 units must be stated)

Question		Working	Answer	Mark	Notes
260		$\frac{1}{2} \times 60 = 30$, $30 \times 5 = 150$ $\frac{1}{3} \times 60 = 20$, $20 \times 4 = £80$ $3 \times 60 = 180$ $180 + 75 - 150 - 80 = £25$ 10 bags (i.e. 60 – 30 – 20) sold for 25 $25 \div 10 = 2.50$ OR $\frac{1}{2} \times 60 = 30$, $30 \times £2 = £60$ profit $\frac{1}{3} \times 60 = 20$, $20 \times £1 = £20$ profit $60 + 20 = £80$ $80 - 75 = 5$ loss on 10 bags (i.e. 60 – 30 – 20) $10 \times £3 = £30$ $30 - 5 = £25$ $£25 \div 10 = £2.50$	2.50	4	M1 for $\frac{1}{2} \times 60 \times 5$ (=150) or $\frac{1}{3} \times 60 \times 4$ (=80) M1 (dep on 1st M1) for $3 \times 60 + 75 -$ '150' – '80' oe (=25) M1 (dep on previous M1) for '25'÷(60 – '30' – '20') A1 for 2.50 (accept 2.5) OR M1 for $\frac{1}{2} \times 60 \times 2$ (=60) or $\frac{1}{3} \times 60 \times 1$ (=20) M1 (dep on 1st M1) for (60 – '30' – '20') × 3 – ('60' + '20' – 75) oe (=25) M1 (dep on previous M1) for '25'÷(60 – '30' – '20') A1 for 2.50 (accept 2.5)

<table>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>261</td><td></td><td>e.g.
41 – 21 (=20)
49 – 10 – 20 (=19)
16 + 19 = 35

OR
(100 – 49) – (16 + 21) (=14)
14 + 10 (=24)
100 – (41 + 24) = 35

<table><tr><td></td><td>w</td><td>b</td><td>c</td><td></td></tr><tr><td>Boys</td><td>16</td><td>21</td><td>14</td><td>51</td></tr><tr><td>Girls</td><td>19</td><td>20</td><td>10</td><td>49</td></tr><tr><td></td><td>35</td><td>41</td><td>24</td><td>100</td></tr></table></td><td>35</td><td>4</td><td>M1 for 41 – 21 (= 20) or
M1 for 49 – 10 – ‘20’ (= 19)
M1 for 16 + ‘19’
A1 cao

OR
M1 for 100 – 49 (=51)
M1 for ‘51’ – 21 – 16 (= 14) and ‘14’ +10 (= 24)
M1 for 100 – (41 + ‘24’)
A1 cao

NB working may appear in table or diagram</td></tr>
<tr><td>262</td><td></td><td>180×1.5
40×1.5
110×1.5
30×1.5</td><td>Flour = 270
Ginger = 60
Butter = 165
Sugar = 45</td><td>3</td><td>M1 for ×24÷16 oe or 24/16 or 1.5 seen or 180 + 90 (=270) or 40 + 20 (=60) or 110 + 55 (=165) or 30 + 15 (=45) or sight of any one of the correct answers
A2 for all 4 correct answers
(A1 for 2 or 3 correct answers)</td></tr>
<tr><td>263</td><td></td><td></td><td>Region shaded</td><td>3</td><td>B1 for circle arc of radius 3cm(®2mm) centre Burford
B1 for circle arc of radius 5cm (± 2mm) centre Hightown
B1 for overlapping regions of circle arcs shade</td></tr>
</table>

Question		Working	Answer	Mark	Notes
264*		180÷9×1:180÷9×3:180÷9×5 =20:60:100 Not enough cement (but enough sand and enough gravel) OR 1×15:3×15:5×15 =15:45:75 15+45+75=135 (<180) Not enough cement (to make 180kg of concrete)	No + reason	4	M1 for 180 ÷ (1+3+5) (=20) or 3 multiples of 1: 3: 5 M1 for 1×'20' or 3×'20' or 5×'20' or 20 seen or 60 seen or 100 seen A1 for (Cement=) 20, (Sand=) 60, (Gravel=) 100 C1 ft (provided both Ms awarded) for not enough cement oe **OR** M1 for (1×15 and) 3×15 and 5×15 or 9×15 or sight of the numbers 15, 45, 75 together. M1 for '15' + '45' + '75' A1 for 135 (<180) C1 ft (provided both Ms awarded) for not enough cement oe

Question	Working	Answer	Mark	Notes
265*	S: $35 \div 100 \times 40 = 14$ W: $40 \div 8 \times 3 = 15$ **OR** D: $16 \div 40$ $(\times 100)$ $= 0.4$ (40%) W: $3 \div 8$ $(\times 100)$ $= 0.375$ (37.5%) **OR** D: $\frac{16}{40} = \frac{80}{200}$ S: $\frac{35}{100} = \frac{70}{200}$ W: $\frac{3}{8} = \frac{75}{200}$	Debbie and correct calculations	4	**Compares Marks out of 40 or fractions with denominator of 40** M1 for $35 \div 100 \times 40$ oe **or** 14 seen (or 14/40 seen) M1 for $40 \div 8 \times 3$ **or** 15 seen (or 15/40 seen) A1 for 14 and 15 **or** $\frac{14}{40}$ and $\frac{15}{40}$ C1 (dep on M1) for correct conclusion for their working QWC with 3 comparable marks: Decision and justification should be clear with working clearly presented and attributable. **OR Decimals (or Percentages)** M1 for $16 \div 40$ $(\times 100)$ oe **or** 0.4 (or 40) seen M1 for $3 \div 8$ $(\times 100)$ oe **or** 0.375 (or 37.5) seen A1 for 0.4 and 0.375 (**or** 40 and 37.5) C1 (dep on M1) for correct conclusion for their working QWC: with 3 comparable decimals (or percentages: Decision and justification should be clear with working clearly presented and attributable. **OR Compares Fractions with denominator other than 40** M1 for attempt to convert all to fractions with a common denominator other than 40 M1 for at least 1 correct A1 for $\frac{80}{200}$ and $\frac{70}{200}$ and $\frac{75}{200}$ oe C1 (dep on M1) for correct conclusion for their working QWC with 3 comparable fractions: Decision and justification should be clear with working clearly presented and attributable.

Question		Working	Answer	Mark	Notes
266	(a)		30	2	M1 for 25 ÷ 10 **or** 2.5 seen **or** 10 ÷ 25 **or** 0.4 seen **or** 12+12+6 oe **or** a complete method eg. 25×12÷10 oe A1 cao
	(b)	1000 ÷ 200 × 12	60	2	M1 for 500 ÷ 50 **or** 1000 ÷ 200 **or** 500 ÷ 10 **or** correct scale factor clearly linked with one ingredient eg 10 with sugar or 5 with butter or flour or 50 with milk **or** an answer of 120 or 600 A1 cao

Question		Working	Answer	Mark	Additional Guidance
267 **QWC i, ii, iii**		50 shirts at £12 each = £600 Selling Price for profit of 30% = £12 × 1.3 = £15.60 20 shirts at £15.60 = £312 Reduced selling price = £15.60 × 0.85 = £13.26 30 shirts at £13.26 = £397.80 £397.80 + £312 > £600	Yes, together with appropriately set out working which supports answer	8	B1 for price of 50 shirts M1 for £12 × 1.3 A1 for £15.60 A1 for 20 shirts = £312 M1 for £15.60 × 0.85 A1 for £13.26 A1 for 30 shirts = £397.80 C1 Yes stated together with a statement which supports the correct answer **QWC: With clear working attributed correctly**
					Total for Question: 8 marks
268. **FE**	(a)	48 + 37 + 78 + 21 = 184 184 × 40 = 7360 4 × 12 = 48 73.60 + 48	£121.60	4	M1 find the total miles M1 total miles × 40 or $ 0.4(0) M1 mileage expenses + 4 × 12 or + 5 × 12 A1 cao
	(b)	2000 ÷ 50 = 40 4000 ÷ 40 = 100 **OR** 2000 ÷ 0.4 = 50000 50000 # 50 = 100 **OR** 0.4 × 50 = 20 2000 ÷ 20 = 100	100	3	M1 for sight of 2000 , or 50, or 20000 M1 dep for an attempt to find cost per week or mileage per year A1 100 **OR** M1 sight of 2000, or 50 M1 dep 0.4 × 50 and 2000 ÷ '20' A1 100
					Total for Question: 7 marks

Question		Working	Answer	Mark	Additional Guidance
269. QWC ii, iii		$\frac{1}{2}=\frac{4}{8};\frac{1}{4}=\frac{2}{8}$ So $\frac{3}{8}$ is half way **OR** use of 0.5 and 0.25 to get 0.375 and compare to 0.33 **OR** $\frac{1}{2}-\frac{1}{3}=\frac{1}{6}$ **and** $\frac{1}{3}-\frac{1}{4}=\frac{1}{12}$ followed by conclusion **OR** use of 0.5 and 0.25 and differences of 0.5 – 0.33(3,...) and 0.33(3...) – 0.25	Coherent and well structured argument with appropriate reason	3	M1 to change both fractions to equivalent fractions M 1(dep on at least one correct equivalent fraction) to find midpoint C1 conclusion following correct work by stating that $\frac{3}{8}$ is not equal to $\frac{1}{3}$ **QWC: Decision should be stated with supporting reason given** **OR** M1 use of 0.5 and 0.25 M1 (dep on at least correct decimal one find midpoint) C1 conclusion following correct work and sight of 0.37(5) and 0.33(3..) **QWC: Decision should be stated with supporting reason given** **OR** M1 for working out differences M1 For a correct method of calculating differences of fractions using equivalent fractions C1 conclusion following from $\frac{1}{6}$ **and** $\frac{1}{12}$ **QWC: Decision should be stated with supporting reason given** **OR** M1 for working out differences M1 for a correct method of calculating differences of fractions using equivalent fractions C1 conclusion following from $\frac{1}{6}$ **and** $\frac{1}{12}$ **QWC: Decision should be stated with supporting reason given** **OR** M1 use of 0.5 and 0.25 M1(dep on at least one correct decimal) for working out differences C1 for conclusion based on 0.17(or better) and 0.08(23...) **QWC: Decision should be stated with supporting reason given**
					Total for Question: 3 marks

Question	Working	Answer	Mark	Notes
*270		Liz is wrong (supported)	4	M1 for adding the 4 times eg 2 × 1 min + 2 × 45secs (= 3 min 30 sec or 210 sec) M1 for 60 ÷ "3.5" (= 17.14..) oe or 200 ÷ 10 (= 20) M1 for complete method leading to comparable figures eg. compares no. trips: 60 ÷ "3.5" (=**17.14**..) and 200÷10 (**20**) compares no. people: 60÷ "3.5" (=17.14..) then ×10 (=**171.4**..) [**200** given] compares tot. time needed: 200÷10 (=20) then × "3.5" (=**70**) [**60** min given] compares time per trip 200÷10 (=20) then 60 ÷ "20" (= **3**) ["**3.5"**calculated] C1 for statement that Liz is wrong with correct comparable figures (see above) NB: throughout accept rounding of 17.14 to 17 for all marks, and work in seconds if consistent.
*271		Yes with comparable values	3	M1 for method to change 14 ft 4 in to in eg 14 × 12 + 4 (= 172) M1 for method to convert an amount of in to cm eg "172" × 2.54 (= 436.(88) or 437), 4 × 2.54 (=10.16), (12 × 14) × 2.54 (=426.72) C1 for Yes with 4.36-4.37 or with 436.(88) or 437 and 440 OR M1 for method to convert 4.4 m to cm eg 4.4 × 100 (= 440) M1 for method to convert cm to in eg 440 ÷ 2.54 (= 173.22...) C1 for Yes with 14 ft 5 in OR M1 for method to convert 4.4 m to cm eg 4.4 × 100 (= 440) M1 for method to change 14 ft 4 in to in eg 14 × 12 + 4 (= 172) C1 for Yes with 173(.22..) and 172
272		6.29	3	M1 for using 1kg = 1000 g, eg 650 ÷ 1000 (= 0.65) M1 complete method, eg "0.65" × 9.68 or 9.68 ÷ 1000 × 650 or for 6.292 A1 for 6.29, accept 6.3(0) SC: B1 for 62.92

Question	Working	Answer	Mark	Notes
273		555	3	M1 for recognising that 1295 is 70% eg 70% = 1295 M1 for 10% = 1295 ÷ 7 (=185) or 1% = 1295 ÷ 70 (=18.5) or 1295 × $\frac{3}{7}$ oe or (1295 – 185) ÷ 2 or $1295\times\frac{10}{7}$ oe (=1850) A1 cao
274	**£:** 189 ÷ 1.39= 135.97 174 ÷ 1.27 = 137.01 **SF:** 115 × 1.39 = 159.85 174 ÷ 1.27 × 1.39 = 190.44 **€:** 115 × 1.27 = 146.05 189 ÷ 1.39 × 1.27 = 172.68	London with correct comparable figures	3	M1 for method to convert one price to another currency, eg 189 ÷ 1.39 M1 for a complete method leading to 3 prices in the same currency or to figures that can be used to compare the 3 prices A1 for London and correct comparable figures. (accept rounded or truncated to the nearest unit)
275		23	3	M1 for method to find difference in cost, eg 23×24 – 425 (= 127) or for 425 ÷ (23×24) (= 0.7699...) or 24 – (425 ÷ 23) (=5.52…) M1 for $\frac{"127"}{"552"}$ × 100 oe or 100 – "0.7699"×100 or $\frac{"5.52"}{24}\times100$ A1 for answer in range 23 – 23.01

Question	Working	Answer	Mark	Notes
276 (a)		50	2	M1 for 1 kg = 1000g or 1 ÷ 20 (=0.05) A1 cao
(b)		70	3	M1 for 5000/20 (=250) or for 250 /100 (= 2.5) or for 5000/2000 (=2.5) M1 for 28 × "2.5" A1 cao Note: calculations may be carried out in kg or in g.
277 (a)		61	2	M1 for a complete method eg 7 × 8 + 5 A1 cao
(b)		3	3	M1 for 29 – 5 (=24) or for 8x + 5 = 29 M1 for "24" ÷ 8 or for 8x = 24 A1 cao
278 (a)		66	1	B1 for 65 – 67
(b)		125	2	M1 for complete method using graph eg 50 euros = £42; 42 × 3 A1 for 122 – 128

Question	Working	Answer	Mark	Notes
279 (a)		25	1	B1 cao
*(b)		yes with correct comparative figures	3	M1 for method to calculate journey time travelling at 30 mph, eg $\frac{20}{30}$ (=0.66…) or 40 (mins) M1 (dep) for method to work out arrival time at home, (consistent units), eg 18 10 + "40 mins" (=18 50) C1 for yes with comparison of 40 minutes with 50 minutes or stating arrival time home as 18 50 OR M1 for method to calculate speed in order to get home by 1900 eg 20 ÷ $\frac{50}{60}$ (= 24 mph) M1 (dep) for stating speed as 24 mph C1 for yes with supporting calculations showing speed as 24 mph

Question	Working	Answer	Mark	Notes
280		6 : 5	4	M1 for $\frac{2}{3}$ × 165 oe (= 110) [black counters] M1 (dep M1) for $\frac{40}{100}$ × "110" oe (=44) [where 110 is their black counters] M1 (dep M2) for (110 − "44") : 55 or 66 : 55 or a reversed ratio A1 cao OR M1 for 2 : 1 M1 for 2 × "1 − 0.4" or 1.2 M1 (dep M2) for "1.2" : 1 A1 cao OR M1 for correct method to find proportion of black counters left in the bag eg $\frac{60}{100} \times \frac{2}{3}$ $(= \frac{120}{300})$ M1 for correct method to find proportion of white counters in the bag ie $\frac{1}{3}$ oe M1 (dep M2) for correct method to find ratio after eg "$\frac{120}{300}$" : "$\frac{1}{3}$" A1 cao

Question	Working	Answer	Mark	Notes
281 (a)		$\frac{7}{10}$	1	B1 cao
(b)		12 squares shaded	1	B1 for 12 squares shaded
(c)		64	3	M1 for 80 ÷ 5 (= 16) M1 (dep) for 80 – "16" or "16" × 4 A1 cao OR M1 for $1 - \frac{1}{5}$ $(=\frac{4}{5})$ M1 (dep) for "$\frac{4}{5}$" × 80 A1 cao
282 (a)		24	3	M1 for using 1 kg = 1000 g M1 for dividing "5.4kg" by 450g or 10 × 450 + 900 = 5400 or 10 + 2 = 12 oe A1 cao NB: Candidates can work in kg and/or g
*(b)		No and explanation	4	M1 for a correct first step eg 90 + 30 (= 120) eg 5.4 × 20 (= 108 or 1h 48 m) M1(dep) for a complete method to get 6 18 pm or 2 12 pm or 228 or 3h 48m A1 for 6 18 pm or 2 12 pm or 228 **and** 210 or 18 or 3h 48m **and** 3h 30m C1 ft (dep on M2) for correct decision based on their figures

Question	Working	Answer	Mark	Notes
283 (a)		20.3	2	M1 for $\frac{50}{1.57^2}$ oe A1 for answer in range 20.2 to 20.3
(b)		68.04	2	M1 for (m =) $1.8^2 \times 21$ oe A1 cao
(c)		2.61	3	M2 for a complete method to find 145% of 1.8, eg. $\frac{145}{100} \times 1.80$ oe (M1 for a method to find 45% of 1.8, eg. $\frac{45}{100} \times 1.80$ (= 0.81) or for a multiplication factor of 1.45) A1 cao
284		42.28	5	M1 for method to find weekly mileage eg. $18 \times 2 \times 5$ (= 180) or weekly car park charge, eg. 3.50×5 (= 17.50) M1 for method to find fuel used in a relevant journey eg. 180 ÷ 45.2 (= 3.9823 gallons) or 18 ÷ 45.2 (= 0.39823 gallons) M1 for a correct use of the conversion factor to convert between gallons and litres eg. "3.9823"× 4.546 (= 18.1 … litres) or "0.39823" × 4.546 (= 1.81 …. litres) or 1.369 × 4.546 (= 6.22...£/gallon) or 45.2 ÷ 4.546 (= 9.942 miles/litre) M1 for a method to find the cost of a relevant journey eg. "18.1…" × 1.369 (= 24.78 …) or "1.81…" × 1.369 (= 2.478 …) or "3.9823" × "6.22.." (= 24.78...) A1 for answer in the range 42.26 to 42.3(0) NB candidates could work in litres or in gallons and/or could work in £ or p

Table for use in Question 284

Journeys in miles	Fuel used in gallons; miles ÷ 45.2	Fuel used in litres, gallons × 4.546	Cost of journey in £, litres × 1.369 or gallons × 6.22...
18	0.398...	1.81...	2.478...
36	0.796...	3.62...	4.956...
90	1.991...	9.05...	12.39...
180	3.98...	18.1...	24.78...
252	5.57...	25.3...	34.69...

Question		Working	Answer	Mark	Notes
285	(a)		$\frac{3}{7}$	1	B1 cao
	(b)		2 squares shaded	1	B1 cao
	(c)		150	2	M1 200 ÷ 4 × 3 or 0.75 × 200 oe A1 cao
	*(d)		Explanation	2	C2 for a full explanation, eg answer given as 4/35 or "He subtracted 3/5 from a fraction less than 1 so the answer must be less than 1" (C1 for a partial explanation, eg use of a suitable common denominator or " He should have used a common denominator")
286			3.2 m - 5 m	3	M1 man's height seen as 1.6 m - 2 m oe or 5 ft 3 in - 6 ft 7 in oe M1 for 2 to 2.5 × 'man's height' A1 for 3.2 m - 5 m oe or 10 ft 6 in - 16 ft 6 in oe (units needed)
287	(a)		2:3	1	B1 cao
	(b)		$\frac{3}{5}$	2	M1 ft for adding the numbers in their ratio to get an acceptable total AND using this as their denominator eg 4 + 6 = 10 or 2 + 3 = 5 A1ft $\frac{3}{5}$ oe

Question		Working	Answer	Mark	Notes
288	(a)		15 minutes	2	B1 15 B1 (indep) minutes
	(b)		3 05	2	M1 for intention to add 10 minutes and 55 minutes to 2 o'clock A1 3 05 oe
	*(c)		No with reason	2	M1 for a method to add 75 minutes to '3 05' or to work out the difference between '3 05' and 4 pm or to subtract 75 minutes from 4 pm C1(dep M1) for conclusion based on appropriate working and correct time calculations, ft from (b)
289	(a)		12.5	1	B1 cao
	(b)		500	2	M1 for a complete method to find $\frac{5}{6}$ of 600 or 600 ÷ 6 (= 100) A1 cao
*290			65 km is not enough	4	M1 for intention to add the four distances M1 for adding with consistent and correct use of units A1 65(km) oe [can work in other units eg metres] C1 (dep on M2) correct conclusion comparing their figure to 70 with supporting working eg 18.2+14.25+20.5+12.05 = 65km or 18+14+20+12 = 64; 0.2+0.25+0.5+0.05 = 1; 64+1 = 65km
291			4	3	M1 for method to find 6% of 2000 (= 120) M1 (dep) for 480 ÷ '120' or for repeated addition of '120' to 480 A1 cao
292			Loci drawn	3	B1 line parallel to *BC* and 3 cm from *BC* B1 arc drawn centre *C* with radius 4 cm B1 ft for shading a region below their horizontal line **and** inside their arc

Question		Working	Answer	Mark	Notes
293			36	4	M1 for $\frac{3}{5} \times 240$ (= 144) M1 for $\frac{1}{4} \times 240$ (= 60) M1 (dep on M2) for 240 – ('144' + '60') A1 cao OR M1 for $\frac{3}{5} + \frac{1}{4}$ or $\frac{17}{20}$ oe M1 for 1 – '$\frac{17}{20}$' (=$\frac{3}{20}$) or '$\frac{17}{20}$'× 240 (= 204) M1 (dep on M2) for '$\frac{3}{20}$'× 240 or 240 – '204' A1 cao
294	(a)		360	2	M1 30 ÷ 10 (= 3) or 120 ÷ 10 (=12) or 120 + 120 + 120 oe A1 cao
	(b)		25	2	M1 for $\frac{750}{300}$ (=2.5) oe A1 cao
295			2.10 euros or £1.81	3	M1 for 2.5 × 1.16 (= 2.9) M1 (dep) for 5 – "2.9" (=2.1) A1 for 2.1(0) euros OR M1 for 5 ÷ 1.16 (= 4.31...) M1 (dep) for "4.31" – 2.50 (=1.81) A1 for £1.81

Question		Working	Answer	Mark	Notes
*296			Decision (No the attendance target was not met)	3	M1 for attempting to find total number of students or 1210 seen M1 for $\frac{'1092'}{'1210'} \times 100$ oe or $\frac{'118'}{'1210'} \times 100$ oe C1 for correct decision with 90.(2479...) or correct decision with 6 and 9.(752...) **OR** M1 for attempting to find total number of students or 1210 seen M1 for $\frac{94}{100} \times$ '1210' oe C1 for correct decision with 1137 (.4) and 1092 or correct decision with 72(.6) and 118 **OR** M1 for a correct % method for one year, e.g. $\frac{192}{208} \times 100$ or $\frac{94}{100} \times 208$ M1 for a correct % method for each year C1 for correct decision with 92.(30...), 90.(87...), 89.(31...), 89.(27...), 89.(91...) or 195(.5..), 226.(9…), 246.(2..), 245.(3…), 223.(7…)

Question		Working	Answer	Mark	Notes
297	(a)		C and D	1	B1 cao
	(b)(i)		F	2	B1 cao
	(b)(ii)		2		B1 cao
298	(a)		2600	1	B1 for 2600
	*(b)	£100 1300 rand 3700 rand £285 Computer 4680 rand Watch 5200 rand Camera 4875 rand	computer, camera	3	M1 for method to convert 3700 rand into £ or for changing one amount in pounds into rand M1for a complete method to compare total money Simon has with the cost of each item C1 (dep M2) for correct conclusion with correct figures e.g.£383 - £386 or 4950 rand to 5050 rand
299			237 600	4	M1 for one multiplication involving two numbers from (1500 or 8 or 60) **or** 90 000 or 480 or 12 000 given M1 for 1500 × 8 × 60 (= 720 000) M1 for multiplying their number of cans by 330 **and** dividing by 1000 A1 cao **Note** these operations can be applied in any order **SC** B2 if M0 scored for digits 2376

Question		Working	Answer	Mark	Notes
*300			$\frac{2}{3}$	3	M1 for attempting to write at least two fractions expressed with a common denominator with at least one of the two fractions correct A1 for three correct fractions with suitable common denominator C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for writing at least two of the fractions as decimals ie $\frac{2}{3}$ as 0.66(…) or 66(.6…)%, $\frac{7}{8}$ as 0.87(5) or 87.(5)%, $\frac{3}{4}$ as 0.75 or 75% A1 for three correct decimals or percentages C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for finding two fractions of the same number e.g. $\frac{2}{3}$ of 48 or $\frac{7}{8}$ of 48 (may be implied by shading a fraction of a rectangle divided into e.g. 48 parts) A1 for three correct values or three correct diagrams with shading C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for attempting to find the difference between $\frac{3}{4}$ and $\frac{2}{3}$ **and** between $\frac{3}{4}$ and $\frac{7}{8}$ at least one pair of fractions expressed with a suitable common denominator and at least one of the two fractions correct A1 for $\frac{1}{12}$ and $\frac{1}{8}$ or 0.08(333...) and 0.12(5) C1 (dep M1) for correct conclusion from comparison of the 2 differences.

Question		Working	Answer	Mark	Notes
*301			Tuesday and Friday	3	M1 for 179 ÷ 12 or 162 ÷ 12 or 170 ÷ 12 or 143 ÷ 12 A1 for 14.9(166…) or 15 and 13.5 or 14 and 14.1(66…) or 15 and 11.9(16…) or 12 C1 (dep M1) ft for comparison of their results for all the days with the number of teachers available leading to a correct statement **Or** M1 for 179 ÷ 15 or 162 ÷ 13 or 170 ÷ 14 or 143 ÷ 12 A1 for 11.9(3…) or 12 and 12.4(6…) or 13 and 12.1(4…) or 13 and 11.9(1…) or 12 C1 (dep M1) ft for comparison of their results for all the days with 12 leading to a correct statement **Or** M1 for 15 × 12 or 13 × 12 or 14 × 12 or 12 × 12 A1 for 180 and 156 and 168 and 144 C1 (dep M1) ft for comparison of their results for all the days with the number of students taking part leading to a correct statement

Question	Working	Answer	Mark	Notes
302 (a)		$\frac{5}{9}$	1	B1 for $\frac{5}{9}$ oe
(b)		3 squares shaded	1	B1 for any 3 squares shaded
(c)		80	2	M1 for $120 \div 3$ (= 40) **or** 2×120 (= 240) **or** $\frac{2}{3} \times 120$ oe A1 cao
303		1.9 km or 1900 m	3	M1 for 1.25×1000 (= 1250) **or** $650 \div 1000$ (= 0.65) M1 for "1250" + 650 or 1.25 +"0.65" A1 for for 1.9 km or 1900 m
304	80 litres ≈ 18 gallons or 16 gallons ≈ 72 litres	A with correct figures	3	M1 for reading from the graph eg. 8 gallons = 36 litres; 20 litres = 4.4 gallons M1 for a complete method to convert either 80 litres into gallons or 16 gallons into litres e.g. 80 litres = "4.4" × 4 gallons or 16 gallons = "36" × 2 litres A1 for car A with correct figures in range 17.5 –18.5 gallons or 64 – 72 litres
305		7	4	M1 for 1800×36 **or** 1800×2.54 **or** 36×2.54 M1 for $1800 \times 36 \times 2.54$ (=164 592) M1 (dep on M1) for a complete method e.g. $1800 \times 36 \times 2.54 \div 100 \div 245$ (= 6.71...) A1 for 7 with correct working **OR** M1 for 245×100 (=24 500) M1 for "24500" ÷ 2.54 ÷ 36 (=267.93...) M1 for 1800 ÷ "267.93.." (=6.71...) A1 for 7 with correct working
306		6.45	5	M1 for $110 + 12 \times 16.80$ (= 311.6) M1 for 0.15×359 oe (= 53.85) M1 (dep on previous M1) for 359 – "53.85" oe (= 305.15) M1 (dep on M3) for "311.6" – "305.15" A1 for 6.45 from correct working

Question	Working	Answer	Mark	Notes
*307		No with correct figure	3	M1 for a calculation which uses the Time × Speed = Distance relationship **OR** a conversion of units eg between hours & minutes or between mph & miles per min M1 for a calculation involving both of the above C1 for "no" with a correct calculation, with units, from working: 25.2 – 25.8 minutes, 30.1 – 30.8 miles, 69 – 69.3 mph Distance ÷ speed: 30 ÷ 70 (= 0.42 - 0.43); Distance ÷ time: 30 ÷ 26 (= 1.15…); Speed × time: = 70 × 26 (=1820 mins) Mph to miles/min 70 ÷ 60 (=1.16-1.67); Minutes to hours is 26 ÷ 60 (= 0.43…) **NB** 70 ÷ 26 × 30 as a single stage calculation gets 0 marks

Question	Working	Answer	Mark	Notes
308		5%	2	**(uses percentages)** M1 for 30 – 25 (= 5) or 25 – 30 (= −5) A1 for 5% oe OR **(uses decimals)** M1 for or 0.3 – 0.25 or 0.25 – 0.3 (= −0.05) A1 for 0.05 OR **(uses fractions)** M1 for $\frac{30}{100} - \frac{1}{4}$ or $\frac{1}{4} - \frac{30}{100}$ $(=-\frac{5}{100})$ A1 for $\frac{5}{100}$ oe OR **(uses trial value, eg 60)** M1 for 0.3×60 – 0.25×60 (=3) or 0.25×60 – 0.3×60 (= −3) A1 for $\frac{3}{60}$ oe
309		60	3	M1 for 9 × 14 + 6 (=132) M1 (dep) for full method to convert '132' from lbs to kg using the graph **or** for '132'÷2.2 (=60) A1 for 59 – 62 OR M1 for reading off 14 lbs (= 6.2−6.5) and 6 lbs (=2.4−2.9) M1 (dep) for 9 × '6.4' + '2.75' A1 for 59 – 62 [SC B2 for 66]

Question		Working	Answer	Mark	Notes
310	(a)		720	2	M1 for 6 × 120 or 600 × 120 ÷ 100 oe A1 for 720 oe (accept 720.0)
	(b)		£10 or €12	3	M1 for 540÷1.2 (=450) oe, eg 4×100+50 (=450) M1(dep) for 460 – '450' (=10) A1 for £10 oe (accept £10.0) OR M1 for 460×1.2 (=552) oe, eg 4×120+60+12 (=552) M1 (dep) for '552' – 540 (=12) A1 for €12 oe (accept €12.0)
311	(a)		40	3	M1 for 120 × 100 (=12 000) or 20 × 15 (=300) M1 (dep) for '12 000' ÷ '300' A1 cao OR M1 for 120 ÷ 15 (= 8) or 100 ÷ 20 (= 5) M1 (dep) for '8' × '5' A1 cao OR M1 for 120 ÷ 20 (=6) or 100 ÷ 15 (=6.66…) M1 (dep) for '6'×'6.66…' (=40) or '6'×'6' (=36) or '6'×'7' (=42) A1 cao
	(b)		10.40	2	M1 for $\frac{20}{100} \times 52$ oe A1 for 10.4(0) [SC B1 for 62.4(0) or 41.6(0)]

Question		Working	Answer	Mark	Notes
312	(a)		2.70	3	M1 for 2 × 1.40 + 2.10 + 2.40 (= 7.30) M1 (dep) for 10 – '7.30' or 2.7(0) A1 for 2.70 in correct money notation OR M1 for subtracting at least 2 different correct costs from (£)10 M1 for 10 – 1.40 – 1.40 – 2.10 – 2.40 A1 for 2.70 in correct money notation [SC B1 for 4.10 in correct money notation]
	(b)		2.21	3	M1 for 2.60×0.15 (= 0.39) or 260×0.15 (=39p) M1 (dep) for 2.60 – '0.39' or 260–39 (=221p) A1 cao OR M1 for 1 – 0.15 (=0.85) or 100 – 15 (=85) M1 (dep) for 2.60 × 0.85 oe A1 cao

Question		Working	Answer	Mark	Notes
*313			Not enough mincemeat since 600<700 OR Only able to make 38 mince pies since insufficient mincemeat	4	M1 for 45 ÷ 18 (= 2.5) M1 for 2.5 used as factor or divisor A1 for 562.5 and 875 and 250 and 700 and 2.5 (accept 2 or 3) OR for availables as 400 and 400 and 200 and 240 and 2.4 (accept 2 or 3) C1 ft (dep on at least M1) for identifying and stating which ingredient is insufficient for the recipe (with some supportive evidence) OR M1 for a correct method to determine the number of pies one ingredient could produce M1 for a correct method to determine the number of pies **all** ingredient could produce A1 for 80 and 51 and 90 and 38 and 108 C1 ft (dep on at least M1) for identifying and stating which ingredient is insufficient for the recipe (with some supportive evidence)

Question		Working	Answer	Mark	Notes
314			28% or $\frac{14}{50}$	4	M1 for 100 − 30 (=70) or $1-\frac{3}{10}\left(=\frac{7}{10}\right)$ M1 for '+70' ÷ (3 + 2) (=14) or '$\frac{7}{10}$' ÷ $(3+2)\left(=\frac{7}{50}\right)$ M1 for '14' × 2 or $\frac{7}{50}\times 2$ A1 for 28% or $\frac{14}{50}$ oe OR M1 for a correct method to find (100−30)% of any actual sum of money, eg 0.7×500 M1 for '350' ÷ (3 + 2) (=70) M1 for '70' × 2 (=140) A1 for 28% or $\frac{14}{50}$ oe OR M1 for starting with a two numbers in ratio 3:2, eg 21 and 14 M1 for equating sum of their numbers to 100 – 30 (=70), eg '21' + '14' (=35) M1 for scaling sum of their numbers to 100%, eg '35'÷70×100 (=50) A1 for 28% or $\frac{14}{50}$ oe [SC award B3 for oe answers expressed in an incorrect form eg $\frac{2.8}{10}$]

Question		Working	Answer	Mark	Notes
315			9 squares shaded	1	B1 for any 9 squares shaded oe
*316			Yes + supporting work	4	M1 for adding the weights of all the ingredients (= 96) M1 (dep) for '96' × 8 A1 cao for 768 C1 (dep on M2), ft for a correct conclusion (yes or no) from a comparison of 750 (pots) with their '768' pots; units must be quoted [SC: B1 for 768 seen without working if M0M0 scored] **OR** M1 for adding the weights of all the ingredients (= 96) M1 for 750 ÷ 8 A1 cao for 93.75 C1(dep on M2), ft for a correct conclusion (yes or no) from a comparison of their weight of ingredients in one tank full '93.75' kg with '96' kg; units must be quoted [SC: B1 for 93.75 seen without working if M0M0 scored]] **OR** M1 for adding the weights of all the ingredients (= 96) M1 (dep) for 750 ÷ '96' A1 cao for 7.8125 C1(dep on M2), ft for a correct conclusion (yes or no) from a comparison of their number of pots, '7.8125' pots with 8 (pots); units must be quoted [SC: B1 for 7.8125 seen without working if M0M0 scored]]
317	(a)		2.5	2	M1 for 10 (cm) or "10" ÷ 4 A1 for 2.45 – 2.55
	(b)		A marked on diagram	2	M1 for a point marked (or line drawn) on a bearing of 038° from either point B or point W, OR for a point marked (or arc drawn) 6 cm from B A1 for the position of Avebury marked (accept without label if not ambiguous)

Question		Working	Answer	Mark	Notes
318	(a)	15 ÷ 6	2.5	2	M1 for 15 ÷ 6 oe A1 for 2.5 or $2\frac{1}{2}$
	*(b)		Yes + evidence	2	M1 for a correct method to change 15 miles into kilometres C1(dep on M1) for 24 km **and** statement with correct conclusion [SC: B1 for "Yes" oe and 24 km shown if M0 scored] **OR** M1 for a correct method to change 20 kilometres into miles C1(dep on M1) for 12.5 miles **and** statement with correct conclusion [SC: B1 for "Yes" oe and 12.5 miles shown if M0 scored]

Question		Working	Answer	Mark	Notes
319			414.96	5	M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method to find the cost of oil required before the discount M1 for a correct method of finding 5% of their calculated cost M1 (dep on previous M1) for a correct method to find the discounted cost A1 for correct answer of 414.96 or 41496p **OR** M1 for a correct method of finding 5% of the cost of 1 litre of oil M1 (dep on previous M1) for a correct method to find the discounted cost of 1 litre of oil M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method to find the discounted cost of the oil required A1 for correct answer of 414.96 or 41496p **OR** M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method of finding 5% of their calculated amount of oil M1 (dep on previous M1) for a correct method to find the reduced amount of oil M1 for a correct method to find the cost of the reduced amount of oil A1 for correct answer of 414.96 or 41496p

Question		Working	Answer	Mark	Notes
320		$180 \times \frac{10}{100} = 18$ or $\frac{20}{180} \times 100 = 11.\dot{1}$	No	3	M1 for $180 \times \frac{10}{100}$ oe or 180 × 1.1 oe or $\frac{20}{180} \times 100$ $(= 11.\dot{1})$ oe A1 for (£)18 or (£)198 or 11% C1 (dep M1) for comparison of increases or total pay or percentage increases leading to a correct deduction
321		Paint R Us 6 × 2.19 (= 13.14) Deco Mart 9× 1.80 (= 16.20) 16.20 × 0.9 (= 14.58)	Paint R Us	6	Paint R Us M1 for '9 − 3'× 2.19 A1 for 13.14 Deco Mart M2 for $\frac{90}{100}$ × '16.20' oe (M1 for $\frac{10}{100}$ × '16.20' oe) A1 for 14.58 C1 (dep M1) for comparison of cost of 9 tins at Paint R Us with cost of 9 tins at Deco Mart leading to a correct deduction
322		25 ÷ 50 = 0.5 h = 30 min 25 ÷ 60 = 0.416 h = 25 min	5	3	M1 for 25 ÷ 50 **or** $\frac{60}{50} \times 25$ **or** 30 (min) **or** 0.5(h) **or** 25 ÷ 60 **or** $\frac{60}{60} \times 25$ **or** 25 (min) **or** 0.41(6)(h) M1(dep) '0.5' –'0.41(6)'**or** '30' – '25' A1 cao OR M1 for 60 ÷ 25 (= 2.4) and 60 ÷ "2.4" **or** 50 ÷ 25 (= 2) and 60 ÷ "2" M1(dep) for '30' – '25' A1 cao

Question		Working	Answer	Mark	Notes
323	(a)		4.8	1	B1 for answer in range 4.6 – 5
	(b)		37.5	2	M1 for a valid method eg reading from graph for 6 km then ×10 A1 for answer in range 35 – 40 **OR** M1 for use of conversion factor $60 \times {}^{5}/_{8}$ oe A1 for answer in range 35 – 40

Question		Working	Answer	Mark	Notes
324		$250 - 0.42\times250 - 250\div5\times2$ $= 250 - 105 - 100$ **OR** $250\times\left(1-\left(\frac{42}{100}+\frac{2}{5}\right)\right) =$ $250\times\frac{9}{50}$ **OR** $250\times\left(\frac{100-42-40}{100}\right) =$ $250\times\frac{18}{100}$ **OR** $250-250\times\left(\frac{42}{100}+\frac{2}{5}\right) =$ $250-250\times\frac{41}{50} = 250-205$ **OR** $250-250\times\left(\frac{42}{100}+\frac{40}{100}\right) =$ $250-250\times\frac{82}{100} = 250-205$	45	4	M1 for $\frac{42}{100}\times 250$ oe (=105) M1 for $\frac{2}{5}\times 250$ oe (=100) M1 for 250 – '105' – '100' A1 cao **OR** M1 for $\frac{42}{100}+\frac{2}{5}\left(=\frac{82}{100}\right)$ or $\left(=\frac{41}{50}\right)$ M1 for $1-'\frac{82}{100}'$ or $1-'\frac{41}{50}'$ M1 for $'\frac{9}{50}'\times250$ A1 cao **OR** M1 for $\frac{2}{5}\times100$ or $\frac{2}{5}=\frac{2\times20}{5\times20}$ or 2×20 M1 for 100 - 42 - '40' (= 18) M1 for '0.18' × 250 A1 cao (continued overleaf)

Question		Working	Answer	Mark	Notes
324 cont.					**OR** M1 for $\frac{42}{100}+\frac{2}{5}\left(=\frac{82}{100}\right)$ or $\left(=\frac{41}{50}\right)$ M1 for $'\frac{41}{50}'\times 250$ M1 for 250 - '205' A1 cao **OR** M1 for $\frac{2}{5}\times 100$ or $\frac{2}{5}=\frac{2\times 20}{5\times 20}$ or 2×20 M1 for '(42 + '40)'/100 × 250 M1 for 250 - '205' A1 cao

<table>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>325</td><td></td><td>45 ÷ (5 – 2) (=15)
‘15’×2

OR
$45 \times \frac{2}{3}$

OR
<table>
<tr><th>P</th><th>J</th><th>T</th><th>D</th></tr>
<tr><td>2</td><td>5</td><td>7</td><td>3</td></tr>
<tr><td>4</td><td>10</td><td>14</td><td>6</td></tr>
<tr><td>6</td><td>15</td><td>21</td><td>9</td></tr>
<tr><td>8</td><td>20</td><td>28</td><td>12</td></tr>
<tr><td>10</td><td>25</td><td>35</td><td>15</td></tr>
<tr><td>12</td><td>30</td><td>42</td><td>18</td></tr>
<tr><td>14</td><td>35</td><td>49</td><td>21</td></tr>
<tr><td>16</td><td>40</td><td>56</td><td>24</td></tr>
<tr><td>18</td><td>45</td><td>63</td><td>27</td></tr>
<tr><td>20</td><td>50</td><td>70</td><td>30</td></tr>
<tr><td>22</td><td>55</td><td>77</td><td>33</td></tr>
<tr><td>24</td><td>60</td><td>84</td><td>36</td></tr>
<tr><td>26</td><td>65</td><td>91</td><td>39</td></tr>
<tr><td>28</td><td>70</td><td>98</td><td>42</td></tr>
<tr><td>30</td><td>75</td><td>105</td><td>45</td></tr>
</table></td><td>30</td><td>3</td><td>M1 for 45 ÷ (5 – 2)
M1 for ‘15’×2
A1 cao for 30

OR
M2 for $45 \times \frac{2}{3}$ oe
(M1 for $45 \times \frac{1}{3}$)
A1 cao for 30

OR
M1 for (2, 5); 4, 10; 6, 15; 8, 20
M1 for a completly correct list up to 30, 75
A1 cao
(SC If M0 then B1 for 18 given as the answer)</td></tr>
</table>

Question		Working	Answer	Mark	Notes
326	(a)		51	3	M1 200 × 25.82 (= 5164) A1 for 5164 or 5200 or 5100 or 51.64 or 51.6(0) or 5160 or 52 A1 for 51 **OR** M1 for 100 ÷ 25.82 (3.87…) and 200 ÷ '3.87…' (=51.64..) A1 for 5164 or 5200 or 5100 or 51.64 or 51.6(0) or 5160 or 52 A1 for 51 cao
	(b)		15.49	3	M1 for 400 ÷ 25.82 A1 for 15.4918… A1 for £15.49 or £15.50 **OR** M1 for 4 × '3.87…' from (a) A1 15.4918… A1 for £15.49 or £15.50

<table>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>*327</td><td></td><td>180 × 365 =65700
65700÷1000 =65.7
65.7×91.22 =5993.154
5993.154÷100 + 28.20= 88.13..

<table><tr><td>D</td><td>U</td><td>C</td><td>T</td></tr><tr><td>366</td><td>65880</td><td>6010</td><td>88.30</td></tr><tr><td>365</td><td>65700</td><td>5993</td><td>88.13</td></tr><tr><td></td><td>65000</td><td>5929</td><td>87.49</td></tr><tr><td></td><td>66000</td><td>6020</td><td>88.40</td></tr><tr><td>364</td><td>65520</td><td>5976</td><td>87.96</td></tr><tr><td>360</td><td>64800</td><td>5911</td><td>87.31</td></tr><tr><td>~~336~~</td><td>~~60480~~</td><td>5517</td><td>83.37</td></tr></table></td><td>Decision (Should have a water meter installed)</td><td>5</td><td>Per year
M1 for 180 × ‘365’ (=65700)
M1 for “65700”÷1000 (=65.7 or 65 or 66)
M1 for “65.7”×91.22 (=5993.....)
A1 for answer in range (£)87 – (£)89
C1(dep on at least M1) for conclusion following from working seen

OR (per day)
M1 for 107 ÷ ‘365’ (=0.293…)
M1 for 180 ÷ 1000 × 91.22 (=16.4196)
M1 for 28.2 ÷ ‘365’ + ‘0.164196’ (units must be consistent)
A1 for 29 – 30(p) and 24– 24.3(p) oe
C1(dep on at least M1) for conclusion following from working seen

OR
M1 for (107 – 28.20) ÷ 0.9122 (=86.384..)
M1 for ’86.384..’×1000 (=86384.5…)
M1 for ‘365’ × 180 (=65700)
A1 for 65700 and 86384.5..
C1(dep on at least M1) for conclusion following from working seen

NB : Allow 365 or 366 or 52×7 (=364) or 12 × 30 (=360) or 365¼ for number of days</td></tr>
</table>