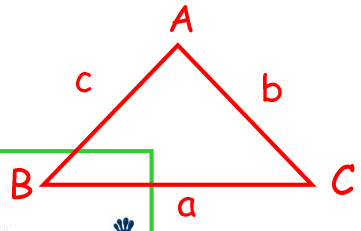
1.5 Sine Law

For oblique triangles (non-right angles)



find a side

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

find an angle

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

sine law

Need PAIRs of Sided Angles

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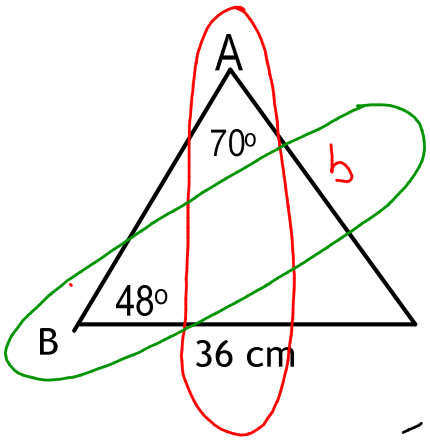
Ex 1 - Find b.



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

$\frac{b}{\sin 48^\circ} = \frac{36}{\sin 70^\circ}$

$b = \sin 48^\circ \left(\frac{36}{\sin 70^\circ}\right)$

$= 28.47$

$\doteq 28\text{cm}$

$\therefore b = \sin 48^\circ (38.31)$

$= 28.47$

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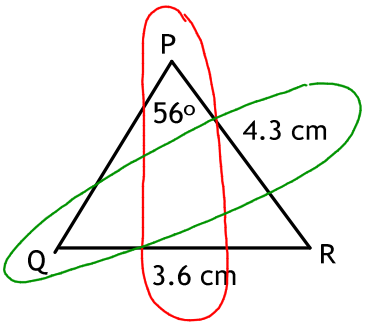
Ex. 2 - Find angle Q

Finding ANGLE!
(sin Q on top)



$$\frac{\sin Q}{q} = \frac{\sin P}{p}$$

$$\frac{\sin Q}{4.3} = \frac{\sin 56^\circ}{3.6}$$

$$\sin Q = 4.3 \cdot \left(\frac{\sin 56^\circ}{3.6}\right)$$

$$\sin Q \doteq 0.99024$$

$$Q = \sin^{-1}(0.99024)$$

$$\doteq 82^\circ$$

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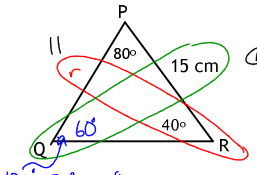
Ex. 3 - Solve the triangle. (Find all unknown sides & angles)



$180° - 80° - 40° = 60°$

① $\frac{r}{\sin R} = \frac{q}{\sin Q}$

$$\frac{r}{\sin 40^\circ} = \frac{15}{\sin 60^\circ}$$

$$r = \sin 40^\circ \left(\frac{15}{\sin 60^\circ}\right)$$

$$= 11.13$$

$$\doteq 11$$

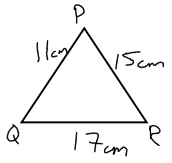
② $\frac{p}{\sin P} = \frac{q}{\sin Q}$

$$\frac{p}{\sin 80^\circ} = \frac{15}{\sin 60^\circ}$$

$$p = \sin 80^\circ \left(\frac{15}{\sin 60^\circ}\right)$$

$$\doteq 17$$

"Solve the triangle"?
DRAW A FINAL DIAGRAM



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Practice
p. 31 #1b, 2b, 3b, 4b,8, 10

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