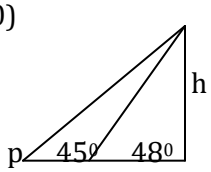
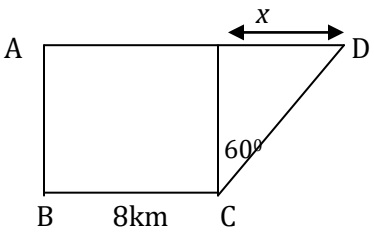
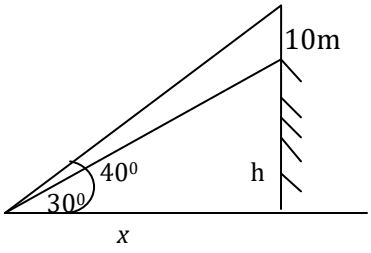
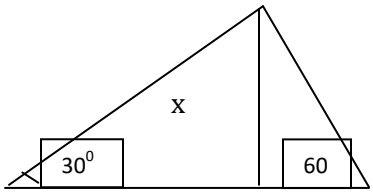
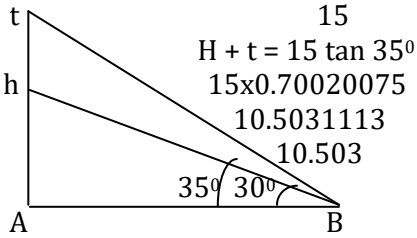
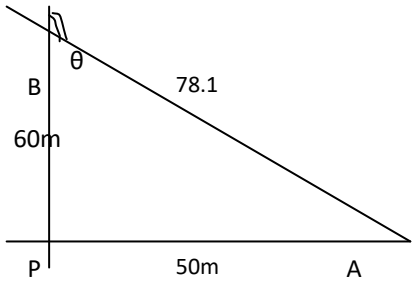
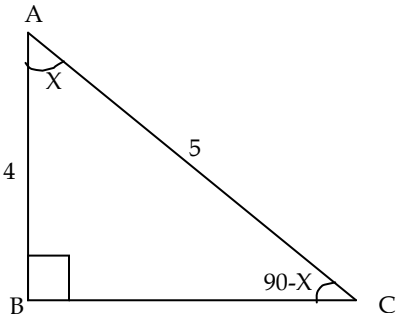
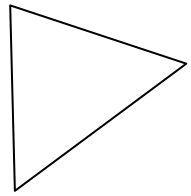
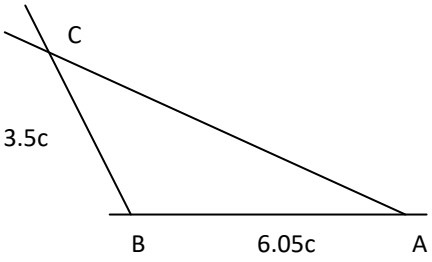
TRIGONOMETRY MARKING SCHEME

1.	Tan 580 = h/5 h = 5tan 58⁰ = 5 x 1.600 = 8m **1989Q4**	2M
2.	h= x tan 48⁰ = (x + 10) tan 45⁰ x tan 48⁰ = (x + 10)tan45⁰ 1.1106x =1(x + 10) 1.1106x – 1x = 10 0.1106x = 10 x = 90.42cm h = (90. 42 + 10)1 = 100.42m **1990Q12** 	4M
3.	 x = tan60⁰ x 15 = 25.98 AD = 25.98 + 8 = 33.98 = 34km **1990Q12**	3M
4.	(a)  h = tan 300x x h + 10 = tan 400 x x x = $\frac{h}{\tan 30^0} = \frac{h+10}{\tan 40^0}$ h tan 40⁰ = tan 30⁰(h + 10) 0.8391h = 0.5774h + 5.774 0.8391h – 0.5774h = 5.774	8M
	0. 2617 / 0. 2617 = 0.2617 / 0.2617 h = 22.06 (b) 22.06m + 10m = 32.06m **1994Q23**	
5	Tan 450 = h/60 or h = 60m Tan θ = 60/240 =0.25 = 14.04⁰ (14⁰2) **1996Q4**	M1 M1 A1 3mks
6.	 x = 400 cos 60⁰ = 20⁰m h=200 sin 60⁰ h=200 x 0.8660 =173.2m **1997Q5**	B1 M1 A1 3mks
7.	 Tan 35⁰ = (h + t)/15 H + t = 15 tan 35⁰ 15x0.70020075 10.5031113 10.503 Tan 300 = h/15 h = 15 tan 300 h=15x0.5773502 = 8.6600254 h = 8.611 (b) 10.503 - - 8.661 = 1.842 **1998Q6**	B1 B1 B1 3M

8.	(a) AC = $\sqrt{4^{2}+\frac{\left(\sqrt[4]{3}\right)^{2}}{3}} = \sqrt{16+\frac{16}{3}}$ $= \sqrt{\frac{64}{3}}$ $\frac{8}{\sqrt{3}}$ Or 4.618 (b) BC = $\frac{4.618}{Tan\ 30} = \frac{4.618}{0.5774}$ = 8 **1998Q4**	M1 A1 M1 3mks
9.	a) $x = \sqrt{3^2 - 2^2}$ Tan θ = 2/√5 b) Sec θ = tan θ + 1 = 4/5 + 1 = 1.8 **2000Q7**	
10.	a) RA = 30/tan 26⁰ or = RA 30 tan 64⁰ = 30/0.4877 or 30 x 2.050 = 61.51 (6.15) RB = 30/Tan 32 OR = 30 tan 58⁰ = 30/0.6249 or 30 x 1.600 = 48.01 948) AB = $\sqrt{61.5T^2 + 48.01^3}$ = √ 3783 + 2305 - √6088 = 78.03 b) tan θ = 48.01/61.51 = 0.7805 θ = 37⁰ 58 Bearing = 360 – 37⁰ 58¹ = 322⁰ 2 (322⁰ 3) **2001Q20**	M1 A1 M1 A1 M1 A1 8mks

11.	 Required angle is the supplement of <PBA or angle mked on diagram. Tan θ = 50/60 = 0.8333⁰ -180 – 39.8⁰ = 140.12⁰(140⁰ 12¹) Tanθ = -50/60 = 0.8333 -180 – 39.2⁰ = 140.2⁰ **2003Q12**	M1 M1 3 mks
12.	 Sin (90-x) = AB/AC Sin (90-x) = 8/10 = 4/5 Tan x = BC/AB = 0.75 **2005Q7**	B1 M1 A1
13.	X=1.8 cos 63⁰ = 1.8 x 0.454 = 0.8172 QS= 3.6 -2 x 0.8172 3.6 – 1.6344 = 1.9656 =1.966m **2006Q11**	M1 M1 A1 3mks
14.	$1^2 = 5^2 - (2\sqrt{5})^2 = 5$ L=√5 Tan (0-x)0 = 2√5/√5 or 2 **2007Q8**	A1 M1 2 M

15.	<LKM = 110^0 <KLM =35^0 0r KML =35^0 Bearing is 185^0  **2007Q15**	M1 A1 A1 3mks
16.	a). < ABQ=180^0 -95.5^0= 84.5^0 < AB = $\frac{5.8}{\text{Cos } 84.5}$ OR $\frac{5.8}{\text{Sin } 5.5}$ = 60.5m = 61m b). i). ABC = 95.50 + (900-30.50) = 1550 Scale : 1cm : 10m  <ACA = 16^0 + 1^0(15^0 or 17^0) Therefore, < of depression of A from C = 30.5^0 -16^0 = 14.5^0 +1^0 =15.5^0 or 13.5^0 **2007Q18**	M1 A1 2mks M1 A1 M1 M1 A1 5mks A1 M1 M1 A1 3 M

17.	a). Tan 11.3^0 = $\frac{20}{x}$ x = $\frac{20}{\text{Tan } 11.30}$ $\frac{20}{0.1998197}$ = 100.09022 = 100^0 b). PQ = $\frac{36 \times 1000}{60 \times 60} \times 5$ = 50M BQ = 100.1 + 50 = 150. Tan θ =$\frac{20}{150}$ = 0.133245 θ = 7.5896 θ = 7.59^0 c). i). QD = 200-150.1 = 49.9 CD = $\sqrt{50.9^2 - 49.9^2}$ = 10.03992 = 10.04M ii). AX = 20-10.04 = 9.96 Tan x = $\frac{9.96}{200}$ = 0.0498 α = 2.85097 α = 3^0 **2008Q20**	M1 A1 M1 M1 M1 A1 M1 M1 A1 A1 10 mks
18.	Let angle between ground and wire be θ^0 ; 0 + $\frac{1}{3}\theta$ = 90 θ = 90 x $\frac{\theta}{4}$ = 67.5 Let the wire be x in length ; Co 67.5 = 6/x x = $\frac{6}{\text{Cos } 67.5}$ = $\frac{6}{0.382683432}$ = 15.68m or 1568cm **2009Q12**	B1 M1 A1 3 mks
19.	Sin 3~~θ~~ = cos2~~θ~~ Sin 3~~θ~~ = sin (90^0 - 20) If 3~~θ~~ = 90 - 2~~θ~~ .: 5~~θ~~ = 90 ~~θ~~ = 180 3~~θ~~ = 90^0 - 20 **2010Q13**	M1 M1 A1 3
20.	Sin (x + 60^0) = cos 2x X + 60 + 2x = 90^0 3x = 30 x = 100 Tan $(10 + 60)^0$ = tan 70^0 2.748(4.S.F) from tables **2011Q5**	M1 M1 A1 3
21.	$x = \tan^{-1}\frac{3}{7} = 23.20^0$ Cos $(90 - 23.2)^0$ = 0.3939	B1 B1 2