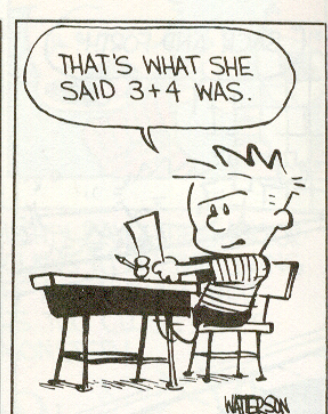
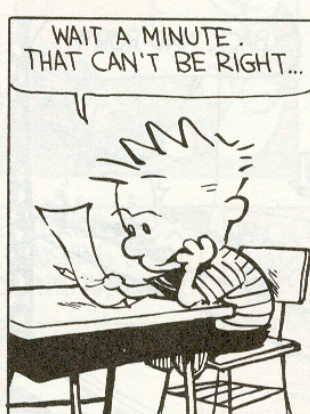
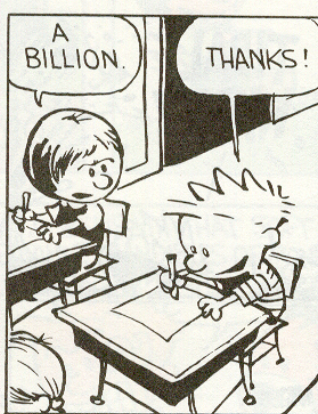
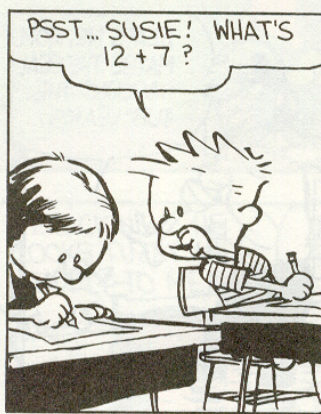
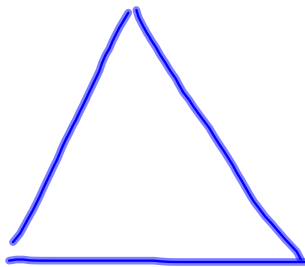


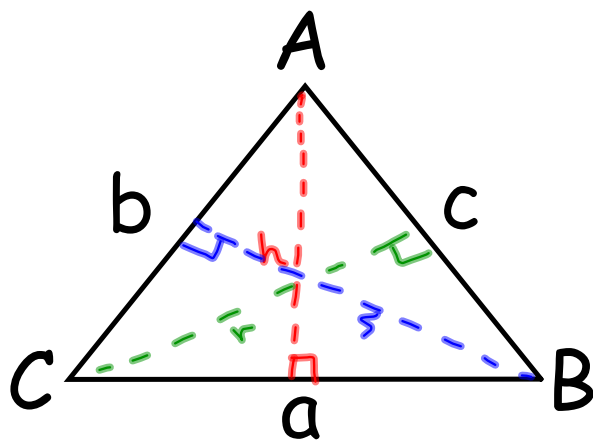
8.1 and 8.2

Law of sine and cosine





Solve: 6 parts
- 3 angles
- 3 side lengths



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

$$h = c \sin B$$

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

$$h = b \sin A$$

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

$$h = a \sin C$$

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

Law of sines

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


SSS

Only use when you have:

ASA, AAS, or SSA *special case

Solve the triangle:

$$A = 40.0^\circ, B = 45.0^\circ, c = 4\text{cm}$$

$$\frac{\sin 40^\circ}{2.58} = \frac{\sin 45^\circ}{b} = \frac{\sin 95^\circ}{4}$$

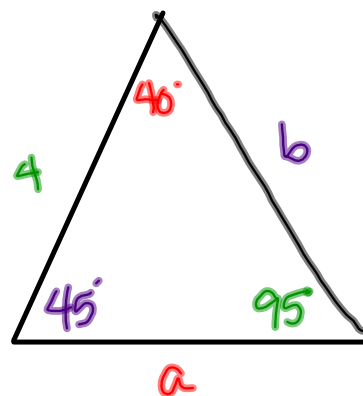
$$a = 2.58$$

$$\begin{aligned} &4\sin(40) \\ &\quad 2.571150439 \\ &\text{Ans}/\sin(95) \\ &\quad 2.580971816 \end{aligned}$$

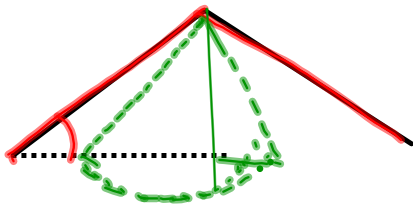


$$b = 2.84$$

$$\begin{aligned} &4\sin(45) \\ &\quad 2.828427125 \\ &\text{Ans}/\sin(95) \\ &\quad 2.839231257 \end{aligned}$$



SSA:



* Ambiguous
case

too
short = 0 Δ

just
right = 1 Δ

too long = 2 poss.
 Δ

Solve the triangle:

$B = 13.6^\circ$, $b = 21.6\text{cm}$, $c = 58.4\text{cm}$

$$\frac{\sin 13.6^\circ}{21.6} = \frac{\sin C}{58.4}$$

$$\sin C = .64$$

$$* \boxed{C = \sin^{-1}(.64)}$$

$$C = 39.5^\circ \text{ or } \underline{\underline{140.5^\circ}}$$

$$A = \text{--- or ---}$$

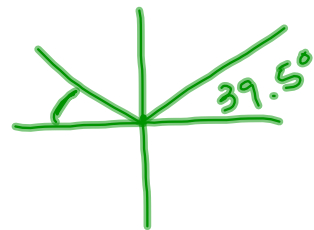
$$B = 13.6^\circ$$

$$C = 39.5^\circ \text{ or } 140.5^\circ$$

$$a = \text{--- or ---}$$

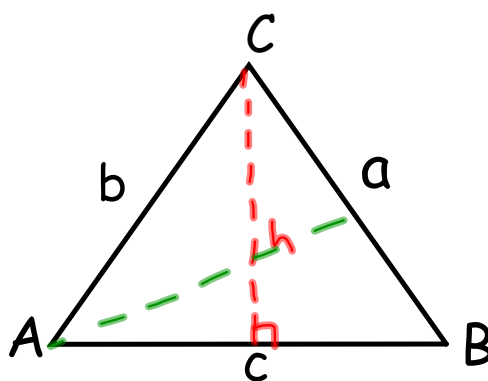
$$b = 21.6$$

$$c = 58.4$$



Area of an Oblique
Triangle:

$$\frac{1}{2}bh$$



$$h = a \sin B$$

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

$$K = \frac{1}{2}ab \sin C$$

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