

Higher IGCSE wk 8 answers

1 a, $x = \sqrt{4^2 + 5^2}$
 $= \sqrt{41}$
 $= 6.4 \text{ cm}$

b, $x = \sqrt{12^2 - 8^2}$
 $= 4\sqrt{5}$
 $= 8.94 \text{ cm}$

c, $C^A H$
 $x = 15 \times \cos 55$
 $= 8.6 \text{ mm}$

d, $S^O H$
 $x = \frac{7.4}{\sin 47}$
 $= 10.1 \text{ mm}$

e, $C^A H$
 $x = \frac{7}{\cos 37}$
 $= 8.76 \text{ m}$

f, $S^O H$
 $x = 16 \times \sin 58$
 $= 13.6 \text{ cm}$

g, $T^O A$
 $x = \frac{9.5}{\tan 28}$
 $= 17.9 \text{ m}$

h, $T^O A$
 $x = \tan(31) \times 19$
 $= 11.4 \text{ cm}$

2, a, $S^O H$
 $\sin x = \frac{10}{12}$
 $x = \sin^{-1}\left(\frac{10}{12}\right)$
 $x = 56.4^\circ$

b, $C^A H$
 $x = \cos^{-1}\frac{12}{15}$
 $= 36.9^\circ$

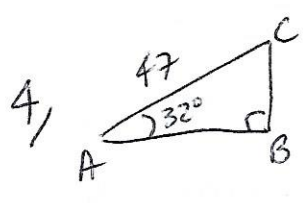
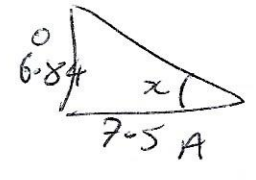
c, $S^O H$
 $x = \sin^{-1}\frac{5.2}{6.4}$
 $= 54.3^\circ$

d, $T^O A$
 $x = \tan^{-1}\frac{7.2}{5.8}$
 $x = 51.1^\circ$

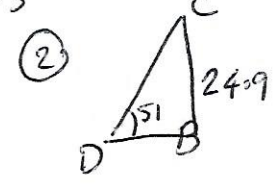
3, Finding CD = $\sqrt{8.3^2 - 4.7^2}$
 $= 6.84$

Using CD to find angle

$x = \tan^{-1}\frac{6.84}{7.5} = 42.4^\circ$

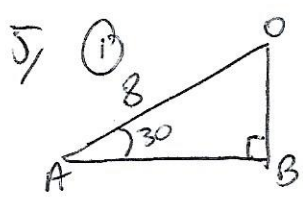


① find BC $S^O H$
 $BC = \sin(32) \times 47$
 $= 24.9 \text{ m}$



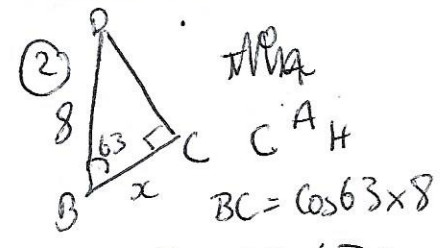
② find BD $T^O A$
 $BD = \frac{24.9}{\tan 51}$

BD = 20.2 m



find BO $S^O H$
 $BO = \sin 30 \times 8$
 $= 4 \text{ cm}$

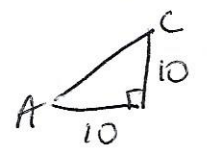
BO = radius
 $\therefore BD = 2 \times BO$
 $= 8 \text{ cm}$



$BC = \cos 63 \times 8$
BC = 3.63 cm

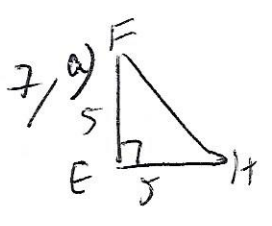
6, To calculate Circumference need diameter

diameter = diagonal
 of O

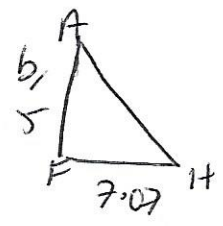


$AC = \sqrt{10^2 + 10^2}$
 $= \sqrt{200}$
 $= 14.1$

Circumference
 $= \pi d$
 $= 14.1 \times \pi$
 $= 44.4 \text{ cm}$

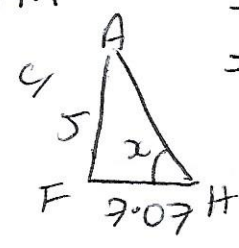


$FH = \sqrt{5^2 + 5^2}$
 $FH = 7.07 \text{ m}$

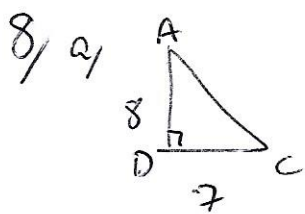


$AH = \sqrt{5^2 + 7.07^2}$

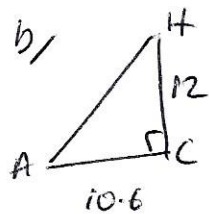
$AH = 8.66 \text{ cm}$



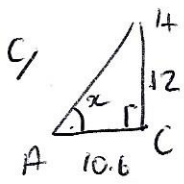
$x = \tan^{-1}\frac{5}{7.07}$
 $x = 35.3^\circ$



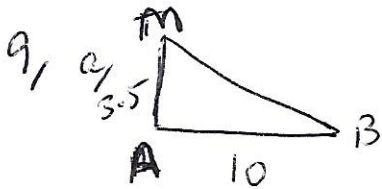
$$AC = \sqrt{8^2 + 7^2} = 10.6 \text{ cm}$$



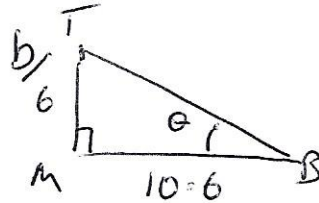
$$AH = \sqrt{12^2 + 10.6^2} = 16.0 \text{ cm}$$



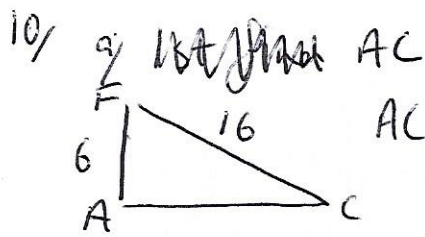
$$\angle HAC = \tan^{-1}\left(\frac{12}{10.6}\right) = 48.5^\circ$$



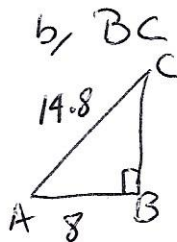
$$MB = \sqrt{10^2 + 3.5^2} = 10.6 \text{ cm}$$



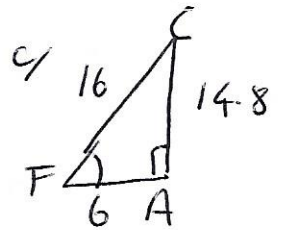
$$\angle TBA = \tan^{-1}\left(\frac{6}{10.6}\right) = 29.5^\circ$$



$$AC = \sqrt{16^2 - 6^2} = 14.8 \text{ cm}$$

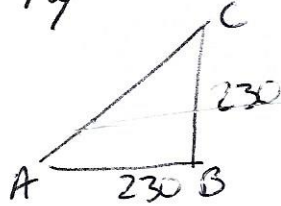


$$BC = \sqrt{14.8^2 - 8^2} = 12.8 \text{ cm}$$



$$\angle CFA = \tan^{-1}\left(\frac{14.8}{6}\right) = 67.9^\circ$$

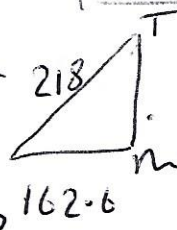
11/ a/ 1st calculate length AC



$$AC = \sqrt{230^2 + 230^2} = 325.3 \text{ m}$$

length AM

$$= \frac{1}{2} AC = 162.6 \text{ m}$$



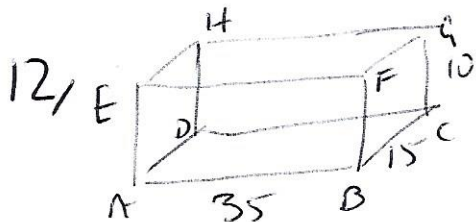
$$TM = \sqrt{218^2 - 162.6^2}$$

$$TM = 145 \text{ m}$$

b/ $\angle ATC = 2 \times \angle ATM$

$$\angle ATM = \sin^{-1}\left(\frac{162.6}{218}\right) = 48^\circ$$

$$\angle ATC = 48 \times 2 = 96^\circ$$

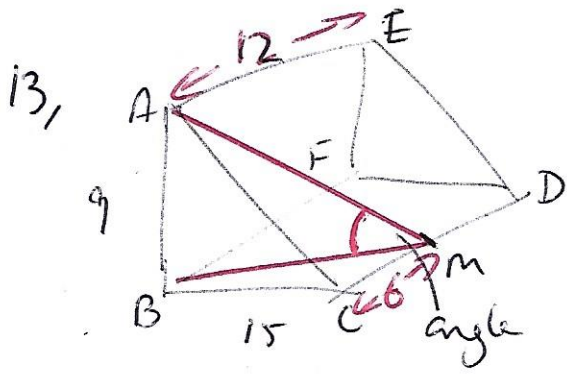


Have to work out length of diagonal AC

$$\text{1st work out length } AC = \sqrt{35^2 + 15^2} = 38.1$$

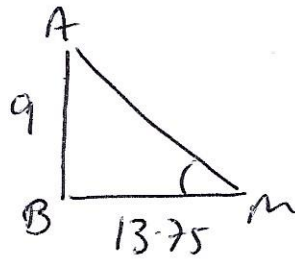
$$\text{length } AG = \sqrt{38.1^2 + 10^2} = 39.4 \text{ cm}$$

Cross diagonal length = 39.4 cm \therefore 40cm knitting needles won't fit in



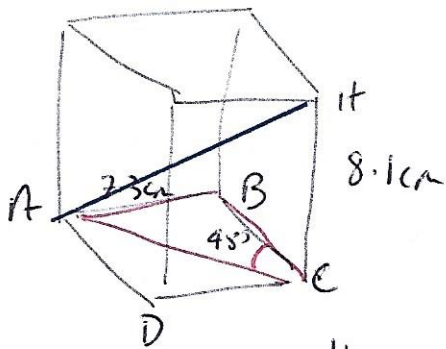
1st work out length BM

$$BM = \sqrt{15^2 - 6^2} = 13.75 \text{ cm}$$



$$\angle AMB = \text{Tan}^{-1} \frac{9}{13.75} = 33.2^\circ$$

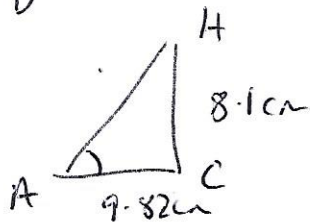
14/



To work out angle HAC

1st work out length AC

$$AC = \frac{7.3}{\sin 48} = 9.82 \text{ cm}$$



$$\angle HAC = \text{Tan}^{-1} \left(\frac{8.1}{9.82} \right) = 39.5^\circ$$