

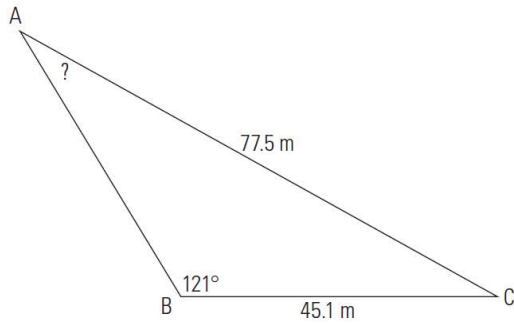
**Apprenticeship Math 12**  
**ASSIGNMENT: The Sine Law**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

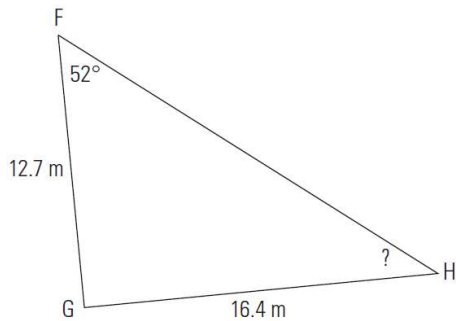
1. Calculate the measure of the indicated side (to the nearest tenth) and/or angle (to the nearest degree).

a)



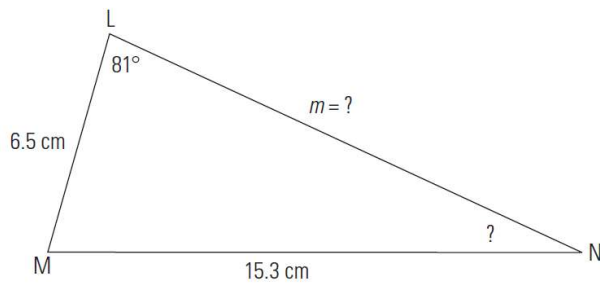
$\angle A =$  \_\_\_\_\_

b)



$\angle H =$  \_\_\_\_\_

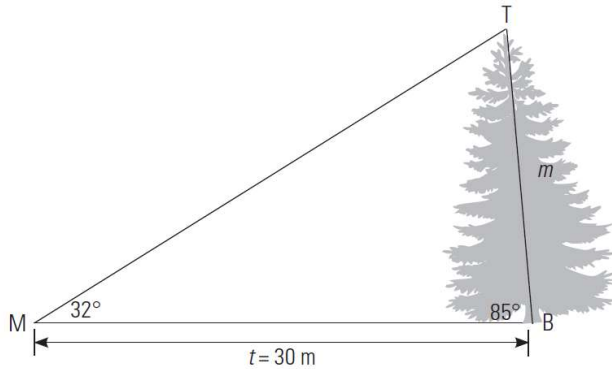
c)



$\angle N =$  \_\_\_\_\_

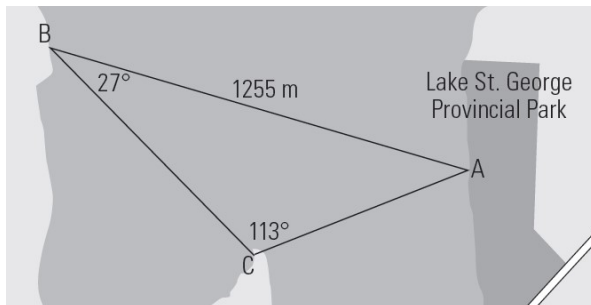
$m =$  \_\_\_\_\_

2. Miguel is an arborist and he needs to calculate the height of a tree that he will be removing from a construction site. The tree is leaning at an angle of  $85^\circ$  with the ground. Miguel stands 30 m from the base of the tree and determines that the angle of elevation to the top of the tree is  $32^\circ$ . What is the height of the tree (m) to the nearest tenth of a metre? Hint: calculate  $\angle T$  before using the sine law.



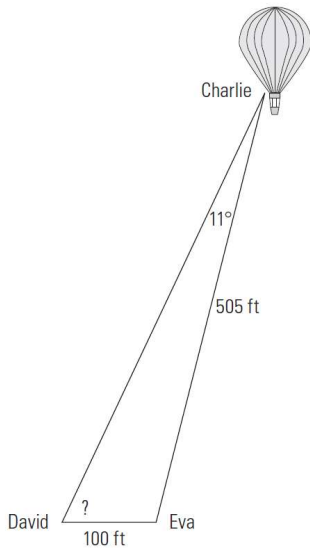
$m =$  \_\_\_\_\_

3. Alexander is camping at Lake St. George Provincial Park in Manitoba. He has taken a row boat out onto the lake. How far will he have to row if he travels from point A to point B, to point C, then back to point A?



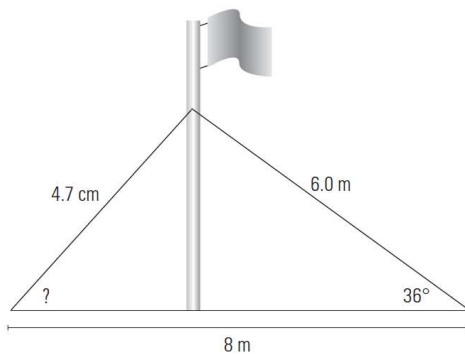
\_\_\_\_\_

4. Charlie is in a hot air balloon. His friends David and Eva are watching from the ground. David and Eva are standing 100 ft apart, and the angle between Charlie's line of sight to the two of them is  $11^\circ$ . Eva is 505 ft from the balloon. What is the angle of elevation of David's line of sight to the balloon?

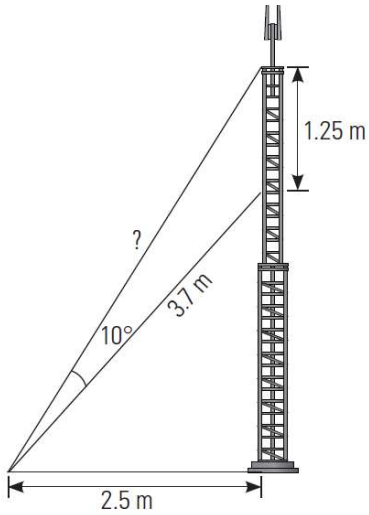



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5. A flag pole is stabilized using two guy wires. The wires are attached to the ground on opposite sides of the flag pole, 8 m apart. The wire on the left is 4.7 m long. The wire on the right is 6.0 m long and is attached at an angle of elevation of  $36^\circ$ .
- a) What is the angle of elevation of the wire on the left? \_\_\_\_\_
- b) How high up the flag pole are the wires attached? \_\_\_\_\_



**BONUS**



A communications tower is stabilized with guy wires. One wire is  $3.7\text{ m}$  long. A second guy wire is attached to the pole  $1.25\text{ m}$  higher than the first wire, from the same anchor point on the ground. The angle made between the two wires is  $10^\circ$ . What is the length of the second wire?

\_\_\_\_\_

1. a)  $\angle A = 30^\circ$  b)  $\angle H = 38^\circ$  c)  $\angle N = 25^\circ$ ,  $m = 14.9\text{ cm}$   
 2.  $m = 17.8\text{ m}$   
 3.  $2750\text{ m}$   
 4.  $74^\circ$   
 5. a)  $49^\circ$  b)  $3.5\text{ m}$   
 BONUS:  $4.9\text{ m}$