

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
1(a)	40	B1	condone 040

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
1(b)	624	B2	B1 answer ending with units digit 4 or addition method from 438 with no more than one error or shows correct “borrowing” with no more than one error

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
2(a)	200	B1	accept two hundred

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
2(b)	8000	B1	accept eight thousand

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
2(c)	24 ÷ 8 or 3 or 5 ÷ 8 or 0.625 or 8 ÷ 5 or 1.6 or 24 × 5 or 120 or 24 ÷ 8 × 5 or 24 : 15	M1	oe eg $\frac{5}{8} \times 24$
	15	A1	
<b>Additional Guidance</b>			
8 – 5 = 3			M0

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
3(a)	50	B1	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
3(b)	$\frac{3}{4} \times 16$ or 12 or $\frac{1}{4} \times 16$ or 4	M1	oe may be seen as 10 more or 12 more squares shaded on diagram
	10	A1	
<b>Additional Guidance</b>			
Allow any indication of shading			
$\frac{12}{16}$ or $\frac{4}{16}$			M1

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
4(a)	6.92	B1	first answer
	7.18	B1	second answer

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
4(b)	-5 and 4	B1	either order first answer
	-10 and -2	B1	either order second answer

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
5(a)	line Q and line S	B1	either order, may be indicated on the diagram

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
5(b)	(0, 3), (1, 2), (2, 1) and (3, 0) plotted with no other points plotted on the grid	B2	B1 at least two of (0, 3), (1, 2), (2, 1) and (3, 0) plotted with up to two other points plotted on the grid or at least four points plotted that would lie on the line $x + y = 3$ where each $x$ and $y$ are not all integers, with no other points plotted on the grid or all four correct coordinates given but not plotted, with no additional coordinates
<b>Additional Guidance</b>			
Mark intention			
Line joining the four correct points with only the four correct points plotted			B2
Line connecting the four correct points but without points plotted			B1

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
6(a)	9	B1	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
6(b)	12	B1	accept $\pm 12$

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
6(c)	16	B1	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
7(a)	SP MP with no others	B1	oe accept in words
	<b>Additional Guidance</b>		
	Any indication, any order		
	Do not ignore repeats		

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
7(b)	A trial of at least 3 portions involving small and large with correct total seen  or 24 and 20 chosen  or $4 \times 6 (= 24)$ and $2 \times 10 (= 20)$	M1	eg $2 \times 6 + 10 = 22$ or 3S and 2L is 38
	4 small and 2 large	A1	
	<b>Additional Guidance</b>		
	Ignore incorrect trials if a correct trial or the correct answer is seen		
Any unambiguous indication eg 2L 4S		M1A1	
$5 \times 6 + 2 \times 10 = 54$			M0

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
8	9 × 25 or 225	M1	oe in pounds
	1000 – their 225 or 775	M1	oe in pounds their 225 must be less than 1000 775 implies M1M1
	their $775 \div 60$ or 12.(9...) or method to get to within one multiple of 60 for their 775 or 720 or 780	M1	oe in pounds their 775 must be less than 1000 and bigger than 60 allow one error in any build-up method $775 \div 60$ implies M1M1M1
	12 with no errors in working	A1	
	<b>Additional Guidance</b>		
Allow mixed units for method marks			
For build-up or build-down allow one error eg1 $1000 - 250 = 750$ , 60, 120, 180, 240, 300, 360, 420, 480, 540, 600, 660, 720 answer 12			M0M1M1A0
eg2 $9 \times 25 = 125$ , $1000 - 125 = 885$ , 60, 120, 180, 240, 300, 360, 420, 480, 540, 600, 660, 720, 760, 820, 880 answer 14			M1M1M1A0
eg3 $9 \times 25 = 225$ , $1000 - 225 = 775$ , 60, 120, 180, 240, 300, 360, 420, 480, 520, 580, 640, 700, 760 answer 13			M1M1M1A0
eg4 $9 \times 25 = 225$ , $1000 - 225 = 775$ , 715, 655, 595, 535, 475, 415, 375, 315, 255, 195, 135, 75, 15 answer 13			M1M1M1A0
eg5 $9 \times 25 = 225$ , $10 \times 60 = 600$ , $2.50 + 600 = 8.50$ , 9.10, 9.70 answer 12 (the 750 is implied)			M1M1M1A0

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
<b>9(a)</b>	(Alina range) 14	B1	
	(Sue median) 21	B1	SC1 14 and 21 not correctly assigned

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
<b>9(b)</b>	Alina and valid reason involving range	B1ft	eg Alina and lower range ft their range for Alina
	<b>Additional Guidance</b>		
	Quoted values must be correct for their part (a)		
	Condone “spread” for “range”		
	Part (a) Alina range 21 then indicates Sue, with Her range is lower		B1ft
	Any reason involving median		B0
	Alina, her scores are close(r) together (no mention of range)		B0
			B0

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
<b>10</b>	Method for finding 1% or a multiple of 5% or $1200 \times 35$ or 42 000 or 0.35	M1	may be implied by a correct value
	Fully correct method that would lead to the correct answer	M1dep	
	420	A1	SC2 780 SC1 digits 42
<b>Additional Guidance</b>			
Values or methods assigned to a percentage must be correct			
Ignore a % sign after answer			

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
<b>11(a)</b>	$2 \times 6$ or 12 or 1700	M1	oe
	17(.00)	A1	accept 1700p

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
<b>11(b)</b>	9.5 or $9\frac{1}{2}$ or valid reason	B1	eg shows that 9 windows cost £23 and 10 windows cost £25 or you can't have half a window
	<b>Additional Guidance</b>		
	Calculated values must be correct		
	(19, 21,) 23, 25 (, 27...)		
	Even number + 5 can't be even / can't end in a 4		
	There's no whole number you can times by 2 to get to 19		
	There's no number you can times by 2 to get to 19		
	Even + 5 = odd, 24 is even		
	Even + 5 = odd		
	Costs are all always odd numbers, 24 is even		

Q	Answer	Mark	Comments
12	Two comparable values and Y	B2	<p>B1 attempts to convert both to comparable form with at least one non-given value correct            eg <math>\left(\frac{7}{20} \text{ and } \frac{8}{20}\right)</math> or <math>\frac{1.75}{5}</math> (and <math>\frac{2}{5}</math>)            or            0.35 and 0.4            or            35% and 40%            or two values in the ratio 7 : 8</p>
	<b>Additional Guidance</b>		
	Accept two comparable values for “not red”  $\frac{13}{20}$ and $\frac{12}{20}$ and Y  $\frac{13}{20}$ and $\frac{12}{20}$  $\frac{13}{20}$ only		B2  B1  B0
	Two comparable values and $\frac{2}{5}$ on answer line  35% and 40%, answer 40% (implies bag Y)		B2  B2
	8 and Y		B2
	200 discs in each bag, 70 and 80, answer Y  200 discs in each bag, 70 (one non-given value correct)  70 and 50 (number of discs in each bag not specified)		B2  B1  B0
	35% and 20% (attempt to convert each to a percentage)  35% only		B1  B0

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
13(a)	$240 \div (1 + 3)$ or $240 \div 4$ or 60	M1	oe
	180	A1	
	<b>Additional Guidance</b>		
	$240 \div 4$ and $240 \div 3$ is choice unless the answer comes from $240 \div 4$		
	60 : 180 or 180 : 60 with no answer chosen		M1A0

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
13(b)	$\frac{5}{14}$	B1	oe fraction
	<b>Additional Guidance</b>		
	5 : 14		B0

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
14(a)	61	B1	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
14(b)	40.87	B1	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
14(c)	$4095 + 63$ or $4221 - 63$ or $(4095 + 4221) \div 2$ or $8316 \div 2$ or Valid attempt to multiply 63 by 66 with no conceptual error	M1	oe from traditional method their 378 + their 3780 or their 198 + their 3960 with at least one correct and placeholder of zero correct or implied  from grid method their 3600 + their 360 + their 180 + their 18 (at least three correct)  from Chinese / Napier's bones method at least three values correct from 1/8, 1/8, 3/6 and 3/6 and total calculated for each diagonal with at least one carrying figure placed correctly
	4158	A1	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
15	6	B1	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
16	All 3 correct boxes indicated Odd Even Cannot tell	B3	in that order B1 for each correct box
<b>Additional Guidance</b>			
	Allow any unambiguous indication eg crosses in all 3 correct boxes with all other boxes blank		
	More than one box ticked in a row		
	B3		
	B0		

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
17	39 – 10 or 29	M1	oe
	their 29 – 10 or 19 or $19n$	M1dep	oe 39 – 10 – 10 implies M1M1 (3rd term =) 48 implies M1M1 may be implied by the difference, after their 2nd term, consistently being the correct 19 $19n$ may be seen as part of $19n + b$
	their $29 + 3 \times$ their 19 or 10 + 4 $\times$ their 19 or substitutes $n = 5$ into expression of the form    their $19n + b$	M1dep	oe (4th term =) 67 implies M1M1M1 $b$ must be an integer
	86	A1	SC1 107 or 137 using Fibonacci SC1 126 using difference of 29
	<b>Additional Guidance</b>		
3rd mark must be a correct method for working out the 5th term			
Going past the 5th term eg 10, 29, 48, 67, 86, 105, without answer 86		M1M1M1A0	
10 + 19 = 39    10, 39, 58, 77, 96    (not the correct 19 being added)		M0	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
18	$\frac{1}{2} \times 20 \times 6.3$	M1	oe
	63	A1	
<b>Additional Guidance</b>			
Ignore units			

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
<b>19</b>	$\begin{pmatrix} 3 \\ -7 \end{pmatrix}$	B1	
	<b>Additional Guidance</b>		
	Condone + sign and/or fraction line eg $\begin{pmatrix} +3 \\ -7 \end{pmatrix}$	B1	
	(3, -7)	B0	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
<b>20(a)</b>	8350	B1	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
<b>20(b)</b>	8449	B1	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
	At least 3 points correctly plotted	M1	$\pm \frac{1}{2}$ square
	All 4 points correctly plotted and joined with straight lines	A1	$\pm \frac{1}{2}$ square lines may be dashed
<b>21a</b> <b>Additional Guidance</b>			
Mark intention for straight lines			
Condone one continuous, smooth curve			
Ignore the graph before 2015 and after 2022			
Ignore a line of best fit			

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
	[82, 90]	B1	
<b>21b</b> <b>Additional Guidance</b>			
Answer in range with or without working, with no graph or incorrect graph			B1

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>	
	Correct statement	B1	eg she used the height instead of the slant height or she used the vertical height or she used 12 (instead of 13)	
<b>Additional Guidance</b>				
22a	Check diagram			
	For 'vertical' accept anything that implies she has used the wrong height			
	Condone 'length' to mean 'height' or 'slant height'			
	12 or 13 circled on the diagram must be accompanied by a supporting statement			
	Indicates '12' in the calculation	B1		
	She should have done $\pi \times 5 \times 13$	B1		
	It should be $65\pi$	B1		
	She used the wrong height / the (value of) $l$ is wrong	B1		
	She hasn't used the slant height (she used the (vertical) height)	B1		
	She hasn't used the 13	B1		
	She hasn't used the 13 and should be $5 \times 12 \times 13 \times \pi$	B0		
	The multiplication used the wrong number(s)	B0		
	She hasn't used a value for $\pi$	B0		
	An incorrect statement with a correct statement eg she used 13 instead of 12 and didn't square the radius	B0		

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
<b>22b</b>	$\pi \times 5 \times 5$ or $25\pi$ or $3 \times 5 \times 5$	M1	oe accept [3.14, 3.142] or $\frac{22}{7}$ for $\pi$
	75	A1	
<b>Additional Guidance</b>			
$\pi 25$			M1

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
<b>22c</b>	'More than' indicated or implied by statement and valid reason	B1	eg valid reasons 3.14 is greater (than 3) Beth's number is bigger (than Adam's) (the correct answer is) 78.5 (with their answer to (b) less than 78.5)
	<b>Additional Guidance</b>		
	If calculations are used, the outcomes must be correct		
	Accept 78 or 79 for 78.5 unless from incorrect working		
	'Less than' indicated		B0
	Do not penalise use of the same incorrect formula in (b) and (c) eg $3 \times 10 = 30$ in (b) and $3.14 \times 10 = 31.4$ in (c) with 'More than' ticked		B1
	Ignore a non-contradictory reason with a correct reason eg 3.14 is bigger than 3 and nearer the true value of pi		B1
	<b>Acceptable reasons</b>		
	Adam has rounded (pi) down / Adam only used 3		B1
	There is an extra 0.14 to multiply by		B1
	Her number has decimal places		B1
	Her number is to more significant figures		B1
	<b>Non-acceptable reasons</b>		
	3.14 will give a bigger answer / 3.14 is more accurate		B0

Q	Answer	Mark	Comments
23	<b>Alternative method 1</b>		
	$\frac{1}{4} + \frac{1}{2}$ or $\frac{3}{4}$	M1	oe
	their $\frac{3}{4} \times 30$ or $\frac{90}{4}$	M1dep	oe
	$22\frac{1}{2}$ or 22.5	A1	allow 22 or 23 with correct working seen SC2 digits 225
	<b>Alternative method 2</b>		
	$\frac{1}{4} \times 30$ or 7.5 or $\frac{1}{2} \times 30$ or 15	M1	oe fractions or percentages
	their 7.5 + their 15	M1dep	oe
	$22\frac{1}{2}$ or 22.5	A1	allow 22 or 23 with correct working seen SC2 digits 225
<b>Additional Guidance</b>			
Using 568 ml instead of 1 pint – follow the spirit of the mark scheme			

Q	Answer	Mark	Comments
24	$7x - 4x$ or $3x$ or $4x - 7x$ or $-3x$ or $-22 - 29$ or $-51$ or $22 + 29$ or $51$	M1	
	$3x = 51$ or $-3x = -51$	A1	$\frac{51}{3}$ or $\frac{-51}{-3}$ implies M1A1 implied by correct answer
	17	A1ft	ft M1A0 from an equation of the form $\pm 3x = a$ or $bx = \pm 51$
<b>Additional Guidance</b>			
Trial and improvement scores 0 or 3			
If a follow through answer does not simplify to an integer, accept it as a fraction, mixed number or decimal to at least 1dp. eg from $3x = 7$ accept $\frac{7}{3}$ or $2\frac{1}{3}$ or 2.3 or better Ignore any attempt to convert a correct ft fraction			M1A0A1ft
Embedded answer			M1A1A0

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
25	$\frac{26(0)}{16.4}$	M1	oe eg $\frac{13}{8.2}$ or $1\frac{9.6}{16.4}$
	$\frac{260}{164}$ or $1\frac{96}{164}$	A1	oe with no decimals eg $\frac{130}{82}$ or $\frac{2600}{1640}$ implied by correct answer
	$\frac{65}{41}$ or $1\frac{24}{41}$	B1ft	ft correct simplification of their fraction using the digits 26 and 164 SC2 $\frac{41}{65}$ SC1 $\frac{65}{106}$ (total area as denominator)
	<b>Additional Guidance</b>		
Ignore units			
Ignore an incorrect conversion of $\frac{65}{41}$ to a mixed number			M1A1B1
$\frac{26(0)}{16.4} = \frac{2600}{164} = \frac{650}{41}$			M1A0B1ft

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
26a	Line joining open circles above, on or below –2 and 4	B1	condone arrows on a correct line with open circles
	<b>Additional Guidance</b>		
	Mark intention		
	If the student has drawn the circles on the line, they must have drawn their own line connecting the circles		
	Closed circle(s)		B0

Q	Answer	Mark	Comments	
26b	$5y \geq 11 - 14$ or $5y \geq -3$ or $14 - 11 \geq -5y$ or $3 \geq -5y$ or $y + \frac{14}{5} \geq \frac{11}{5}$ or $-\frac{3}{5}$	M1	oe fractions or decimals  may be seen in an equation or inequality	
	$y \geq -\frac{3}{5}$ or $-\frac{3}{5} \leq y$		A1 oe fraction or decimal for $-\frac{3}{5}$	
<b>Additional Guidance</b>				
Allow use of other inequality signs or $=$ if recovered				
Accept any letter for $y$				
Condone $\frac{-3}{5}$ or $\frac{3}{-5}$ for $-\frac{3}{5}$				
Ignore any attempt to convert $-\frac{3}{5}$ to a decimal				
$y \geq -\frac{3}{5}$ in working and $-\frac{3}{5}$ on answer line			M1A0	

<b>Q</b>	<b>Answer</b>	<b>Mark</b>	<b>Comments</b>
27	Enlarge(ment)	B1	
	$\frac{1}{2}$	B1	oe condone half
	(1, -7)	B1	condone missing bracket(s)
<b>Additional Guidance</b>			
For the third mark, a vector on its own does not imply a translation			
Do not accept halved or half the size			
Multiple transformations stated or implied			B0B0B0