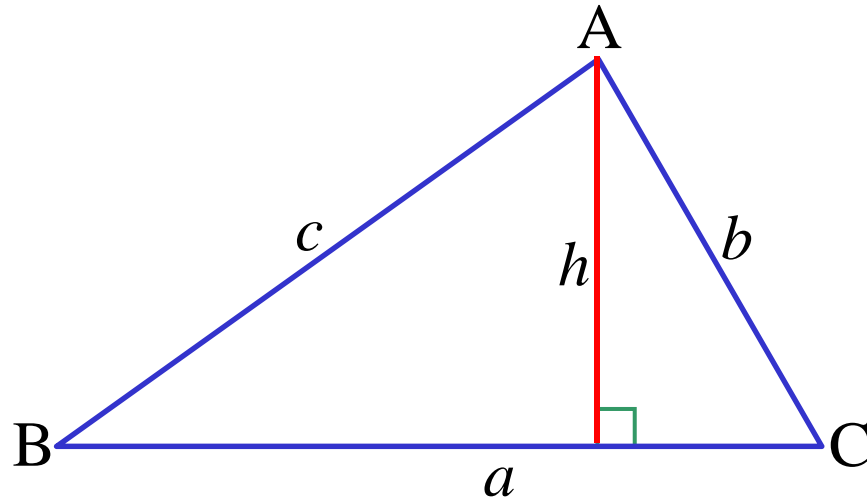


Sine Rule



$$\frac{h}{c} = \sin B$$

$$h = c \sin B$$

$$\frac{h}{b} = \sin C$$

$$h = b \sin C$$

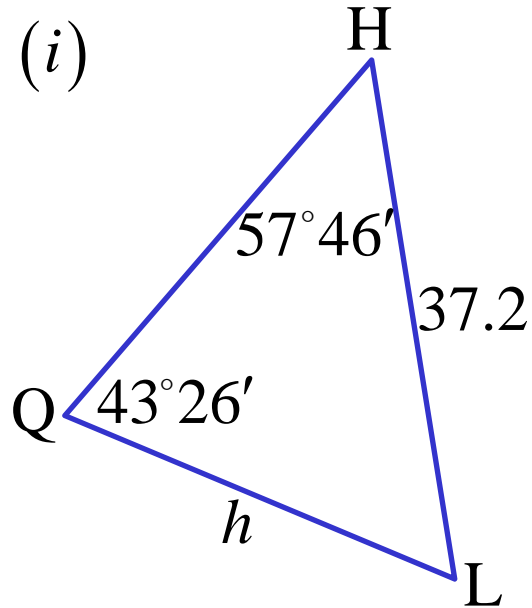
$$\therefore c \sin B = b \sin C$$

$$\underline{\underline{\frac{c}{\sin C} = \frac{b}{\sin B}}}$$

In any $\triangle ABC$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

e.g. (i)

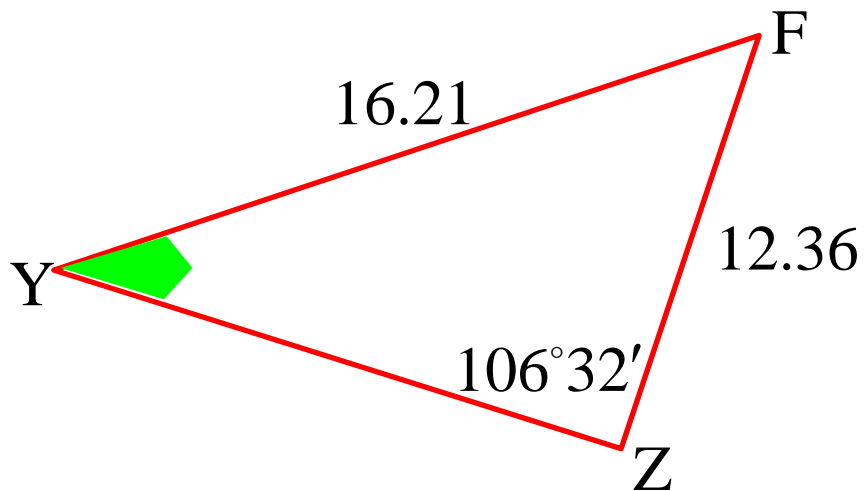


$$\frac{h}{\sin H} = \frac{q}{\sin Q}$$
$$\frac{h}{\sin 57^\circ 46'} = \frac{37.2}{\sin 43^\circ 26'}$$

$$h = \frac{37.2 \sin 57^\circ 46'}{\sin 43^\circ 26'}$$

$$\underline{h = 45.8 \text{ units (to 1 dp)}}$$

(ii)



$$\frac{\sin Y}{y} = \frac{\sin Z}{z}$$

$$\frac{\sin Y}{12.36} = \frac{\sin 106^\circ 32'}{16.21}$$

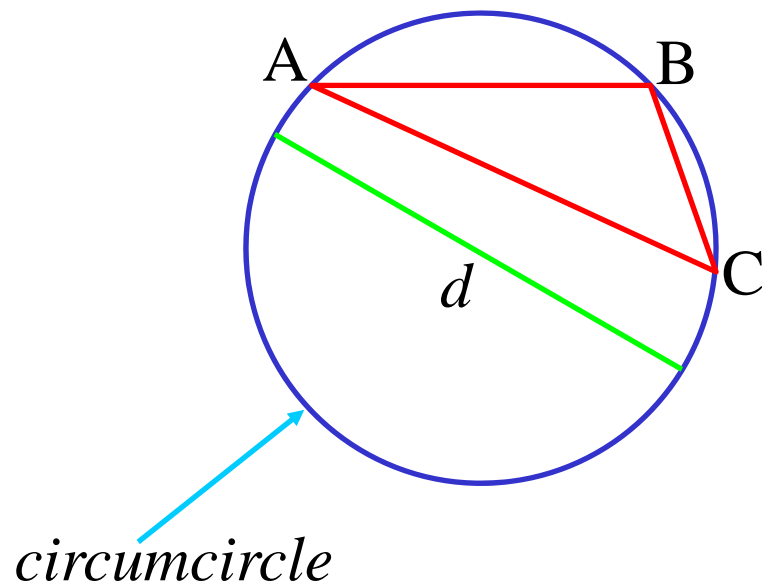
$$\sin Y = \frac{12.36 \sin 106^\circ 32'}{16.21}$$

$$\underline{Y = 46^\circ 58'}$$

Note: does your answer make sense?

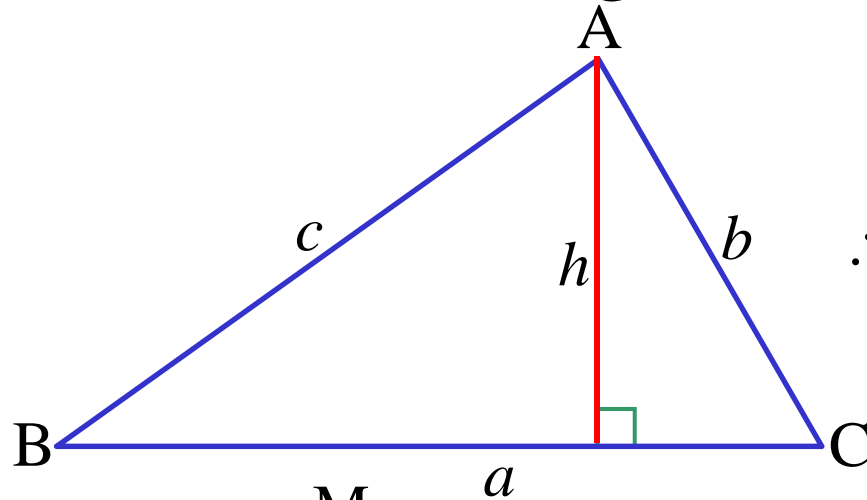
Check whether your answer might be obtuse, remember;

- angle sum $\Delta = 180^\circ$
- largest angle is opposite the largest side



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = \text{diameter}$$

Area of a Triangle



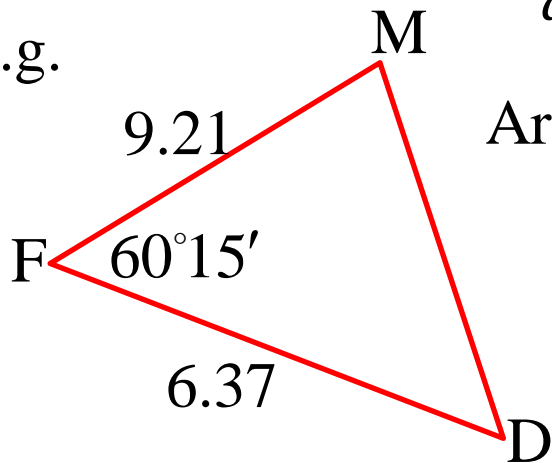
$$\text{Area} = \frac{1}{2}ah$$

$$\frac{h}{b} = \sin C$$

$$\therefore \text{Area} = \frac{1}{2}ab \sin C$$

$$h = b \sin C$$

e.g.



$$\text{Area} = \frac{1}{2}dm \sin F$$

$$= \frac{1}{2}(9.21)(6.37) \sin 60^\circ 15'$$

$$= \underline{25.47 \text{ units}^2} \quad (\text{to 2 dp})$$

In any $\triangle ABC$

$$\text{Area} = \frac{1}{2}ab \sin C$$

$$= \frac{1}{2}bc \sin A$$

$$= \frac{1}{2}ac \sin B$$

Exercise 6I; 1d, 3b, 4a, 7, 9, 10, 12a, 13a, 14c, 15b, 16, 17, 19a, 20, 22