

## Paper 5525/06

No	Working	Answer	Mark	Notes																																																
1	$.4 \times 240 + .7 \times 200 = 96 + 140$  $\frac{236}{440} \times 100$	53.6%	3	M1 for either $0.4 \times 240$ or $0.7 \times 200$ or 96 or 140 seen A1 (dep) for $0.4 \times 240 + 0.7 \times 200$ , (96+140) or 236 seen A1 53 – 54%																																																
2	Read off at £1000 (2100) and then $\div 48$	43cm	2	M1 read off (2000-2200) and $\div$ by 48 A1 43.7cm - 44.8cm																																																
3	<table border="0" style="width: 100%;"> <tr> <td style="width: 20%;"></td> <td style="width: 10%; text-align: right;">4.0</td> <td style="width: 10%; text-align: right;">80</td> <td style="width: 10%;"></td> </tr> <tr> <td></td> <td style="text-align: right;">4.1</td> <td style="text-align: right;">85.3(2)</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">4.2</td> <td style="text-align: right;">90.8(9)</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">4.3</td> <td style="text-align: right;">96.7(1)</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">4.4</td> <td style="text-align: right;">102.7(8)</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">4.5</td> <td style="text-align: right;">109.1(3)</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">4.6</td> <td style="text-align: right;">115.7(4)</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">4.7</td> <td style="text-align: right;">122.6(2)</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">4.8</td> <td style="text-align: right;">129.7(9)</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">4.9</td> <td style="text-align: right;">137.2(5)</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">5.0</td> <td style="text-align: right;">145</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">4.35</td> <td style="text-align: right;">99.7(1)</td> <td></td> </tr> </table>		4.0	80			4.1	85.3(2)			4.2	90.8(9)			4.3	96.7(1)			4.4	102.7(8)			4.5	109.1(3)			4.6	115.7(4)			4.7	122.6(2)			4.8	129.7(9)			4.9	137.2(5)			5.0	145			4.35	99.7(1)		4.4	4	B2 for trial strictly between 4 and 5 evaluated (B1 for trial at either end) B1 for different trial between 4.3 and 4.4 exclusive B1 cao (dep) on at least one previous B1 NB need to see trials evaluated to at least 1dp (truncated or rounded)
	4.0	80																																																		
	4.1	85.3(2)																																																		
	4.2	90.8(9)																																																		
	4.3	96.7(1)																																																		
	4.4	102.7(8)																																																		
	4.5	109.1(3)																																																		
	4.6	115.7(4)																																																		
	4.7	122.6(2)																																																		
	4.8	129.7(9)																																																		
	4.9	137.2(5)																																																		
	5.0	145																																																		
	4.35	99.7(1)																																																		

No	Working	Answer	Mark	Notes
4	(a) $8x + 4 = 6 - 2x$ $8x + 2x = 6 - 4$	0.2	3	M1 for at least one correct expansion A1 ft for "+2x" and "-4" oe A1 0.2 oe
	(b)	$2p(p-2q)$	2	M1 for $p$ or $2p$ as a common factor with (two terms) and at least one term that is algebraic eg in working A1 cao
	(c)	$(x+1)(x+6)$	2	SC B1 $p-2q$ or $2p-4q$ or $(2p+0)(p-2q)$ M1 $(x+a)(x+b)$ with $ab = 6$ A1 cao
5	(a) $8000 \times 1.05^3$ 8000, 8400, 8820, 9261, (9724.05)	£9261	3	M1 for $\frac{5}{100} \times 8000$ or $\frac{105}{100} \times 8000$ oe or any one of the following seen: 400, 8400, 1200, 9200 M1 (dep) complete method for 3 yrs compound interest A1 cao SC B2 for £1261 without working <b>OR</b> M1 for $8000 \times 1.05^n$ oe M1 for $n = 3$ A1 cao
	(b)	A	1	B1 cao
	(c) $3885 \div 105 \times 100$	£3700	3	B1 for sight of 105 or 1.05 M1 for $3885 \div 105 \times 100$ A1 cao
6	(a) $200 \div 21.2 = 9.43396\dots$	9.43396	2	M1 for $200 \div 21.2$ (imply from 9.....) A1 for 9.43396...
	(b)	9.4	1	B1 ft 2sf or 3sf on '9.43396'

No	Working	Answer	Mark	Notes
7	(a)	$\frac{30}{100}$	1	B1 cao
	(b) $250 \times 0.7$	175	2	M1 for $250 \times 0.7$ A1 cao NB $\frac{175}{250}$ gets M1 A0, 175 out of 250 gets M1 A1
8	$\tan P = 5 \div 12.5$	21.8	3	M1 for correct use of $\tan P = 5 \div 12.5$ (accept $\tan 5 \div 12.5$ ) M1 for $\tan^{-1}\left(\frac{5}{12.5}\right)$ oe, condone $\tan^{-1} 5 \div 12.5$ A1 21.8-21.81 NB 6.29 – 6.3 gets M2 A0 by implication
9	$17^2 - 10^2 = 189$	13.7cm	3	M1 for $17^2 - 10^2$ or $10^2 - 17^2$ M1 for $\sqrt{(289-100)}$ or $\sqrt{189}$ A1 13.7-13.75 SC: B1 for $17^2 + 10^2$ leading to 19.7 – 19.75

No	Working	Answer	Mark	Notes
10 (a)	$\frac{\sqrt{8.8 + 7.2 \sin 40}}{\sqrt{8.8 - 7.2 \sin 40}}$ $= \sqrt{\frac{13.428}{4.172}} = \sqrt{3.218}$	1.79	3	M1 for correct substitution of all values into numerator or denominator (separately) condoning $\sin x 40$ , or for $\frac{40.72}{10.28}$ (=3.96) or for $\frac{48.8}{8.8}$ (=5.54) A1 for 13.4(28) or 4.1(72) or 3.2(18) A1 1.79-1.8
10 (b)	$2 = \sqrt{\frac{r + 10 \sin 30}{r - 10 \sin 30}}$ $2 = \sqrt{\frac{r + 5}{r - 5}}$ $4 = \frac{r + 5}{r - 5}$ $r = 8\frac{1}{3}$	$8\frac{1}{3}$	3	M1 for $2 = \sqrt{\frac{r + 10 \sin 30}{r - 10 \sin 30}}$  M1 square both sides  A1 $8.3 - 8\frac{1}{3}$
11	$L_2 y = 2x + c$ $C = 2 - 2 \times 3 = -4$	$y = 2x - 4$	3	M1 for $y = 2x + c, c \neq 3$ (any line parallel to $y = 2x + 3$ ) or statement "gradient is 2" M1 for $2 = 2 \times 3 + c$ , any clear attempt to substitute into any equation of the form $y = 2x + c, c \neq 3$ A1 cao
12 (a)	$60 \times 2.8 = 168$ $40 \times 3.3 = 132$ $(168 - 132) \div 20$	1.8	3	B1 for either $60 \times 2.8$ or $40 \times 3.3$ or 168 or 132 or 36 M1 for $(60 \times 2.8 - 40 \times 3.3) \div 20$ A1 cao
12 (b)		$p = q$ Lists are the same size	2	B1 cao $p = q$ B1 cao Lists have the same number of members, are the same size, have the same numbers

No	Working	Answer	Mark	Notes
13	(a) $\frac{CD}{5} = \frac{10}{4}$	12.5	2	B1 for sight of $\frac{10}{4}$ or $\frac{4}{10}$ or 2.5 or 0.4 or 1.25 oe
	(b) $4.8 \times 2.5 - 4.8$	7.2	2	B1cao for 12.5 M1 for "4.8 × 2.5" or sight of 12 A1 cao
14	(a) $x^2 + x - 3 = 0$  $x = \frac{-1 \pm \sqrt{1^2 - 4 \times 1 \times (-3)}}{2}$ $x = \frac{-1 \pm \sqrt{13}}{2}$ OR $\left(x + \frac{1}{2}\right)^2 - \frac{1}{4} + 11 = 14$ $\left(x + \frac{1}{2}\right)^2 = \frac{13}{4}$ $x = -\frac{1}{2} \pm \sqrt{\frac{13}{4}}$	1.30 -2.30	3	M1 correct substitution of LHS into quadratic formula, ignore sign errors M1 $\frac{-1 \pm \sqrt{13}}{2}$ A1 1.30 to 1.303 and -2.30 to -2.303 (both) OR M1 for correct method to complete the square, $\left(x + \frac{1}{2}\right)^2 - \frac{1}{4}$ seen M1 for $-\frac{1}{2} \pm \sqrt{\frac{13}{4}}$ A1 1.30 to 1.303 and -2.30 to -2.303 (both) OR T & I M1 for one correct M1 A1 for second correct
	(b)	E g $x = 10,$ $y = 11 \times 11$ Or $x = 11,$ $y = 11 \times 13$	2	B1 for a correct value of $x$ B1 demonstration that $y$ is composite

No	Working	Answer	Mark	Notes
15	(a) $3^2 + 5^2 + 7^2 = 83$	9.11	2	M1 for correct use of 3D Pythagoras formula or 2 correct applications of the 2D formula A1 for 9.11 to 9.12
	(b) $\text{Tan } GAC = 3 \div \sqrt{(5^2 + 7^2)}$	19.2	2	M1 correct trig expression for angle $GAC$ A1 for 19.2 to 19.3
16	$T = kR^2$ $K = 32 \div 120^2 = 0.00222$ $T = 0.00222 \times 150^2$	50	4	M1 for $T = kR^2$ for $32 = k \times 120^2$ A1 for $32 = k \times 120^2$ M1 for $T = \frac{32}{120^2} \times 150^2$ A1 cao 50
17	$\text{SF}(\text{length}) = \sqrt{\frac{800}{450}} = \frac{4}{3}$ $\text{vol} = \left(\frac{4}{3}\right)^3 \times 1350$	3200 cm <sup>3</sup>	3	B1 for $\text{Sf}(\text{length}) = \sqrt{\frac{800}{450}}$ oe M1 for $\left(\frac{4}{3}\right)^3 \times 1350$ or $\left(\frac{4}{3}\right)^3 = \frac{\text{vol}}{1350}$ oe A1 cao SC for vol = 2400 give B0 M1 A0
18	$T_{\text{ub}} = 6.283 \sqrt{\frac{1.365}{9.75}} = 2.351$ $T_{\text{lb}} = 6.283 \sqrt{\frac{1.355}{9.85}} = 2.330$	0.021	5	B1 for either 1.365 or 1.355 seen B1 for either 9.75 or 9.85 seen M1 for a correct expression for either max $T$ or min $T$ . $1.36 < L_{\text{max}} \leq 1.37, 1.35 \leq L_{\text{min}} < 1.36$ $9.8 < g_{\text{max}} \leq 9.9, 9.7 \leq g_{\text{min}} < 9.8$ A1 for either $6.283 \sqrt{\frac{1.365}{9.75}}$ (= 2.351) or $6.283 \sqrt{\frac{1.355}{9.85}}$ (= 2.330) A1 for 0.02 – 0.021 cwo

**Paper 5525/06**

No	Working	Answer	Mark	Notes
19	$\frac{(2x-3)(2x+3)}{(2x-3)(x-1)}$	$\frac{2x+3}{x-1}$	3	B1 for $(2x-3)(2x+3)$ B1 for $(2x-3)(x-1)$ B1 cao
20 (a)	$0.55 \times 0.45 \times 2$	0.495	3	M1 for $0.55 \times 0.45$ or $0.55 \times 0.3$ or $0.55 \times 0.15$ seen M1 (dep) for $0.55 \times 0.45 \times 2$ or adding 3 or 4 correct terms out of $0.55 \times 0.3 \times 2 + 0.55 \times 0.15 \times 2$ A1 cao
(b)	WL or LW or DD $0.55 \times 0.15, 0.15 \times 0.55, 0.3 \times 0.3$ $0.165 + 0.09$	0.255	3	M1 for $0.55 \times 0.15$ or $0.3 \times 0.3$ M1(dep) for adding 2 or 3 correct terms A1cao
21 (a)		Circle centre O Line	3	B1 correct circle, within overlay B2 correct line tol $\pm 1$ mm at (4, 4) and (0, -2) (B1 for any straight line with the correct intercept on the y axis)
(b)		$x = 6.4,$ $y = 7.7$ $x = -4.6,$ $y = -8.9$	2	B2 Two paired solutions, ft from a line and a curve with at least B1 scored in (a) B1 Any two correct values, , ft from a line and a curve with at least B1 scored in (a) Tol $\pm 0.2$
(c)	$(x+3)^2 - 9$	$q = 9$	2	B1 for $x^2 + 6x + 9$ seen B1 for $q = 9$
(d)	$(x+3)^2 - 9 + (y-2)^2 - 4 - 87 = 0$ $(x+3)^2 + (y-2)^2 = 100$	3,10	3	M1 for completing the square A1 for $(y-2)^2 - 4$ seen A1 any correct answer

**Paper 5525/06**

No	Working	Answer	Mark	Notes
22 (a)	$0.5 \times 12 \times 10 \times \sin 45$	42.4	2	M1 for $0.5 \times 12 \times 10 \times \sin 45$ A1 for 42.4 – 42.45
(b)	Area $ABC = 0.5 \times BC \times h$ Area $CDB = 0.5 \times CD \times h$ Let angle $YXW = t$	AG	2	B1 for either $0.5 \times BC \times h$ , Or $0.5 \times CD \times h$ seen B1 for forming the correct fraction and answer
(c)	Area $YXZ = 0.5 \times XY \times XW \times \sin t$ Area $WXZ = 0.5 \times XZ \times XW \times \sin t$ Divide to get the given answer by referring to part (b)	AG	3	B1 for either $0.5 \times XY \times XW \times \sin t$ , Or $0.5 \times XZ \times XW \times \sin t$ B1 for the other one and divide. B1 for a referral to part (b)