

Stage 7: Got It?

Markscheme

Abbreviations

A: Answer mark

M: Method mark

oe: or equivalent

Unless stated otherwise a correct answer with no working gains all marks

A correct answer with alternative correct working gains all marks

A correct answer with incorrect working does not gain the relevant M mark(s)

Q		Answers	M	Notes and alternatives
1	a	-5, -4.5, -3, $\frac{1}{4}$, 1.5, 2	A3	For each part: Award A2A0 if one number in incorrect relative position and all others correct. Award A1A0A0 for largest and smallest numbers in correct position and more than one in incorrect relative position. Award A2 for correct descending order
	b	$\frac{1}{3}$, $\frac{3}{8}$, $\frac{2}{5}$, 0.47, $\frac{8}{15}$, $\frac{11}{11}$	A3	
2	a	F	A1	
	b	T	A1	
	c	F	A1	
	d	F	A1	
	e	F	A1	
	f	F	A1	
3	a	Evidence of use of long multiplication to calculate '157115' 15711.5	M1 A1	Award M1A0 for attempt at using long multiplication (see National Curriculum Appendix) with one arithmetical error
	b	Evidence of short or long division to calculate '99 r 2' oe 99.1	M1 A1	Award M1A0 for attempt at using short or long division (see National Curriculum Appendix) with one arithmetical error
	c	509.07	A2	Award M1A0 for attempt at using columnar addition (see National Curriculum Appendix) with one arithmetical error

	d	247.34 NB: New question 9.12.15; previous answer -392.66	A2	Award M1A0 for attempt at using columnar subtraction (see National Curriculum Appendix) with one arithmetical error
	e	Evidence of ' $44/12 + 27/12$ ' oe Evidence of ' $71/12$ ' $5^{11}/_{12}$	M1 M1 A1	
	f	Evidence of ' $133/28 - 32/28$ ' oe Evidence of ' $101/28$ ' $3^{17}/_{28}$	M1 M1 A1	
	g	Evidence of ' $23/10 \times 2/5$ ' oe Evidence of ' $46/50$ ' or ' $23/25$ '	M1 A1	
	h	Evidence of ' $3/10 \times 3/7$ ' oe $9/70$	M1 A1	
4	a	13456	A1	
	b	6	A3	The possibilities are: 65134 65143 65314 65341 65413 65431 Award M2A0 for 4 possibilities listed Award M1A0 for 3 possibilities listed
5		47.5	A3	Award M1A0 for correct solution to ' 0.72×47.5 ' Award M1A0 for correct solution to ' 4.75×2.8 '
6	a	Evidence of ' $(5 + 4 =) 9$ ' 18	M1 A1	
	b	Evidence of ' $(12 + 6 =) 18$ ' and ' $(6 - 3 =) 3$ ' 6	M1 A1	
	c	Evidence of ' $(60 \div 6 =) 10$ ' and ' $(2 \times 3 =) 6$ ' 4	M1 A1	
	d	Evidence of ' $12 \div (12 \div 6) = 12 \div 2$ ' 36	M1 A1	
7	a	Possible answers: 137, 157, 173, 251, 257, 317	A1	
	b	Any three digit number ending in '5'	A1	
	c	1, 2, 3	A1	
	d	51	A1	
8	a	6^2	A1	
	b	3^2	A1	

	c		3^4	A1	
	d		$\sqrt[2]{400}$	A1	
9	a		Evidence of '1.5 × 40' oe 60	M1 A1	
	b		Evidence of '90 ÷ 4.5' oe 20	M1 A1	
	c		Evidence of '3.5 × 15' oe 52.5	M1 A1	
10	a	i	73.6	A1	
		ii	73.63	A1	
		iii	70	A1	
		iv	74	A1	
11	a		Evidence of ' $\frac{5000 \times 40}{2}$ ' 100 000	M1 A1	
	b		Evidence of '900 ÷ 30' 30	M1 A1	
	c		Evidence of '(200 × 2 =) 400' Evidence of '1' Evidence of $\sqrt{400}$ 20	M1 M1 M1 A1	
12	a	i	ab	A1	
		ii	4b	A1	
		iii	b ³	A1	
		iv	a ²	A1	
		v	4a	A1	
		vi	4ab	A1	
	b		$\frac{a}{b}$	A1	
13	a		23	A1	
	b		-5	A1	
	c		Evidence of '16' or '3 × 4 × 4' 48	M1 A1	
14	a	i	Expression	A1	
		ii	Equation	A1	
		iii	Formula (or equation)	A1	
		iv	Formula (or equation)	A1	
		v	Expression	A1	
		vi	Expression	A1	
	b		term expression	A1 A1	
15	a	i	3a + 2b	A2	Award A1 for '3a' and A1 for '+ 2b'
		ii	8b + c - 4	A2	Award A1 for '8b' and A1 for '+ c - 4'

	b	i	$5x + 15$	A2	Award A1 for '5x' and A1 for '+ 15'
		ii	$a^2 - 3a$	A2	Award A1 for 'a ² ' and A1 for '- 3a'
16	a		Evidence of '16' oe Evidence of '26' oe 42	M1 M1 A1	
	b		Evidence of '12' 3	M2 A1	Award M1 for attempt at squaring 2. Award M0A0 for $(3 \times 2)^2$ oe
17	a		10 1.5 0 7 0	A3	Award A2 for 3 correct answers Award A1 for 2 correct answers
18			A: F B: T C: F D: F E: F F: F G: F	A1 A1 A1 A1 A1 A1 A1	
19	a		No Correct justification; e.g. 'All points on the line have a y co-ordinate of 3' 'It is the line 'y = 3' oe	A1 M1	Award A0M0 for a response of 'no' with no justification
	b	i	Horizontal line passing through the point (0,-3)	A1	
		ii	Diagonal line passing through (0,0), (1,1), (2, 2), (3, 3), etc	A1	
		iii	Diagonal line passing through (0,0), (-1,1), (-2, 2), (-3, 3), etc	A1	
20	a		Evidence of '4x = 72' oe x = 18	M1 A1	Do not award A1 if answer is not presented as 'x ='
	b		Evidence of '3a = 42' oe a = 14	M1 A1	Do not award A1 if answer is not presented as 'a ='
	c		Evidence of '5p + 20 = 75' or 'p + 4 = 15' Evidence of '5p = 55' or 'p = 11' p = 11	M1 M1 A1	Do not award A1 if answer is not presented as 'p ='
	d		Evidence of '2b + 18 = 100' Evidence of '2b = 82' b = 41	M1 M1 A1	Do not award A1 if answer is not presented as 'b ='
21	a		17, 21	A1	
	b		-2, -6	A1	
	c		27, 81	A1	
	d		23, 31	A1	

22	a	i	Triangular	A1	
		ii	Square	A1	
		iii	Arithmetic	A1	
		iv	Cube	A1	
	b		Attempt to use a difference of 6, or ' $6n - 2$ ' 58	M1 A1	
23	a		F	A1	
		b	T	A1	
		c	T	A1	
		d	F	A1	
		e	T	A1	
		f	F	A1	
24			Use of $2\text{kg} = 2000\text{g}$ $\frac{750}{2000}$ oe	M1 A1	
	25	a	1:3	A1	
	b	3:5	A1		
	c	5:3	A1		
	d	1:8	A1		
	e	1:8	A1		
	f	1:20	A1		
26	a		$120 \div 10$ or sight of 12 12×2 or 12×5 or 12×3 John £24, Jean £60, Jan £36	M1 M1 A1	
		b	Evidence of ' $(48 \div 3 =) 16$ ' Evidence of ' 5×16 ' 80	M1 M1 A1	
27			17 and 100	A1	
28	a		23 100 0.23	A2	Award A1 if two numbers are correct
		b	170 170 100	A2	Award A1 if two numbers are correct
29			Evidence of ' $\frac{750}{3000} \times 100$ ' oe 25	M1 A1	
30			Bob	A1	Alt: M1: uses scaling to write one fraction with denominator 20 M1: uses scaling to find two fractions with a common denominator A1: Bob Award A0M0M0 for 'Bob' with no justification
			Evidence of 'Bob's score is equivalent to 85%' oe Evidence of 'Emily's score is equivalent to 80%' oe	M1 M1	

31			Actual loss = £3000 Percentage loss = $\frac{3000}{12000} \times 100$ 25%	M1 M1 A1	
32	a		Illustrates a point Illustrates a line Illustrates a vertex Illustrates an edge Illustrates a plane Illustrates parallel lines using correct notation Illustrates perpendicular lines using correct notation Illustrates a right angle using correct notation Draws any 2D shape with straight sides	A1 A1 A1 A1 A1 A1 A1 A1 A1 A1	
	b		e.g. Regular hexagon	A1	Award A0 for just 'hexagon'
33	a		AC	A1	
	b		$\angle BCA$ or $\angle ACB$ or \hat{C}	A1	
	c		$\angle BAC$ or $\angle CAB$ or \hat{A}	A1	
34	a		Five sided shape drawn 3 sides measure 4cm, 3cm, 2cm	A1 A1	
	b	i	Correct measurement ± 2 mm Correct measurement ± 2 mm	A1 A1	
		ii	Correct angle $\pm 2^\circ$ Correct angle $\pm 2^\circ$ Correct angle $\pm 2^\circ$ Correct angle $\pm 2^\circ$ Correct angle $\pm 2^\circ$	A1 A1 A1 A1 A1	The angles should sum to 540° but there may be up to 10° error combined
35	a		180 – 135' 45°	M1 A1	
	b		32°	A1	
	c		360 – 90 – 160 – 46 oe 64°	M1 A1	
36	a	i	A	A1	
		ii	S	A1	
		iii	N	A1	
		iv	S	A1	
		v	S	A1	
		vi	N	A1	
		vii	N	A1	
	b		'Agree' because A square is a (special) rectangle since opposite sides are equal (oe) A square is a (special) rhombus since opposite angles are equal (oe)	A1 A1	A1A0 for comments but no 'agree' conclusion
37	a		(-2, ..., 3)	A1 A1	Award A1A0 for correct unambiguous point but incorrect coordinate

	b		(-1,... ...2)	A1 A1	Award A1A0 for correct unambiguous point but incorrect coordinate																				
	c		(4,...2)	A1 A1	Award A1A0 for correct unambiguous point but incorrect coordinate																				
38			Coordinate of the form (0.5, y) Different coordinate of the form (0.5, y)	A1 A1																					
39	a		<table border="1"> <tr> <td></td> <td>6</td> <td>12</td> <td>8</td> </tr> <tr> <td></td> <td>5</td> <td>9</td> <td>6</td> </tr> <tr> <td></td> <td>4</td> <td>6</td> <td>4</td> </tr> <tr> <td>Hexagonal pyramid</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Hexagonal prism</td> <td></td> <td></td> <td></td> </tr> </table>		6	12	8		5	9	6		4	6	4	Hexagonal pyramid				Hexagonal prism				A1 A1 A1 A1 A1	
	6	12	8																						
	5	9	6																						
	4	6	4																						
Hexagonal pyramid																									
Hexagonal prism																									
	b	i	Cylinder	A1																					
		ii	Cone	A1																					
		iii	Sphere	A1																					
40	a		6 metres – 10 metres oe	A1																					
	b		50 kg – 90 kg oe	A1																					
	c		9.5 seconds – 11 seconds	A1																					
	d		300 ml – 400 ml oe	A1																					
	e		150 km – 250 km oe	A1																					
	f		20 grams – 50 grams oe	A1																					
	g		6 m ³ – 8 m ³ oe	A1																					
	h		2 hours – 3 hours oe	A1																					
41	a		Evidence of '12 × 8' 96	M1 A1																					
	b		Evidence of correct method being applied, e.g. use of trapezium formula or dividing the shape into triangles and a rectangle oe 46	M1 A1																					
	c		Evidence of correct method being applied, e.g. use of trapezium formula or dividing the shape a triangle and a rectangle oe 132	M1 A1																					
	d		Evidence of '1/2 × 10 × 4' oe 20	M1 A1																					
	e		Evidence of '1/2 × 12 × 8' oe 48	M1 A1																					
	f		Evidence of '1/2 × 12 × 8' oe 48	M1 A1																					
42	a		Evidence of '12 + 12 + 10 + 10' oe 44	M1 A1																					
	b		Evidence of '13 + 10 + 5 + 5' oe 33	M1 A1																					
	c		Evidence of '12 + 8 + 14 + 15' oe 49	M1 A1																					
	d		Evidence of '10 + 5 + 8.1' oe 23.1	M1 A1																					

	e	Evidence of '12 + 10 + 18' oe 40	M1 A1	
	f	Evidence of '12 + 10 + 10' oe 32	M1 A1	
43	a	Application of length × width × height 60	M1 A1	
	b	Application of length × width × height Any three numbers with a product of 450; e.g. 9, 50, 1 or 3, 3, 50, etc.	M1 A1	
44		Surface area of cube = $6 \times 6 \times n$ = 216 Surface area of cuboid = $5 \times 6 \times 2 + 5 \times 8 \times 2$ $+ 8 \times 6 \times 2$ = 236 and 'Cuboid B since the surface area of the cuboid is 236m ² and the surface area of the cube is 216m ² '	M1 A1 M1 A1	Penalise one mark if no conclusion
45		$\begin{pmatrix} 2 \\ -2 \end{pmatrix}$	A1 A1	Penalise one mark for no brackets
46	a	No 'Kate can only be certain that the fraction is the same not the amount of data' oe	A1 M1	Award AOM0 for 'No' with no justification
	b	A sketch of a pie chart with the properties: <ul style="list-style-type: none"> • Five ruled sections • Monday is the largest and approx. $\frac{1}{4}$ • Wednesday and Thursday are the same size and just smaller than $\frac{1}{4}$ • Friday is smallest 	A1 A1 A1 A1	
47	a	Any five numbers with the property: <ul style="list-style-type: none"> • The difference between the largest and smallest is 10 • The total of the five numbers is 30 • 5 is the middle number when placed in order 	A1 A1 A1	
	b	Any five numbers with the property: <ul style="list-style-type: none"> • The difference between the largest and smallest is 5 • Two different numbers occurring twice • 7 is the middle number when placed in order 	A1 A1 A1	
	c	i	Evidence of $(0 + 5 + 8 + 3 + 8 =)$ 24 oe Evidence of $'24' \div (3 + 5 + 4 + 1 + 2)$ oe 1.6	M1 M1 A1
		ii	1	A1
		iii	1	A1
		iv	4	A1
		Total marks	281	