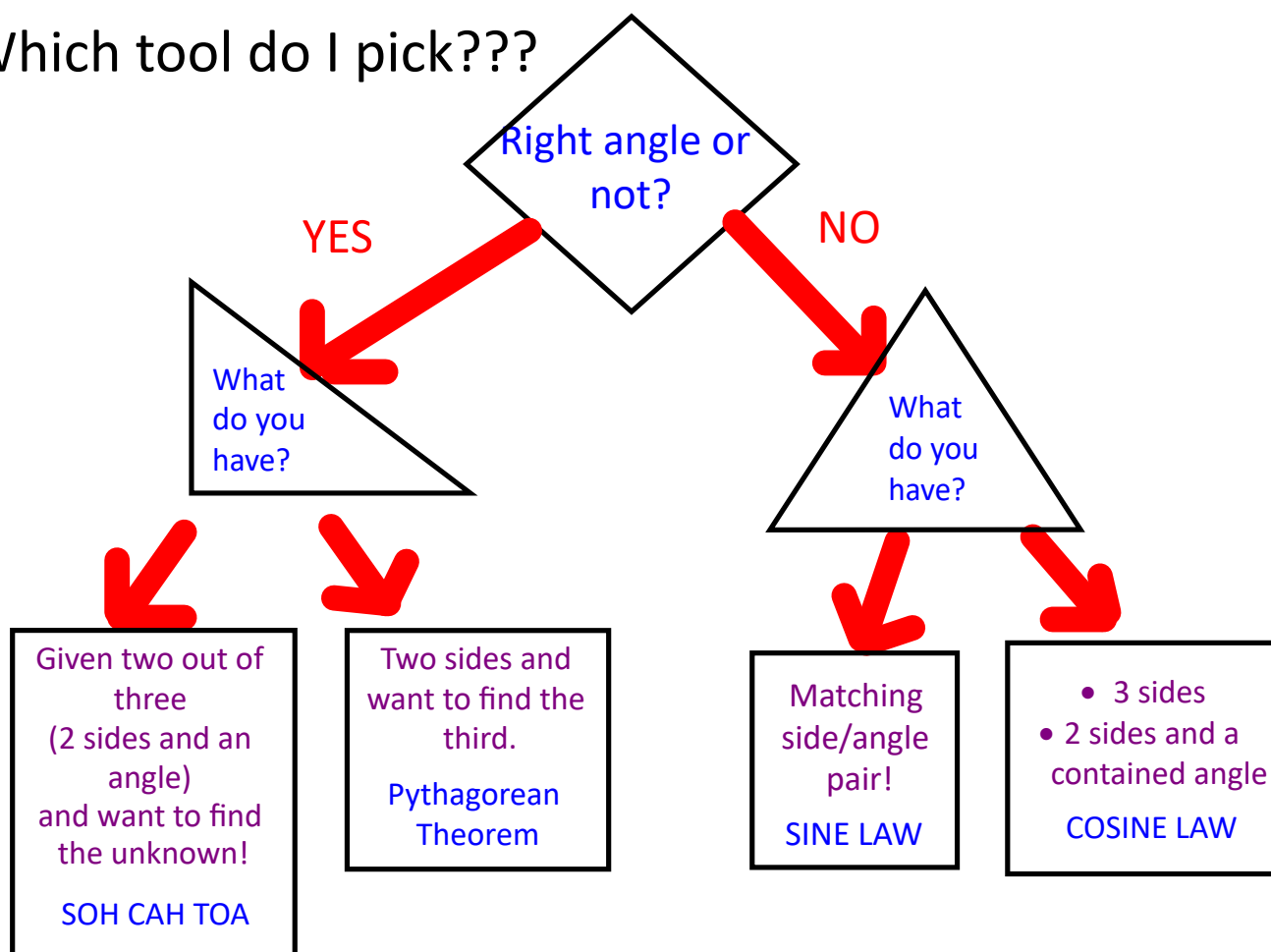
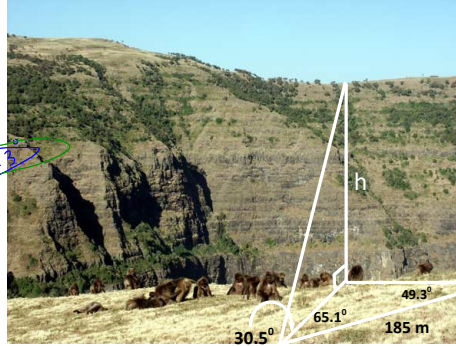
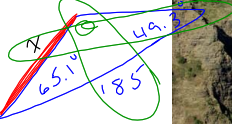
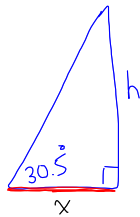


Which tool do I pick???



1.9 Solve Problems with Trigonometry

1. To measure the height, h , of an inaccessible cliff, a surveyor records the data shown. Find the height of the cliff, to the nearest metre.



$$\textcircled{1} \theta = 180 - 65.1 - 49.3 \\ = 65.6$$

$$\textcircled{2} \frac{x}{\sin 49.3} = \frac{185}{\sin 65.6} \\ x = \sin 49.3 \left(\frac{185}{\sin 65.6} \right) \\ = 154$$

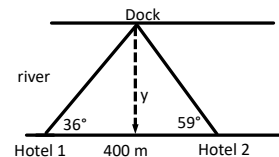
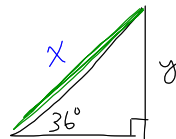
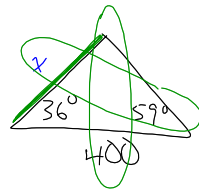


$$\tan \theta = \frac{O}{A} \\ \tan 30.5 = \frac{h}{154} \\ h = 154 (\tan 30.5) \\ = 91$$

$\therefore$ height is 91 m

- Plan
- $\textcircled{3}$ - Need x to use $\tan$ to find h
 - $\textcircled{2}$ - Use sine law to find x
 - $\textcircled{1}$ - Use sum of angles for θ

2. Two hotels are located on the same side of a river, 400 m apart. There is a ferry dock on the other side of the river, as shown. How wide is the river?

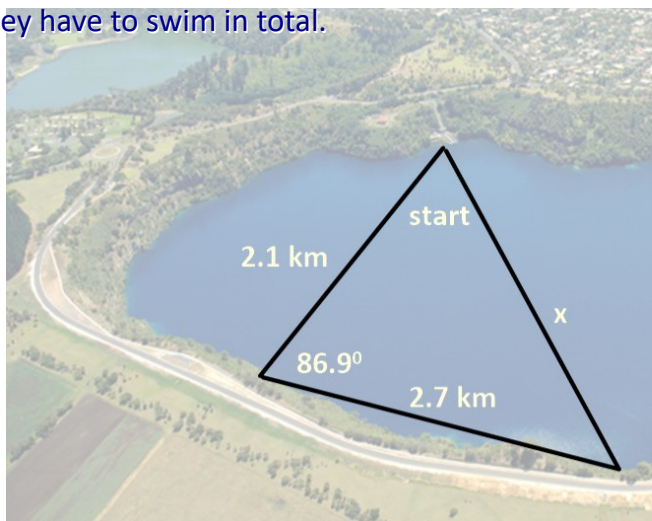


- Plan
- $\textcircled{1}$ Use sum of angles for top angle
 - $\textcircled{2}$ Use sine law for common side x
 - $\textcircled{3}$ Use $\sin 36^\circ$ to solve for y

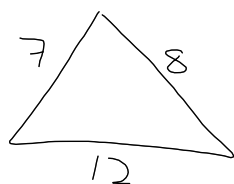
3. The swimming portion of a triathlon course is shown below.
Find the distance they have to swim in total.

Plan

- Cosine law for x
- Add all sides



4. Alex is making a triangular garden with side lengths 12 m, 7 m and 8 m. Find the measure of the largest angle between the sides.



Plan?

- Use cosine law for an angle
- Use sine law for another
- Sum of angles for last

Practice!

Set 1: p. 427#1,2,3a,4,7

Set 2: p. 427#1,3a,6,7,10,13