sum of (n+1) terms = $\frac{(n+1)}{2}(14+nx6)=\frac{(n+1)}{2}x2(7+nx3)=(n+1)(7+3n)=3n^2+3n+7n+7=3n^2+10n+7$

a=3, b=10 c=7 .'. a+c=10=b

Also $\frac{(n+1)}{2}(f+nxd+f)$ = $(\frac{1}{2})(n+1)(2f+nd)=(\frac{1}{2})x(2fn+n^2d+2f+nd)=\frac{1}{2}(n^2)d+(2f+d)n+2f$ ¿

= $(\frac{1}{2})(n^2d+(2f+d)n+2f)$ = $an^2+bn+c(Given)$

Comparing like powers of n on both sides, a=d/2 b=f+d/2 and c=f

.'. a+c= d/2 +f=b Hence the Proof. OR

Sum of n terms of an A.S.is of the form pn^2+qn .

'.Sum of n+1 terms of an A.S.is of the form = $p(n+1)^2+q(n+1)$ = $p(n^2+2n+1)+q(n+1)$

sum of n+1 terms = $pn^2+2pn+p+qn+q=pn^2+(2p+q)n+p+q=an^2+bn+c.'.a=p \quad b=2p+q \quad c=p+q$

= a+c=p+p+q=2p+q=b

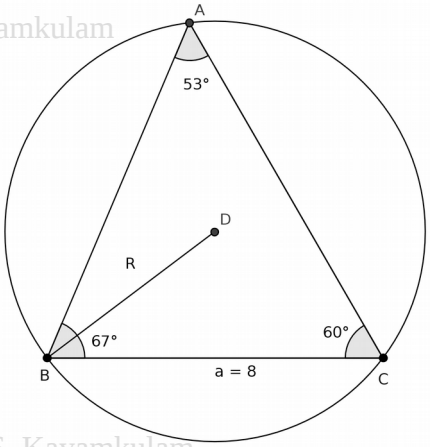
18. $\frac{\overline{AC}}{(\sin 67)}=\frac{\overline{BC}}{(\sin 53)}=\frac{\overline{AB}}{(\sin 60)}=2R$

$\frac{\overline{AC}}{(0.9)}=\frac{\overline{8}}{(0.8)}=\frac{\overline{AB}}{(0.87)}=2R$ **.'. 2R=** $\frac{80}{8}=10$ **.'.R=** $\frac{10}{2}=5$

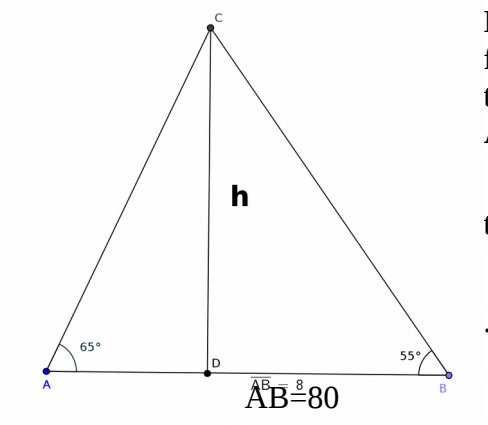
a) Circum diameter=10

b) AB= 10xsin60= 8.7

c) AC=10xsin67= $10\times\sin 67=10\times 0.9=9$



OR



Let h be the height of the flag Post and x and 80-x be the distance from the foot of the flag post at the water level to the either side of the river bank

AB=80 and AD=x CD=80-x

tan65= $\frac{h}{x}$ and tan55= $\frac{h}{(80-x)}$

h=xtan65 and h=(80-x) tan55

.'. xtan65 = (80-x) tan55

$x\times 2.1=(80-x)\times 1.4$.'. $x(2.1+1.4)=80\times 1.4$

$3.5x=112.'.x=\frac{112}{3.5}=32$

$h=x\times 2.1=32\times 2.1=67.2\,mts$ and Distance from the river bank to the flag post= 32 mts and 48 mts

19. $AD^2=AC^2-CD^2$ ¿ $625-400=225.'.AD=15$

From the similar triangles CED and CDA

$\frac{r}{15}=\frac{20}{25}$.'. r= $\frac{20\times 15}{25}=12\,cms$

a) Radius he of the hemisphere=12 cms