
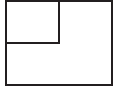


## Paper 5523/04

No	Working	Answer	Mark	Notes
1		Correct shape	2	B2 (B1 for any one side correct, or all correct but scale factor other than 1 or 3) Tolerance: to within half square.
2	$13 \times 5.5(0)$ or $71.5(0)$ $103 - 71.5(0)$ or $31.5(0)$ $31.5(0) \div 9$	3.50	4	M1 for $13 \times 5.5(0)$ or $71.5(0)$ seen M1 for $103 - "71.5(0)"$ or $31.5(0)$ seen M1 for $"31.5(0)" \div 9$ A1 for 3.50 Condone 3.5
3	(a) (b) (c) $6m + 8 + 3m - 15$	$5p + 2q$ $y^2 - 5y$ $9m - 7$	2 1 2	B2 (B1 for $5p$ or $\pm 2q$ ) B1 M1 for correct expansion of at least one bracket A1 for $9m - 7$
4	(a) $\frac{180 - 120}{2}$ (b) $\angle ABD = 150^\circ$ seen $360 - ("150" + 54 + 108)$	30 48	2 3	M1 for $\frac{180 - 120}{2}$ A1 for 30 cao M1 for $\angle ABD = 150^\circ$ seen or $180 - (a)$ (may be stated or shown on diagram) M1 for $360 - ("180-(a)" + 54 + 108)$ A1 for 48 ft from acute (a) <b>OR:</b> M1 for $54 + 120 (=174)$ M1 $360 - ("174" + "30" + 108)$ A1 for 48 ft from acute (a)
5		Correct shape	2	B2 (B1 for one complete flag or two correct poles)
6		$h = 70t + 80$	3	B1 for $h =$ linear expression in $t$ B2 for $70t + 80$ (B1 for $70t$ )

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No	Working	Answer	Mark	Notes										
7		<table style="border-collapse: collapse; margin-left: 20px;"> <tr><td style="border-right: 1px solid black; padding-right: 5px;">0</td><td>12466</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">1</td><td>133555899</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">2</td><td>22455889</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">3</td><td>03</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">4</td><td>6</td></tr> </table> <p>eg 1   3 represents 13</p>	0	12466	1	133555899	2	22455889	3	03	4	6	3	<p>B1 for stem 0, 1, 2, 3, 4 or 0, 10, 20, 30, 40</p> <p>B1 for accurate leaves – condone 1 error or omission (could be unordered)</p> <p>B1 for key and correct ordered leaves</p>
0	12466													
1	133555899													
2	22455889													
3	03													
4	6													
8	(a) $\frac{35}{1+4}$	7	2	M1 for $\frac{35}{1+4}$										
	(b) $4 \times 18$ or $72$ or $5 \times 18$	90	2	A1 for 7 cao M1 for $4 \times 18$ or $72$ or $5 \times 18$ A1 for 90 cao										
9		Correct trapezium	3	B1 for accurately placed D B1 for accurately placed C B1 for two pairs of arcs at D and C, centred on base vertices										
10	(a) $\frac{216}{4.5}$	48 mph  0.8 m/min	4	M1 for $\frac{216}{\text{time}}$ eg time= 4h30, 4.5, 4.3, 270 B1 for the digits 45 seen A1 for 48 cao or 0.8 cao B1(indep) for mph or m/h, m/min (must be consistent)										
	(b)(i) (ii)	22.5 23.5	2	B1 cao B1 23.5 or 23.49 or 23.49... or 23.4999(9...) oe										
11	$6x - 2x = 9 + 5$ $4x = 14$	$3\frac{1}{2}$	3	M1 for correct rearrangement: $6x - 2x = 9 + 5$ or intent shown (correct signs) M1 $4x = 14$ A1 for $3\frac{1}{2}$ oe accept $\frac{14}{4}$										

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No	Working	Answer	Mark	Notes
12	(a)		2	B2 for elevation with correct orientation (B1 incorrect orientation)
	(b)		2	B2 for correct plan; internal square can be in any corner. (B1 for 2 by 2 square with missing/extra internal lines)
13	(a)	-6, -16	2	B2 cao (B1 for one correct value)
	(b)	$2(n-5)$	1	B1oe eg $2n-10$ ; NB $n^{\text{th}} = B1, n = B0$
	(c)	$\frac{y+10}{2}$ or $\frac{y}{2} + 5$	2	M1 for " $2(n-5)$ " = $y$ or $\div 2 + 5$ A1 for $\frac{y+10}{2}$ or $\frac{y}{2} + 5$ or $\frac{1}{2}(y+10)$ or $(y+10) \div 2$ (Sc B1 for ambiguous statements eg $y + 10 \div 2$ )
14	(a)	2770.56	3	M1 for $\frac{4}{100} \times 2664 (=106.56)$ M1 (dep) for "106.56" + 2664 A1 for 2770.56
	(b)	3040	2	M1 for $121.6(0) \times \frac{100}{4}$ oe A1 cao
	(c)	2720	3	B1 for 1.04 oe seen accept 104% M1 for $2828.8 \div 1.04$ oe A1 for 2720
15	(a)	1.258048316	2	M1 for 5.09... or 4.05 or 25.96 seen A1 for at least 4 sf rounded or truncated: 1.258(048316...) or 1.26
	(b)	1.26	1	B1 for 1.26 or ft from (a); 1.260 gets B0

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No	Working	Answer	Mark	Notes
16 (a)	prime factors 2 and 7 seen	$2 \times 2 \times 2 \times 7$	2	M1 for prime factors 2 and 7 seen A1 for $2 \times 2 \times 2 \times 7$ or $2^3 \times 7$
(b)		14	1	B1 for 14 cao
17 (a)	$\frac{90}{240} \times 360$	135	2	M1 for $\frac{90}{240}$ A1 for 135
(b)		$15 \leq t < 20$	1	B1 for $15 \leq t < 20$ Accept 15-20
(c)		95 185 220 235 240	1	B1 for all correct
(d)		Points  curve or line segment	2	B1 ft for at least 4 or 5 pts plotted correctly ( $\pm 1$ sq) at ends of interval dep on sensible table (cf; no more than 1 error) B1(dep on previous B1) for pts joined by curve/line segments provided no gradient is negative (SC: B1 if 4 or 5 pts plotted not at ends but consistently within each interval <b>and</b> joined)
(e)		20.5-22.0	1	B1 ft from a cf graph using cf = 120 (.5)

**Paper 5523/04**

No	Working	Answer	Mark	Notes																
18 (a)	<table border="0"> <tr><td>3.1</td><td>68.2(31)</td></tr> <tr><td>3.2</td><td>73.7(28)</td></tr> <tr><td>3.3</td><td>79.4(97)</td></tr> <tr><td>3.4</td><td>85.5(44)</td></tr> <tr><td>3.5</td><td>91.8(75)</td></tr> <tr><td>3.6</td><td>98.4(96)</td></tr> <tr><td>3.7</td><td>105.4(13)</td></tr> <tr><td>3.65</td><td>101.9(1725)</td></tr> </table>	3.1	68.2(31)	3.2	73.7(28)	3.3	79.4(97)	3.4	85.5(44)	3.5	91.8(75)	3.6	98.4(96)	3.7	105.4(13)	3.65	101.9(1725)	3.6	4	B2 for trial $3.1 \leq x \leq 3.7$ evaluated (B1 for trial $3 < x < 4$ evaluated) B1 for different trial $3.615 \leq x \leq 3.65$ evaluated B1 for 3.6, (dep on at least one of 2 previous Bs) or anything that rounds to 3.6 Values evaluated can be rounded or truncated, but to at least 1 d.p.
3.1	68.2(31)																			
3.2	73.7(28)																			
3.3	79.4(97)																			
3.4	85.5(44)																			
3.5	91.8(75)																			
3.6	98.4(96)																			
3.7	105.4(13)																			
3.65	101.9(1725)																			
(b)(i)		$x^2(x + 4) = 100$	2	B1 for $x^2(x + 4)$ seen or $x \times x \times x + 4$ OR “3.6” <sup>3</sup> +4×”3.6” <sup>2</sup> ≈ 100 (dep on $3.6 \leq (a) \leq 3.7$ ); (46.656+4×51.84) B1 ft from “3.6” ie “3.6” + 4																
(ii)		7.6																		
19	$168^2 + 157^2 = 28\,224 + 24\,649$ $= 52\,873$ $\sqrt{28224 + 24649}$	229.9 - 230	3	M1 for $168^2 + 157^2$ M1 $\sqrt{168^2 + 157^2}$ or $\sqrt{28224 + 24649}$ or $\sqrt{52873}$ ie not doubling A1 for 229.9-230																
20	$\frac{8}{25} \times 1750$ or $0.32 \times 1750$ or $8 \times 70$	560	3	M1 for $\frac{8}{25}$ oe seen or $\frac{1750}{25}$ oe seen or 0.32 or 70 seen M1 for $\frac{8}{25} \times 1750$ oe A1 for 560																

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No	Working	Answer	Mark	Notes
21	$\cos x = \frac{3.9}{4.7} = 0.8297\dots$	33.9	3	M1 for $\cos = \frac{3.9}{4.7}$ (= 0.8297...) M1 for $\cos^{-1} \frac{3.9}{4.7}$ or $\cos^{-1} \frac{4.7}{3.9}$ A1 for 33.9 –33.93 SC B2 for 0.592(069...) or 37.6(923...) or 37.7
22 (a)	$\frac{12}{6.02 \times 10^{23}}$	$1.99 \times 10^{-23}$	2	M1 for $\frac{12}{6.02 \times 10^{23}}$ A1 for $1.99 \times 10^{-23}$ or better (1.99335...)
(b)	$\frac{100}{12} \times 6.02 \times 10^{23}$	$5.02 \times 10^{24}$	2	M1 for $\frac{100}{12} \times 6.02 \times 10^{23}$ or $100 \div (a)$ A1 for $5.02 \times 10^{24}$ or $5.03 \times 10^{24}$ or better (5.0166...) ft from (a)
23	$\left(\frac{1}{2} \times \pi \times 30^2 + 60 \times 45\right) \times 90$ $(1/2 \times 2827.43 + 2700) \times 90$ $(1413.7.. + 2700) \times 90$ $4113.7.. \times 90 = 370234.5\dots$	370 000	4	<b>Cross-section approach:</b> M1 for $(\frac{1}{2} \times) \pi \times 30^2$ (=2827.4 or 1413.7) or $60 \times 45$ (=2700) M1 for “ $(\frac{1}{2} \times) \pi \times 30^2$ ” + $60 \times 45$ (complete method) M1 for “any area” $\times 90$ or 4110–4115 A1 for 370 000 to 370300 <b>Volume approach:</b> M1 for $(\frac{1}{2} \times) \pi \times 30^2$ or $60 \times 45$ M1 for “ $(\frac{1}{2} \times) \pi \times 30^2$ ” $\times 90$ (=127234 or 254468) or $60 \times 45 \times 90$ (=243000) M1 for addition of two volumes A1 for 370 000 to 370300 (370 235)

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No	Working	Answer	Mark	Notes
24 (i) (ii) (iii)		E A I	3	B1 for E cao B1 for A cao B1 for I cao
25 (a)	$\sqrt{75}$	8.66 or $5\sqrt{3}$	2	M1 for $\frac{3 \times 50}{2}$ or 75 A1 for 8.66 or better (8.6602..., $5\sqrt{3}$ )
(b)	$d^2 = \frac{3h}{2}$	$\frac{2d^2}{3}$	2	M1 for squaring each side A1 for $\frac{2d^2}{3}$ oe