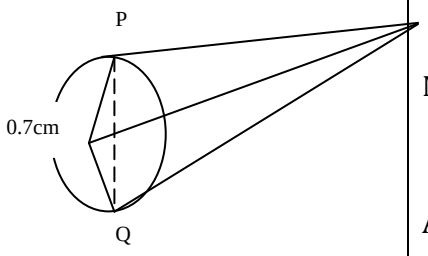
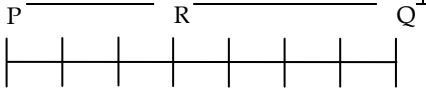
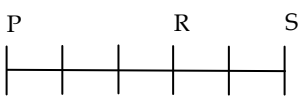
CIRCLES, CHORDS AND TANGETS MARKING SCHEME

1.	$67.35cm^2$ **1989Q24**	8M
2.	$r^1 = 5cm\ r^2 = 5cm\ r^3 = 24cm$ **1990Q20**	8M
3.	$2r = \frac{a}{\sin A}$ $2R = \frac{13}{\sin 67}$ $2r = 14.122$ $r = 7.061cm$ **1992Q8**	4M
4.	Area of sector ABC $= \frac{120}{360} \times 3.142 \times 4.62$ $= 22.16cm^2$ Area of triangle ABC $= \frac{1}{2} \times 4.6 \times 4.6 \sin 120^0$ $= 9.16cm^2$ Area of section $= 22.16 - 9.16$ $= 13cm^2$ Area of sector AOC $= \frac{60}{360} \times 3.142 \times 8 \times 8$ $= 33.51cm^2$ area of triangle AOC $= 1/2 \times 8 \times 8 \sin 60^0$ $= 27.71cm^2$ Area of section $= 33.51 - 27.71$ $= 5.8cm^2$ Area of shaded region $= 5.8 + 13$ $= 18.8cm^2$ $18.803cm^3$ **1993Q24**	8M
5.	$\sin 84.26 = \frac{x}{50}$ $x = 50 \sin 84.26$ $= 49.75cm$ $84.26 \times 2 = 168.52^0$ $\frac{168.52}{360} \times 3.142 \times 10$ $= 14.71cm$	8M
	$360^0 - 168.520 = 191.48^0$ $\frac{191.48}{360} \times 3.142 \times 20$ $= 33.42cm$ $= 49.75 + 14.71 + 33.42$ $= 147.6cm$ **1994Q21**	
6.	$A = {}^1/_2 bxh$ $120 = \frac{1}{2} \times 12 \times h$ $120 = 6h$ $h = 20cm$ $12^2 + 20^2 = 544$ $\sqrt{544} = 23.32cm$ $xb = 11.32cm$ **1994Q11**	4M
7.	a) $b^2 = a^2 + c^2 - 2ac \cos B$ $8^2 = 5^2 + 5^2 - 2 \times 5 \times 5 \cos B$ $64 = 25 + 25 - 50 \cos B$ $50 \cos B = 50 - 64$ $50 \cos B = -14$ $\cos B = \frac{-14}{50} = -0.28$ $B = 106.260$ $3600 - 106.260 = 253.740$ Area of sector AOB = $\frac{253.74}{360} \times 3.142 \times 52$ $= 55.36cm^2$ Area of triangle AOB $= \frac{1}{2} \times 5 \times 5 \sin 106.26$ $= 12cm^2$ $= 55.36 + 12$ $= 67.36cm^2$ **1995Q19**	6M
8.	Area of the sector $= {}^{750}/_{360} \times {}^{22}/_{7} \times 14 \times 14$ $= 128.3cm$ Area of Δ $= \frac{1}{2} \times 14 \times 14 \sin 75^0$ $= \frac{1}{2} \times 14 \times 14 \times 0.9659$ $= (6,5)$ $= 94.64cm$ Area of segment = 128-94.64	M1 M1 M1 A1 4 M

	= 33.66 Or (33.68)LM **1997Q5**	
9.	(a) ps = $(34^2 - 16^2) = 900$ = 30 (b) cos Pos $= \frac{17^2 + 17^2 - 30^2}{2 \times 17 \times 17} = \frac{-322}{578}$ = -0.5572 Cos Pos = $123^0 50$ (2) (123.86) (c) Area of sector $= \frac{123.8}{360}$ x 3.142 x 17 x 17 = 312.3 Area of Δ = ½ x 17 x 17 sin $123^0 50$ = ½ x 17 x 17 x 0.8307 = 120 Area of segment = 312.3 – 120 = 192.3 **1998Q23**	M1 M1 A1 M1 M1 A1 8M
10.	a) 6.xc = 4.8 x 5 xc = $\frac{4.8 \times 5}{6}$ = 4 b) BT^2 = 6 + 4 + 8) x 8 = 18 x 8 = 144 BT = 12 **2000Q14**	M1 A1 M1 A1
11.	MY = 14.8 = 6cm Therefore 4 (MQ) = 8 x 6 MQ = 12 **2002Q12**	M1 A1 2 M
12.	a). i).135 x $\frac{Л}{180}$ x $\frac{3Л^0}{4}$ Area of sector = $^3/_8$ x $^{22}/_7$ x 282 = 924cm^2 ii). Length of mirror $^3/_8$ x $^{22}/_7$ x 28 x 2 = 66cm b). i).Jrl= area of curved surface rЛ=$\frac{924 \times 7}{22 \times 28}$ = 10.5m H = $\sqrt{28^2 - 10.5^2}$	B1 M1 A1 B1 A1 B1 B1 B1 8 M

	= 25.96 **2002Q23**	
13.	a). Area = $^{120}/_{360}$ x 7 x 7 x $^{22}/_7$ = $5^{11}/_3$ cm^2 b). ½ AD = 7sin 60^0 $\frac{7\sqrt{3}}{2}$ = 6.062 AB= 14.2 x 7 cos 60^0 = 14.2x 7x0.5 Area of trapezium XABY = ½ (7+14) x 6.062 = 63.65cm^2 c). Area of shaded region =2(63.65-$5^{11}/_3$) =127.30-102.67 = 24.63cm^2 **2003Q19**	M1 A1 M1 M1 M1 A1 M1 A1 8 M
14	Area of equilateral = ½ x 5 x 5 sin 60^0 = ½ x 5 x 5 x 0.866 = 10.825cm^2 = 64.95cm volume of the prism = 64.95 x 20 1299cm^3  Cos = $^7/_{25}$ =73044 or 73.74 PQ=7 x 2.sin 73044 =14 x 0.9600 = 13.44cm **2004Q14**	B1 B1 B1 M1 M1 A1 8 M
15.	  	B1

		1 M 1 M
	$\overrightarrow{PR} = {}^{3}/_{7}\ PQ$ $\overrightarrow{PR} = {}^{3}/_{5}\ PS$ But $\overrightarrow{PR} = \overrightarrow{PR}$ ${}^{3}/_{7}\ PQ = {}^{3}/_{5}\ PS$ **2005Q6**	A1
16.	Area of each sector ${}^{60}/_{360}$ x n x 62 18.84955592cm² Area of Δ = ½ x 6 x 6 x sin 600 = 15.58845727cm² Therefore area of shaded region 15.58845727 + 2 (18.84955592-15.5884527) 15.58845727+6.522197303 22.11065457 22.11cm² **2007Q14**	M1 A1 A1 M1 4 m
17.	N = $\sqrt{42}$ + 7.52 = 8.5 QR = (14+8.5)=7.52 Qr = 25 4x an =14x (8.5-2.5) AN = $\frac{14 \times 5}{4}$ = 12cm **2007Q11**	B1 M1 M1 M1 A1 4 M
18.	AT² = 9x4 = 36 AT= 6cm **2009Q15**	M1 A1 2 M
19.	R = 2.5± 0.1 cm **2011Q10**	B1 B1 A1 3m

20.	(a) Let UV be x cm. VT × UT = ST ² $(x + 8)8 = 12^2$ 8x = 144 – 64 = 80 x = 10cm (b) VX = $\frac{2}{5} \times 10$ = 4 cm XU =10 – 4 cm = 6 cm = VX ×XU or SX = $\sqrt{14^2 - 12^2}$ = SX ×3 = 4×6 SX= 7.211 SX= 8cm Accept 7.2 **2012 Q14 P2**	 M1 A1 M1 A1 4