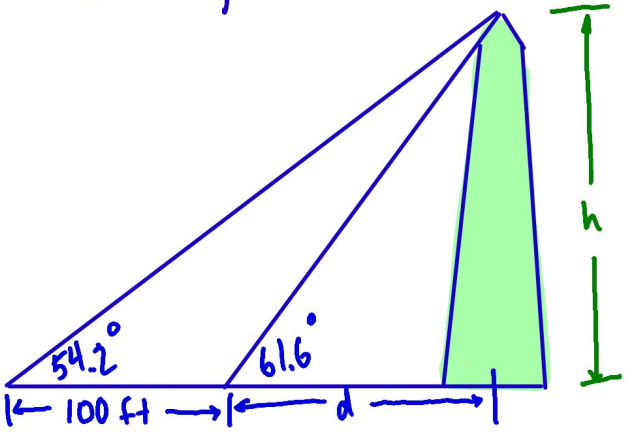
WARMUP

While sightseeing in D.C. you visit the Washington monument. From an unknown distance, you measure the angle of elevation to the top of the monument. You then move 100 ft backward and measure the angle of elevation again. If the angles are 61.6° and 54.2° respectively, how tall (to the nearest foot) is the Washington monument?



$\tan 61.6^\circ = \frac{h}{d}$ $\qquad$ $\tan 54.2^\circ = \frac{h}{100+d}$

$1.8495d = h$ $\qquad$ $1.3865(100+d) = h$

$1.3865(100+d) = 1.8495d$

$138.65 + 1.3865d = 1.8495d$

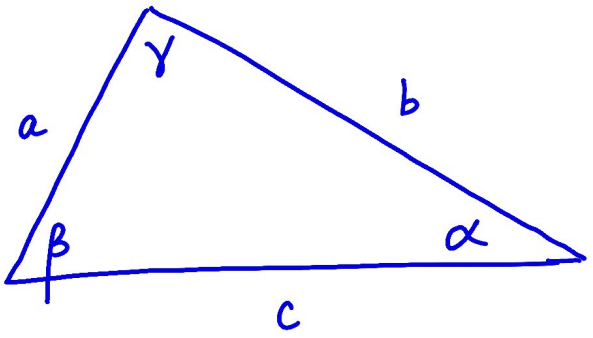
$138.65 = 0.463d$

$d = 299$

$1.3865(100+299) = h$

$h = 553 \text{ ft}$

Section 7.2 The Law of Sines

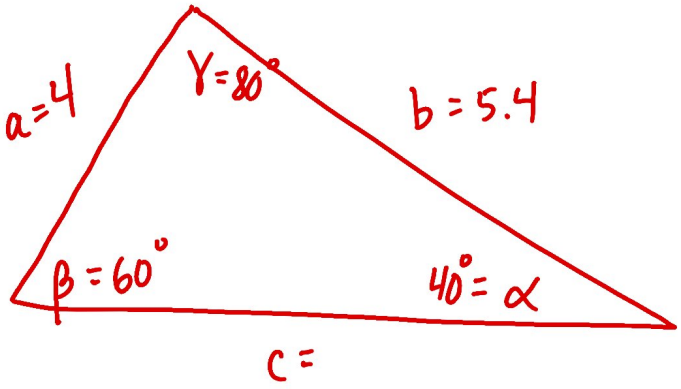


$$\frac{\sin\alpha}{a} = \frac{\sin\beta}{b} = \frac{\sin\gamma}{c}$$

Use Law of Sines when ASA, AAS, or SSA

ex: Solve the triangle:

$\alpha = 40^\circ$, $\beta = 60^\circ$, $a = 4$



$\gamma = 80^\circ$

$b = 5.4$

$c =$ ____

$\gamma = 180 - 60 - 40 = 80^\circ$

$$\frac{\sin 80^\circ}{c} = \frac{\sin 40^\circ}{4}$$

$4\sin 80^\circ = c\sin 40^\circ$ $\quad c = 6.1$

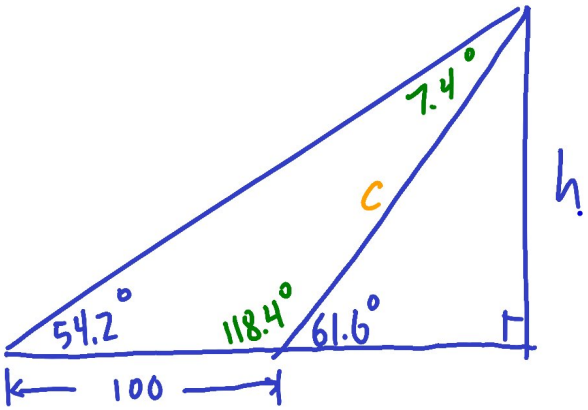
$$\frac{4\sin 80^\circ}{\sin 40^\circ} = c$$

$$\frac{\sin 60^\circ}{b} = \frac{\sin 40^\circ}{4}$$

$b\sin 40^\circ = 4\sin 60^\circ$

$$b = \frac{4\sin 60^\circ}{\sin 40^\circ}$$

$b = 5.4$



$$\frac{\sin 7.4^\circ}{100} = \frac{\sin 54.2^\circ}{c}$$

$$c \sin 7.4^\circ = 100 \sin 54.2^\circ$$

$$c = 630$$

$$\sin 61.6^\circ = \frac{h}{630}$$

$$630 \sin 61.6^\circ = h$$

$$h = 554'$$

100 * sin(54.2) / sin(7.4) enter

p547-548

3, 11, 31, 33, 34