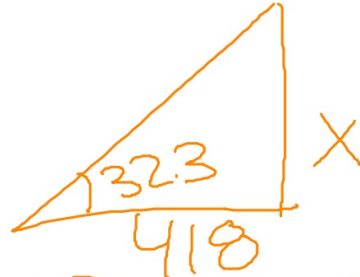


Warm Up



A lamppost is located 418 feet from a building. The angle of elevation from the base of the lamppost to the top of the building is 32.3° . **Approximately** how tall is the building?



$$418 \cdot \tan(32.3) = \frac{X}{418} \cdot 418$$
$$2.64 = X$$

Objective: SWBAT solve problems involving triangles and the Law of Sines

Agenda:

- Warm Up
- HW Huddle
- Remark
- Notes
- Practice
- Reflection

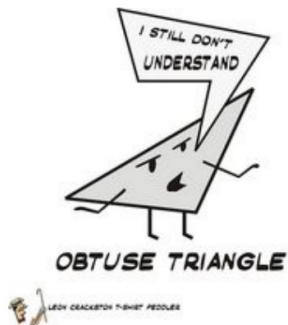
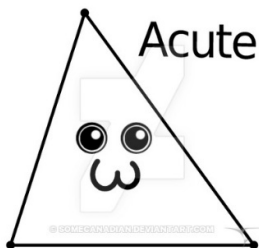
HW: 14-4G

5 - 14

Remark: Non-Right Triangles

Because the world isn't perfect, we aren't always presented with right triangles, or enough information to break things into right triangles.

Fortunately, there are tools we can use to figure things out.



???

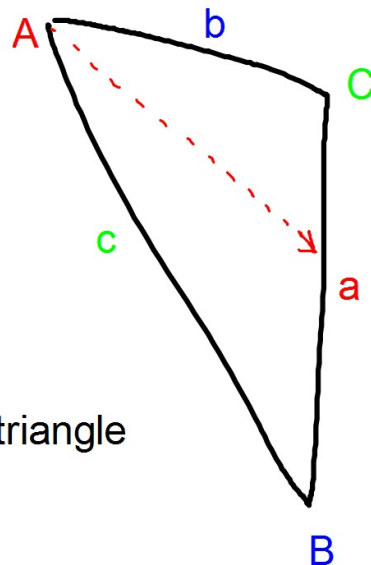


Notes: Law of Sines

For a general triangle, the Law of Sines says:

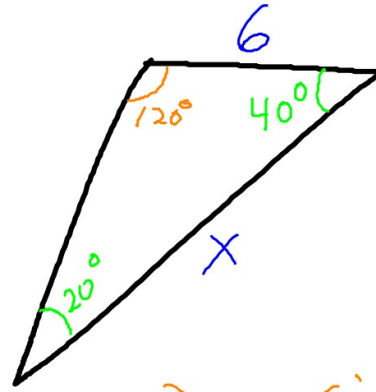
$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

This is most useful if you have an "ASA" triangle (2 angles + 1 side)



Notes: Finding Missing Parts

1. Find a known side/angle pair
2. Find one other part
3. Set up proportions
4. Solve

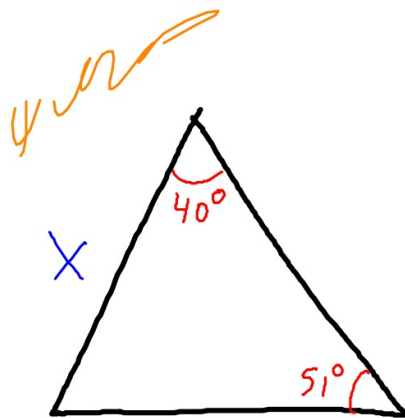


$$\frac{\sin(20)}{6} = \frac{\sin(120)}{X}$$

$$X \sin(20) = \frac{6 \sin(120)}{\sin(20)}$$

$$X = 15.2$$

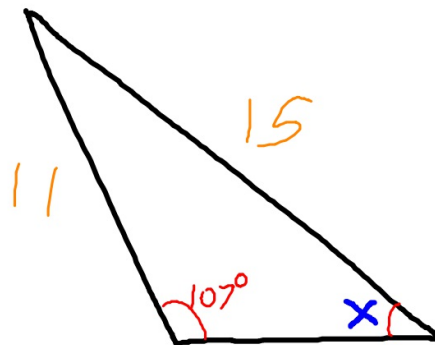
Example



$$\frac{\sin 40}{6} = \frac{\sin 51}{X}$$

$$X \sin 40 = \frac{6 \sin 51}{\sin 40}$$

$$X = 7.25$$



$$\frac{\sin(107)}{15} = \frac{\sin(X)}{11}$$

$$\frac{11(\sin(107))}{15} = \frac{15(\sin(X))}{15}$$

$$X = \sin^{-1}\left(\frac{11(\sin(107))}{15}\right)$$

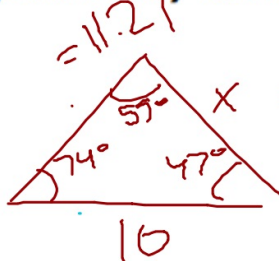
$$X = 44.53$$

Released Precalculus

James is standing 10 meters away from Samantha.

- A bird is located in the sky at a point between where James and Samantha are standing.
- James is looking up at the bird at an angle of elevation of 74° .
- Samantha is looking up at the bird at an angle of elevation of 47° .

Approximately how far is the bird from Samantha?


$$\frac{47}{121} - \frac{180}{121} = 59^\circ$$
$$\frac{\sin(59)}{10} = \frac{\sin(74)}{X}$$
$$\frac{X \sin 59}{\sin 59} = 10 \frac{\sin 74}{\sin 59} \quad X = 11.21$$

Practice

Algebra 2 pg. 924: #9-19

HW: 14-4 G # 5-14
and
unfinished modeling
packet

Reflection

How do you know when to use the Law of Sines?