5525/06				
No.	**Working**	**Ans.**	**Mark**	**Notes**
1	$\frac{451-376}{376}\times 100$	19.9%	3	M1 $\frac{451-376}{376} = \frac{75}{376} = 0.199$ M1 (dep) $\frac{'451-376'}{376}\times 100$ A1 19.9 – 19.95% Alternative: M2 $\frac{451}{376}\times 100 - 100$ A1 19.9 – 19.95% SC: B1 for 119.9 – 119.95 or $\frac{451-376}{451}\times 100$ oe NB: ignore 0s for the purpose of awarding the method marks.
2	x $x^3 - 5x$ 4 44 4.1 48.4(2) 4.2 53.0(8) 4.3 58.0(0) 4.4 63.1(8) 4.5 68.6(2) 4.6 74.3(3) 5 100 4.35 60.5(6)	4.3	4	B2 for trial between 4.3 and 4.4 inclusive (B1 for trial between 4 and 5 inclusive) B1 for different trial between 4.3 and 4.4 exclusive B1 (dep on at least one previous B1) for 4.3 cao NB Trials should be evaluated to at least 1 dp truncated or rounded, apart from those which when done so would give .0 which can be rounded to the nearest integer

5525/06				
No.	**Working**	**Ans.**	**Mark**	**Notes**
3(a)	$5.6^2 + 10.5^2$ $\sqrt{31.36 + 110.25} = \sqrt{141.61}$	11.9	3	M1 $5.6^2 + 10.5^2$ M1 (dep) $\sqrt{31.36 + 110.25}$ A1 cao
(b)	'11.9' + (10.5 – 5.6) = 16.8 4 × 16.8	67.2	2	M1 '11.9' + (10.5 – 5.6) or 4× '11.9'+ 4 × (10.5 – 5.6) A1 cao (SC B1 for 68.6)
4	$\frac{1}{2}\pi \times 10^2$	157 cm^2	3	M1 for sight of $\frac{1}{2}\pi \times 10^2$ or $\pi \times 10^2$ A1 157 – 157.1 B1 (indep) cm^2
5(a)	(106+1)÷2 th value	$30 < T \leq 40$	1	B1 cao
(b)	5×20 + 15 × 17 + 25 × 12 + 35 × 32 + 45 × 25 = (100+ 255+300+1120+ 1125) ÷ 106 =2900 ÷ 106	27.4	4	M1 *fx* consistent within each interval, allow 1 error. M1 use of midpoints in *fx* M1 (dep on 1st M1) $\frac{\Sigma fx}{\Sigma f}$ A1 27.3 – 27.4

5525/06				
No.	**Working**	**Ans.**	**Mark**	**Notes**
6(a)	6 −2 0	6, –2, 0	2	B2 all 3 correct (B1 one or two correct)
(b)		Graph	2	B1 for 5 or 6 points plotted either correct or ft from their table. B1 Joined with a smooth curve For either B mark ft on (a) if at least B1 awarded
(c)(i) (ii)	$y = 2.5$ drawn	–0.5, 2.5	2	B1 –0.4 to –0.6 or ft graph ±0.1 B1 2.4 to 2.6 or ft ft graph ±0.1 SC If B0 then B1 $y = 2.5$ drawn at least $-1 \leq x \leq 2$; tolerance within $y=2$ and $y=3$ NB Accept coordinates that define the values.
7	$2000\times1.05^2 = 2000\times1.1025$ **or** $2000\times1.05 = 2100$ $2100\times1.05 = 2205$	£2205	3	M2 2000×1.05^2 (M1 2000×1.05^n, $n \neq 2$) A1 cao **Or** M1 $\frac{5}{100} \times 2000$ (oe) or 100 or 200 or 2100 or 2200 seen M1 (dep) $\frac{5}{100} \times$ (2000 + "100") A1 cao SC B2 for £2315.25 seen (3 yrs)

5525/06				
No.	**Working**	**Ans.**	**Mark**	**Notes**
8	2×360 , $2\times2\times180$, $2\times2\times2\times90$, $2\times2\times2\times2\times45$,	$2\times2\times2\times2\times3\times3\times5$	2	M1 at least two correct steps to find 720 as a product of its prime factors or sight of factors 2, 3, 5 on a factor tree oe A1 cao accept $2^4\times3^2\times5$
9(a)		p^{16}	1	B1 cao
(b)		q^{10}	1	B1 cao
10	(100%–25%)×Normal Price=£12.75 Normal Price = £12.75÷0.75	£17	3	M1 (100%–25%)×Normal Price=£12.75 or 0.75 or 75% seen M1 £12.75÷0.75 or £12.75 × $\frac{4}{3}$ oe A1 cao Alternative: M1 25% is £4.25 or £12.75 ÷3 (=£4.25) M1 (dep) £12.75 + "£4.25" oe A1 cao
11	$\frac{2\times2.2\times10^{12}\times1.5\times10^{12}}{2.2\times10^{12}-1.5\times10^{12}}$ $=\frac{6.6\times10^{24}}{7\times10^{11}}$	9.43×10^{12}	3	M1 6.6×10^{24} or 7×10^{11} or 0.7×10^{12} or as ordinary numbers or calculator notation M1 $\frac{6.6\times10^{24}}{7\times10^{11}}$ or as ordinary number or calc notation A1 9.42×10^{12} to 9.43×10^{12} SC B1 for 9.4… $\times 10^n$ where n≠12 and an integer
12	$6x + 2y = 16$ $4x + 2y = 9$ $2x = 7$, $x = 3.5$ $3\times3.5 + y = 8$, $y = -2.5$	$x = 3.5$, $y = -2.5$	3	M1 full method to eliminate x or y, allow one accuracy error M1 (dep) for substitution of one variable in one of the equations, or by appropriate method after starting again A1 both cao

5525/06				
No.	**Working**	**Ans.**	**Mark**	**Notes**
13(a)(i) (ii) (b)	130÷2 $RQP = 55°$ $RSP = 180° - RQP$	65 Reason 125	2 2	B1 cao B1 'angle at centre is twice the angle at the circumference' Allow "origin & O & middle" and "edge & perimeter" M1 full method for *RSP* A1 cao (SC B1 for methods that depend on QRS = 90^o and PQO = 27.5^oleading to 125^o)
14	$\tan x = \frac{4.5}{12} = 0.375$ $x = \tan^{-1} 0.375$	20.6	3	M1 $\tan$ *and* $\frac{4.5}{12}$ M1 $\tan^{-1}\left(\frac{4.5}{12}\right)$ A1 20.55 – 20.6 RAD: 0.3587 GRAD: 22.84 for M2
15	$27 = \frac{4(x+10)}{2}$ $27 = 2x + 20$	3.5	3	M1 $27 = \frac{4(x+10)}{2}$ M1 Expansion to $4x+40$ or ×2 to give $54=4(x+10)$ A1 for 3.5, accept $\frac{14}{4}$ or $\frac{7}{2}$ SC: B1 for $x=11$

5525/06				
No.	**Working**	**Ans.**	**Mark**	**Notes**
16(a)	$\frac{1240+1270+1330}{3}$	1280	2	M1 $\frac{1240+1270+1330}{3} = \frac{3840}{3}$; accept 1240 + 1270 + 1330 ÷ 3 oe A1 cao
(b)	$\frac{1300+1330+x}{3} = 1350$ or (1350 × 3) – (1300 + 1330) = 4050–2630	1420	2	M1 $\frac{1300+1330+x}{3} = 1350$ **OR** (1350 × 3) –(1300 + 1330) or 4050–2630 A1 cao
17(a)		0.2 0.58, 0.22 0.2	2	B1 0.2 on jazz on 1st set B1 0.58, 0.22 0.2 repeated 3 times
(b)	0.2 × 0.2	0.04	2	M1 '0.2' × '0.2' A1 cao

5525/06				
No.	**Working**	**Ans.**	**Mark**	**Notes**
(c)	$0.8 \times 0.2 \times 2 + 0.2 \times 0.2$ or $1 - 0.8 \times 0.8$	0.36	3	M1 $(0.58+0.22) \times$ '0.2' M1 $(0.58+0.22) \times$ '0.2' $\times 2 +$ '0.2' $\times$ '0.2' A1 0. 36 cao **OR** M2 $1 - (0.58+0.22)^2$ A1 0.36 cao Listing the outcomes for (c) CJ $0.58\times$'0.2' = 0. 116 FJ $0.22\times$'0.2' = 0.044 JC '0.2'$\times 0.58$ = 0.116 JF '0.2'$\times 0.22$ = 0.044 JJ '0.2'$\times$'0.2' = 0.04 M2 for all 5 terms added (M1 for any 2, 3 or 4 terms added)
18	$f = \frac{k}{d}$ $256 = \frac{k}{50}$ $k = 12800$ $f = \frac{'12800'}{80}$ OR $50 \times 256 = f \times 80$ $f = \frac{'12800}{80}$	160	3	M1 $f = \frac{k}{d}$ M1 $256 = \frac{k}{50}$ (also implies first M1) A1 cao **OR** M1 $50 \times 256 = f \times 80$ M1 $f = \frac{'12800}{80}$ A1 cao

5525/06				
No.	**Working**	**Ans.**	**Mark**	**Notes**
19(a)	$3x(2x-7)+x(3x+4)=85$ $6x^2-21x+3x^2+4x=85$	AG	3	M1 for $3x(2x-7), x(3x+4)$ oe M1 for $6x^2-21x+3x^2+4x$ oe (at least 3 out of 4 terms correct) A1 fully correct working leading to given equation **OR** M1 $x(5x-3), 2x(2x-7)$ oe M1 $5x^2-3x+4x^2-14x$ oe(at least 3 out of 4 terms correct) A1 fully correct working leading to given equation **OR** M1 $3x(5x-3), 2x(3x+4)$ oe M1 $15x^2-9x-6x^2-8x$ oe(at least 3 out of 4 terms correct) A1 fully correct working leading to given equation.
(b) (i)	$x=\frac{-(-17)\pm\sqrt{(-17)^2-4\times9\times(-85)}}{2\times9}$ $x=\frac{17\pm\sqrt{3349}}{18}=\frac{17\pm57.87}{18}$	4.16,− 2.27	4	M1 correct substitution up to signs M1 $x=\frac{17\pm\sqrt{3349}}{18}$ A1 4.15 – 4.16, −2.27 – −2.271 T&I B1 first value, B2 second value
(ii)		1.32		B1 1.3 – 1.32

5525/06				
No.	**Working**	**Ans.**	**Mark**	**Notes**
20	$BD = 3 \times \tan 35 = 2.101$ $\frac{'2.101'}{9} = \sin BAD$	13.5	4	M1 $BD = 3 \times \tan 35$ A1 2.10(06..) M1 $\frac{'2.101'}{9} = \sin BAD$ A1 13.49 – 13.5
21	$\frac{1}{2} \times x^2 \times \sin 60 = 36$ $x^2 = \frac{72}{\sin 60} = 83.13..$	9.12	3	M1 $\frac{1}{2} \times x^2 \times \sin 60 (= 36)$ or $\frac{1}{2} \times ab \times \sin 60 (= 36)$ Or $\frac{1}{2} \times x \times \sqrt{x^2 - \left(\frac{x}{2}\right)^2}$ (=36) M1 $x^2 = \frac{72}{\sin 60}$ or $ab = \frac{72}{\sin 60}$ or $x^2 = \frac{36 \times 2}{\sqrt{0.75}}$ A1 9.11 – 9.12
22(a)		$8x^{12}y^{15}$	2	B2 (B1 any two correct in a 3 term product) (SC B1 for $8x^{12} + y^{15}$)
(b)	$(p-t)y = 2pt$ $py - ty = 2pt$ $py = ty + 2pt$ $py = t(y + 2p)$	$t = \frac{py}{y + 2p}$	4	M1 eliminate fractions $(p-t)y = 2pt$ M1 $py - ty = 2pt$ M1 Collect terms in t on 1 side with all other terms on the other side $py = ty + 2pt$ A1 cao
23	$M = 8.5 \times 6.45^3$	2300	3	B1 8.5 or $8.4\dot{9}$ or 6.45 or $6.44\dot{9}$ seen M1 '8.5' × '6.45'^{3} where 8<'8.5'≤8.5 and 6.4<'6.45'≤6.45 A1 2280 – 2300 before rounding

5525/06				
No.	**Working**	**Ans.**	**Mark**	**Notes**
24(a)	$(x-4)^2-16+23$	$p = 4$, $q=7$	3	M1 for sight of $(x-4)^2$ A1 $p = 4$, A1 $q = 7$ **or** M1 $x^2-2px+p^2(+q)$ seen A1 $p = 4$, A1 $q = 7$ **Or** M1 Substitute 2 different values of x and attempt to solve for p, q A1 $p = 4$, A1 $q = 7$
(b)		(4, 7)	1	B1 ft on (a)
(c)	Reflection in the y axis		1	B1

5525/06				
No.	**Working**	**Ans.**	**Mark**	**Notes**
25	$DC^2 = 5^2 + 8^2 ; DC = \sqrt{89}$ $DB^2 = 5^2 + 10^2 ; DB = \sqrt{125}$ $BC^2 = 8^2 + 10^2 ; BC = \sqrt{164}$ $\cos CDB = \dfrac{89 + 125 - 164}{2 \times \sqrt{89} \times \sqrt{125}}$ $= 0.23702$	76.3	6	M1 $(DC^2 =) 5^2 + 8^2$ or $DC = \sqrt{89} = 9.4(3)$ M1 $(DB^2 =) 5^2 + 10^2$ or $DB = \sqrt{125} = 11.1(8)$ M1 $(BC^2) = 8^2 + 10^2$ or $BC = \sqrt{164} = 12.8(1)$ M2 $\cos CDB = \dfrac{'89' + '125' - '164'}{2 \times '\sqrt{89}' \times '\sqrt{125}'}$ A1 76.2–76.3 **OR** M1 correct sub into cosine rule on formula sheet $\sqrt{'164'}^2 = \sqrt{'89'}^2 + \sqrt{'125'}^2 - 2 \times \sqrt{'89'} \times \sqrt{'125'} \times \cos x$ M1 correct rearrangement to $\cos CDB = \dfrac{'89' + '125' - '164'}{2 \times '\sqrt{89}' \times '\sqrt{125}'}$ A1 76.2–76.3