

Paper 5523_03				
No	Working	Answer	Mark	Notes
1		Cuboid drawn	2	B2 for correct isometric drawing in any orientation (ignore points 'behind', mark 7 vertices only); accept lines drawn near to dots as long as there is no ambiguity. (B1 for one of the three faces drawn correctly <b>or</b> for an isometric drawing of any cuboid)
2	Different makes of car Tally Frequency	Make of car Tally Frequency	3	B1 for make of car or list of at least 3 different makes B1 for tally or tally marks B1 for frequency or totals
3		6 tessellating shapes	2	B2 for fully correct with 5 or more additional shapes, no gaps (B1 for 4 or more shapes tessellating, with at least one shape inverted, with or without the given shape, ignore extras)
4	$24.90 \div 3$ or 8.30 $24.90 - '8.30'$ or $2 \times 8.30$	16.6(0)	3	M1 for $24.90 \div 3$ or 8.30 M1 (dep) for $24.90 - "8.30"$ or $2 \times "8.30"$ A1 for 16.60 or 16.6

No	Working	Answer	Mark	Notes																																																			
5	<div style="display: flex; justify-content: space-around; margin-bottom: 20px;"> <table style="border-collapse: collapse;"> <tr><td style="padding: 5px;">315</td><td style="padding: 5px;">24</td></tr> <tr><td style="border-top: 1px solid black; padding: 5px;">24</td><td style="border-top: 1px solid black; padding: 5px;">315</td></tr> <tr><td style="padding: 5px;">1260</td><td style="padding: 5px;">120</td></tr> <tr><td style="border-top: 1px solid black; padding: 5px;">6300</td><td style="border-top: 1px solid black; padding: 5px;">240</td></tr> <tr><td style="border-top: 1px solid black; padding: 5px;">7560</td><td style="border-top: 1px solid black; padding: 5px;">7200</td></tr> <tr><td></td><td style="border-top: 1px solid black; padding: 5px;">7560</td></tr> </table> </div> <div style="display: flex; justify-content: space-around; margin-bottom: 20px;"> <table style="border-collapse: collapse;"> <tr><td style="padding: 5px;"><b>3</b></td><td style="padding: 5px;"><b>1</b></td><td style="padding: 5px;"><b>5</b></td></tr> <tr><td style="border: 1px solid black; padding: 5px;">0</td><td style="border: 1px solid black; padding: 5px;">0</td><td style="border: 1px solid black; padding: 5px;">1</td></tr> <tr><td style="border: 1px solid black; padding: 5px;">6</td><td style="border: 1px solid black; padding: 5px;">2</td><td style="border: 1px solid black; padding: 5px;">0</td></tr> <tr><td style="border: 1px solid black; padding: 5px;">1</td><td style="border: 1px solid black; padding: 5px;">0</td><td style="border: 1px solid black; padding: 5px;">2</td></tr> <tr><td style="border: 1px solid black; padding: 5px;">2</td><td style="border: 1px solid black; padding: 5px;">4</td><td style="border: 1px solid black; padding: 5px;">0</td></tr> <tr><td style="padding: 5px;">7</td><td style="padding: 5px;">5</td><td style="padding: 5px;">6</td></tr> <tr><td></td><td></td><td style="padding: 5px;">0</td></tr> </table> </div> <div style="display: flex; justify-content: space-around; margin-bottom: 20px;"> <table style="border-collapse: collapse;"> <tr><td style="padding: 5px;"><b>300</b></td><td style="padding: 5px;"><b>10</b></td><td style="padding: 5px;"><b>5</b></td></tr> <tr><td style="border: 1px solid black; padding: 5px;">6000</td><td style="border: 1px solid black; padding: 5px;">200</td><td style="border: 1px solid black; padding: 5px;">100</td></tr> <tr><td style="border: 1px solid black; padding: 5px;">1200</td><td style="border: 1px solid black; padding: 5px;">40</td><td style="border: 1px solid black; padding: 5px;">20</td></tr> </table> </div> <p style="margin-bottom: 20px;">6000+200+100+1200+40+20 = 7560</p> <div style="display: flex; justify-content: space-around; margin-bottom: 20px;"> <table style="border-collapse: collapse;"> <tr><td style="padding: 5px;"><b>3</b></td><td style="padding: 5px;"><b>0.1</b></td><td style="padding: 5px;"><b>0.05</b></td></tr> <tr><td style="border: 1px solid black; padding: 5px;">60</td><td style="border: 1px solid black; padding: 5px;">2</td><td style="border: 1px solid black; padding: 5px;">1</td></tr> <tr><td style="border: 1px solid black; padding: 5px;">12</td><td style="border: 1px solid black; padding: 5px;">0.4</td><td style="border: 1px solid black; padding: 5px;">0.2</td></tr> </table> </div> <p>60 + 2 + 1 + 12 + 0.4 + 0.2 = 75.6</p>	315	24	24	315	1260	120	6300	240	7560	7200		7560	<b>3</b>	<b>1</b>	<b>5</b>	0	0	1	6	2	0	1	0	2	2	4	0	7	5	6			0	<b>300</b>	<b>10</b>	<b>5</b>	6000	200	100	1200	40	20	<b>3</b>	<b>0.1</b>	<b>0.05</b>	60	2	1	12	0.4	0.2	75.6(0)	3	<p>M1 for a complete method with relative place value correct.                      Condone 1 multiplication error, addition not necessary.</p> <p><b>OR</b></p> <p>M1 for a complete grid with not more than 1 multiplication error, addition not necessary.</p> <p><b>OR</b></p> <p>M1 for sight of a complete partitioning method, condone 1 multiplication error, final addition not necessary.</p> <p>A1 for 7560 or digits 756(0)</p> <p>A1 (dep on M1, but not previous A1) for correct placement of decimal point.</p>
315	24																																																						
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1260	120																																																						
6300	240																																																						
7560	7200																																																						
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<b>3</b>	<b>1</b>	<b>5</b>																																																					
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6	2	0																																																					
1	0	2																																																					
2	4	0																																																					
7	5	6																																																					
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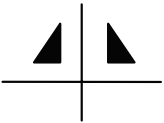
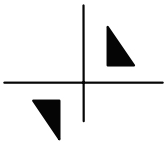
No	Working	Answer	Mark	Notes
6	<p>15 and 16 parts shaded</p> <p>Alternative 1</p> $\frac{3}{4} = 0.75 \text{ or } 75\%, \frac{4}{5} = 0.8 \text{ or } 80\%$ <p>Alternative 2</p> $\frac{3}{4} = \frac{15}{20}, \frac{4}{5} = \frac{16}{20}$	$\frac{4}{5} \text{ + reason}$	3	<p>M1 for shading 15 parts for <math>\frac{3}{4}</math></p> <p>M1 for shading 16 parts for <math>\frac{4}{5}</math></p> <p>A1 (dep on M2) for selection of <math>\frac{4}{5}</math> with correct shading</p> <p>Alternative 1</p> <p>M1 for <math>\frac{3}{4} = 0.75 \text{ or } 75\%</math></p> <p>M1 for <math>\frac{4}{5} = 0.8 \text{ or } 80\%</math></p> <p>A1 (dep on M2) for selection of 0.8 or 80% or <math>\frac{4}{5}</math> with correct decimals or percentages</p> <p>Alternative 2</p> <p>M1 for <math>\frac{3}{4} = \frac{15}{20}</math> oe</p> <p>M1 for <math>\frac{4}{5} = \frac{16}{20}</math> oe</p> <p>A1 (dep on M2) for selection of <math>\frac{4}{5}</math> or <math>\frac{16}{20}</math> with equivalent fractions</p>

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7	$5 \times 5 \times 6$	150	4	<p>M1 for attempt at 1 division (e.g. <math>40 \div 8</math>), may be implied by marks or number on one edge of diagram or by 5 or 6 seen</p> <p>M1 for attempt at 3 divisions (<math>40 \div 8</math>, <math>40 \div 8</math>, <math>60 \div 10</math>), may be implied by marks or numbers on diagram or by 5,5 and 6 seen.</p> <p>M1 (dep on 1<sup>st</sup> M1) for “5” <math>\times</math> “5” <math>\times</math> “6” A1 cao</p> <p>Alternatively M1 for <math>40 \times 40 \times 60</math> <b>or</b> <math>8 \times 8 \times 10</math> <b>or</b> 96000 or 640 seen M1 for <math>40 \times 40 \times 60</math> <b>and</b> <math>8 \times 8 \times 10</math> or 96000 <b>and</b> 640 seen M1 (dep on 1<sup>st</sup> M1) for “(<math>40 \times 40 \times 60</math>)” <math>\div</math> “(<math>8 \times 8 \times 10</math>)” A1 cao</p> <p>SC:B1 for dividing area of one carton face by area of corresponding box face if M0</p>
8	(a)  (b) $7 + 2$ (or $20 - 11$ ) are not lime flavour  (c)	$\frac{7}{20}$  $\frac{9}{20}$  0	1  1  1	<p>B1 for <math>\frac{7}{20}</math> oe</p> <p>B1 for <math>\frac{9}{20}</math> oe</p> <p>B1 for 0, zero or nought (<math>\frac{0}{20}</math> gets B0)</p>
9	(a) (b) (c)	$80x$ $95y$ $80x + 95y$	1 1 2	<p>B1 for <math>80x</math> (accept <math>80 \times x</math>, <math>x80</math>, <math>x \times 80</math>) seen</p> <p>B1 for <math>95y</math> (accept <math>95 \times y</math>, <math>y95</math>, <math>y \times 95</math>) seen</p> <p>M1ft for adding “<math>80x</math>” and “<math>95y</math>” (algebraic expressions only) A1 for <math>80x + 95y</math></p>

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10 (a)	$40 \times 2$ or $\frac{40}{30} \times 60$ or $40 \div \frac{1}{2}$	40	1	B1 cao																																						
(b)		45	1	B1 for 42 to 48 (accept 3/4 hour)																																						
(c)		80	2	M1 for $40 \times 2$ or $\frac{40}{30}$ or $40 \div \frac{1}{2}$ A1 cao  NB $\frac{40}{45} \times 60$ gets M0 A0																																						
11 (a)	$3 \times 3 - 4 \times 2$ or $9 - 8$	1	2	M1 for substitution of 3 and 2 into expression or 9 and 8 seen A1 cao																																						
(b)	$-7 - 3 = -10$ $2 \times -10 = -20$ $-20 \div 4$	-5	3	M1 for substitution of 2 and -7 into $p(q - 3)$ or sight of -20 or -14 - 6 M1 (dep) for "-20" $\div 4$ A1 cao SC: B1 for -10 seen if M0																																						
12 (a)	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>6</td><td>8</td><td>9</td><td>7</td></tr> <tr><td>7</td><td>8</td><td>5</td><td>9</td><td>6</td><td>3</td></tr> <tr><td>8</td><td>1</td><td>3</td><td>1</td><td>7</td><td>1</td></tr> <tr><td>9</td><td>0</td><td>1</td></tr> </table>	6	8	9	7	7	8	5	9	6	3	8	1	3	1	7	1	9	0	1	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>7</td><td>3</td><td>5</td><td>6</td><td>8</td><td>9</td></tr> <tr><td>8</td><td>1</td><td>1</td><td>1</td><td>3</td><td>7</td></tr> <tr><td>9</td><td>0</td><td>1</td></tr> </table>	6	7	8	9	7	3	5	6	8	9	8	1	1	1	3	7	9	0	1	3	M1 for unordered diagram (condone one error) A1 cao B1 for key (eg $6   7 = 67$ )
6	8	9	7																																							
7	8	5	9	6	3																																					
8	1	3	1	7	1																																					
9	0	1																																								
6	7	8	9																																							
7	3	5	6	8	9																																					
8	1	1	1	3	7																																					
9	0	1																																								
(b)(i)		Explanation	2	B1 for '(order numbers and) select middle value' oe																																						
(ii)		79		B1 cao																																						

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13 (a)		Reflection in $y$ -axis	1	B1 for triangle with vertices at (-1, 1) (-3, 1) and (-1,4)
(b)		Rotation by half turn about (0, 0)	2	B2 for triangle with vertices (-1, -1) (-3, -1) and (-1, -4) (B1 for half turn not about (0,0))
(c)		Enlargement Scale factor 3 Centre (0, 0)	3	B1 for 'enlargement' B1 for 'scale factor 3' or 3 seen B1 for 'centre (0,0)' B0 for any combination of transformations
14 (a)		4560	1	B1 cao
(b)		45.6	1	B1 cao
(c)		2.4	1	B1 cao
15 (a)	$4a - 2a + 5b + b$	$2a + 6b$	2	B2 cao (B1 for $2a$ or $6b$ seen)
(b)		$x(x - 6)$	2	B2 cao (B1 for $x(ax + b)$ where $a, b$ are numbers not equal to zero or $x - 6$ seen on its own, or part of an expression)
(c)		$3x - 2x^3$	2	B2 cao (B1 for $3x$ or $2x^3$ )
(d)		$4x(3y + x)$	2	B2 cao (B1 for $2(6xy + 2x^2)$ or $4(3xy + x^2)$ or $x(12y + 4x)$ or $2x(6y + 2x)$ or $4x(\quad)$ )

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16	(a)	$1 - (0.2 + 0.3 + 0.1)$	0.4	2	M1 for $1 - (0.2 + 0.3 + 0.1)$ A1 for 0.4 oe, accept $\frac{0.4}{1}$
	(b)	$0.2 \times 200$	40	2	M1 for $0.2 \times 200$ A1 cao NB $\frac{40}{200}$ is M1 A0, 40 out of 200 is M1 A1
17	(a) (i)	$180 - 2 \times 25$	130	3	M1 for $180 - 2 \times 25$ A1 cao
	(ii)		Reason		B1 for mentioning isosceles and equal (or base) angles or equal sides and equal (or base) angles
	(b)	$180 - 95$	85	1	B1 cao
18	(a) (i)		$7^5$	3	B1 cao
	(ii)		$7^4$		B2 cao (B1 for sight of $7^5$ or $7^{2+3}$ or $7 \times 7^3$ or $7^1 \times 7^3$ or $7^2 \times 7^2$ or $7^{2+3-1}$ )
	(b)		$\frac{1}{2}$	1	B1 for $\frac{1}{2}$ or 0.5 or $2^{-1}$
19	(a)		$3 \times 10^7$	1	B1 cao
	(b)		0.002	1	B1 cao

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20		Box plot	2	3 aspects:  1 <sup>st</sup> aspect – vertical line for median 2 <sup>nd</sup> aspect – box using correct quartiles 3 <sup>rd</sup> aspect – whiskers (could be single line) drawn with correct end points  B2 for fully correct box plot (B1 for 1 aspect)								
21 (a)	e.g. <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 0 5px; text-align: center;">2</td> <td style="padding: 0 5px; text-align: right;">126</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px; text-align: center;">3</td> <td style="padding: 0 5px; text-align: right;">63</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px; text-align: center;">3</td> <td style="padding: 0 5px; text-align: right;">21</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px;"></td> <td style="padding: 0 5px; text-align: right;">7</td> </tr> </table>	2	126	3	63	3	21		7	$2 \times 3 \times 3 \times 7$	2	M1 for a systematic method of at least 2 correct divisions by a prime number or factor trees; can be implied by digits 2, 3, 3, 7 on answer line.  A1 for $2 \times 3^2 \times 7$ or $2 \times 3 \times 3 \times 7$
2	126											
3	63											
3	21											
	7											
21 (b)	$2 \times 3 \times 7$	42	2	B2 cao (B1 for 6, 14, 21 or $2 \times 3 \times 7$ )								
22	$\frac{8}{3} \times \frac{5}{4} = \frac{8 \times 5}{3 \times 4} = \frac{40}{12}$	$3\frac{1}{3}$	3	B1 for $\frac{8}{3}$ or improper fraction or $\frac{5}{4}$ or improper fraction  M1 (dep on B1) for multiplying numerator and denominator of “ $\frac{8}{3}$ ” and “ $\frac{5}{4}$ ”  A1 for $3\frac{1}{3}$ or mixed number or $\frac{10}{3}$  OR  B1 for 1.25 and 2.67 or 2.66(...) M1 (dep on B1) for correct method of multiplication A1 for $3.\dot{3}$								



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23			2	M1 for a relevant pair of intersecting arcs A1 for line drawn within guidelines, at least 3cm in length, accept broken line [SC: B1 for line drawn within guidelines if M0]
24	(a)	-1, 0, 1, 2, 3	2	B2 cao (-1 each error or omission)
	(b)(i)	$x \geq \frac{7}{2}$	3	M1 for $2x \geq 7$ , condone use of = sign or wrong equality A1 for $x \geq \frac{7}{2}$ oe as final answer
	(ii)	4		SC:B1 for 3.5 or $\frac{7}{2}$ seen if M0 B1 ft from $x \geq \frac{7}{2}$
25	$4x + 2y = 8$ $4x - 10y = 20$ <hr style="width: 100px; margin-left: 0;"/> $12y = -12$ $y = -1$ $4x + 2(-1) = 8$ $x = 2.5$	$x = 2.5$ $y = -1$	3	M1 for correct process to eliminate either $x$ or $y$ (condone one arithmetical error) M1 (dep) for substituting found value into either equation A1 for $x = 2.5, y = -1$  [SC: B1 for $x = 2.5$ or $y = -1$ if M0]

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26	Interior angle of hexagon = $180 - (360 \div 6) = 120$ $360 - (90 + 120)$	150	4	Alternative 1 M1 for $360 \div 6$ A1 for 60 M1 (dep on M1) for “60” + 90 A1 cao  Alternative 2 M1 for $360 \div 6$ A1 for 60 M1 (dep on M1) for $360 - (2 \times \text{“60”} + 90)$ A1 cao  Alternative 3 M1 for $(6 - 2) \times 180 \div 6$ A1 for 120 M1 (dep on M1) for $360 - (90 + \text{“120”})$ A1 cao
27	(a)  (b) Cumulative freq. diag. curve/ segments  (c) 100 – 42	(16), 50, 82, 96, 100 Cum. freq graph  58	1  2  2	B1 cao  B1 for 4 or 5 points plotted correctly $\pm 1$ full (2mm) square depending on sensible table (condone 1 addition error) B1 (dep) for points joined by curve or line segments provided no gradient is negative - ignore any part of graph outside range of their points. (SC:B1 if 4 or 5 points plotted not at end but consistent within each interval and joined) M1 (ft dep on graph being cf) for reading from graph at 18 or 19, can be implied by answer in range 40 to 46 A1 for answer in range 56 to 60 or ft for $100 - \text{‘42’} \pm 1$ full (2mm) square