

Solving a Triangle

Solving a triangle: find ALL the missing pieces

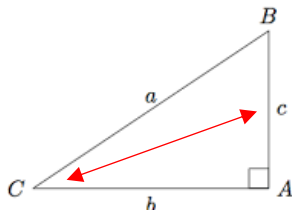
Appropriate labels: If you look back at your notes you will see that we always used Lower case letters for sides Capital letters for angles

In fact: the labels follow a set pattern

Little c is opposite big C

Little b is opposite big B

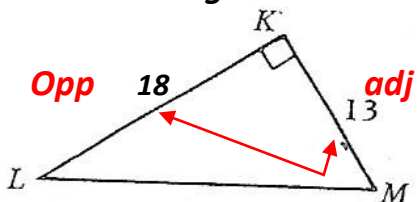
Little a is opposite big A



So, we must label our answers correctly when 'solving' a triangle

Start with a diagram

1) Solve the triangle below



**We need to find: M, L and k
(which can be done in any order)**

$$M = 54.2^\circ$$

$$\tan M = \frac{18}{13}$$

$$M = 54.2^\circ$$

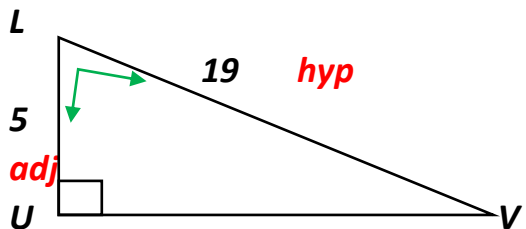
$$L = 180^\circ - 90^\circ - 54.2^\circ$$

$$L = 35.8$$

$$18^2 + 13^2 = k^2$$

$$k = 22.2$$

2) ΔLUV has a right angle at U, $v = 5$ and $u = 19$. Solve this triangle



**After placing known values we need to find:
L, V, l**

$$L = 74.7^\circ$$

$$\cos L = \frac{5}{19}$$

$$L = 74.7^\circ$$

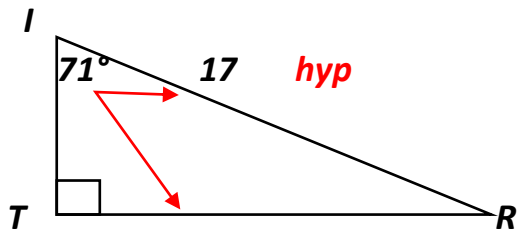
$$V = 180^\circ - 90^\circ - 74.7^\circ$$

$$V = 15.3^\circ$$

$$19^2 - 5^2 = l^2$$

$$l = 18.3$$

3) ΔTRI has a right angle at T , $t = 17$ and $I = 71^\circ$. Solve this triangle



After placing known values, we need to find:
 R, r, i

$$R = 180^\circ - 90^\circ - 71^\circ \quad (\text{freebie!})$$

$$R = 19^\circ$$

opp

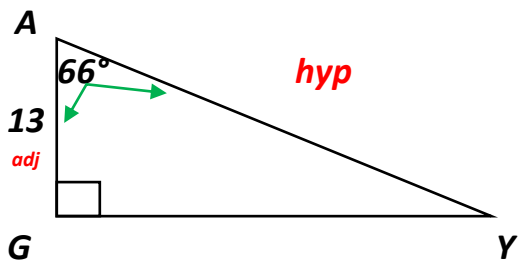
$$\sin 71^\circ = \frac{i}{17} \quad i = 16.07$$

$$i = 16.07$$

$$\cos 71^\circ = \frac{r}{17} \quad r = 5.53$$

$$r = 5.53$$

6) ΔGYA has a right angle at G , $y = 13$ and $A = 66^\circ$. Solve this triangle



After placing known values, we need to find:
 Y, g, a

$$Y = 180 - 90 - 66 \quad (\text{freebie!})$$

$$Y = 24^\circ$$

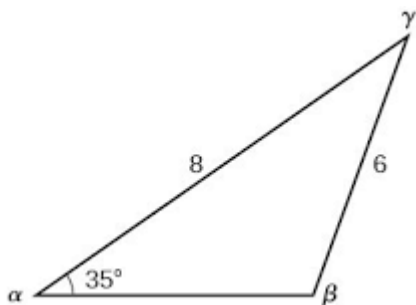
$$\cos 66^\circ = \frac{13}{g} \quad g = 31.96$$

$$g = 31.96$$

$$\tan 66^\circ = \frac{a}{13} \quad a = 29.2$$

$$a = 29.2$$

Solve the following – Problem?



NO right angle
Can't use SOHCAHTOA

Solve the triangle



Assignment = worksheet

Triangle Solving worksheet (be sure to label correctly ... and draw your Δ)

- 1) ΔMAT has a right angle at M and $m = 16$ and $t = 9$, solve this triangle
- 2) ΔHTE has a right angle at H and $t = 25$ and $E = 12^\circ$, solve this triangle
- 3) ΔNIS has a right angle at S and $s = 22.7$ and $i = 14$, solve this triangle
- 4) ΔRAD has a right angle at A and $a = 26.5$ and $d = 11.2$, solve this triangle

5) $\triangle YEA$ has a right angle at A and $Y = 41^\circ$ and $y = 15$, solve this triangle

6) $\triangle HWO$ has a right angle at O and $h = 46$ and $W = 12^\circ$, solve this triangle

7) Now complete: Page 111 #6

a)

b)

c)

d)