

Name \_\_\_\_\_ Per \_\_\_\_\_

LO: I can solve for unknown values by using sine, cosine, and tangent ratios.

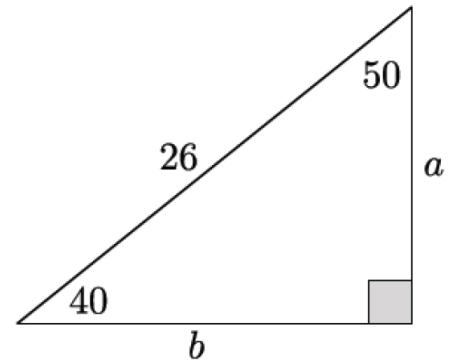
 **DO NOW** On the back of this packet (1) **Using sine, cosine and tangent with a calculator to solve problems**

calculator

Jordan is trying to find the values of  $a$  and  $b$ . Deja tells him there are 4 different equations he can write, 2 using sine and 2 using cosine.

(a) Josiah suggests the equation:  $\cos 40^\circ = \frac{a}{26}$

Will Josiah's equation work? If so, use it to find  $a$ .  
If not, write a different equation and solve it.



(b) Write and solve an equation to find the value of  $b$ .

(c) Write a different equation that could have been used to find  $a$ . \_\_\_\_\_

(d) Write a different equation that could have been used to find  $b$ . \_\_\_\_\_

(e) Why isn't tangent helpful in finding  $a$  and  $b$  in this problem?

(2)  
calculator

### Using sine, cosine and tangent with a calculator to solve problems

Write and solve an equation for each diagram to find the variable.

Use the guides below to help you.

(1) Mark the reference angle with an eyeball.

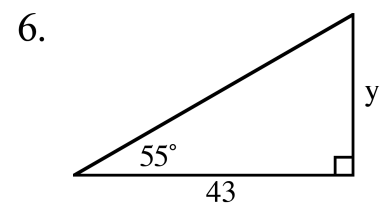
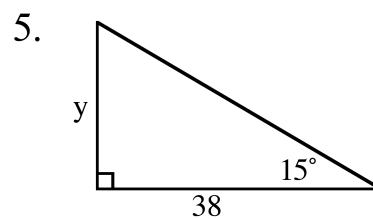
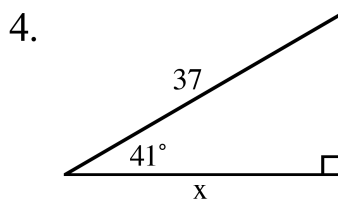
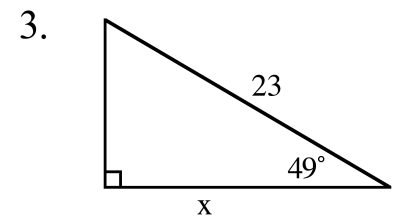
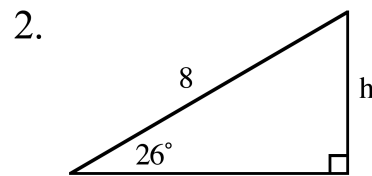
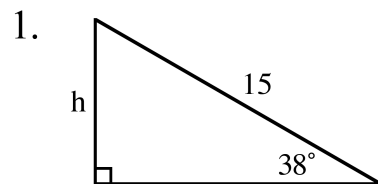
(2) Identify what 2 parts you will be using (hyp, opp, adj)

(3) Based on your findings in (2), figure out which trig ratio you need to use (sine, cosine, tangent)

$$\sin \angle = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos \angle = \frac{\text{adjacent}}{\text{hypotenuse}}$$

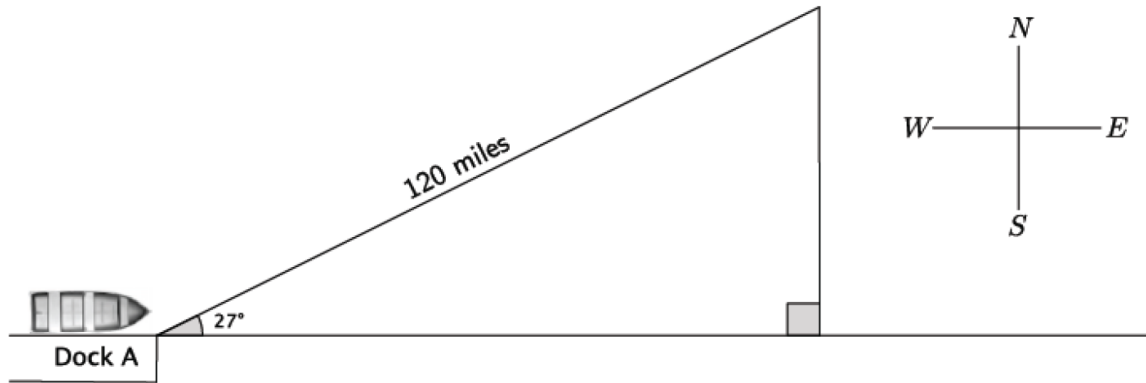
$$\text{tangent} \angle = \frac{\text{opposite}}{\text{adjacent}}$$



(3)  
calculator

**Using sine, cosine and tangent with a calculator to solve problems**

Andre set a boat to sail exactly  $27^\circ$  NE from the dock. After traveling 120 miles, the Andre realized he had misunderstood the instructions from the captain; he was supposed to set sail going directly east!



(a) How many miles will Andre have to travel directly south before he is directly east of the dock? Round your answer to the nearest mile.

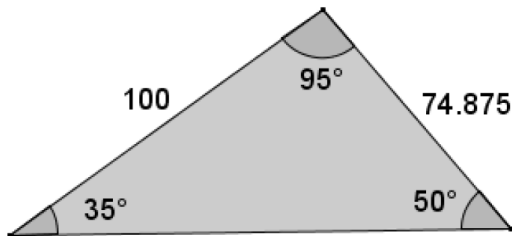
(b) How many extra miles does Andre travel by going the wrong direction compared to going directly east? Round your answer to the nearest mile.

(4)  
calculator

### Using sine, cosine and tangent with a calculator to solve problems

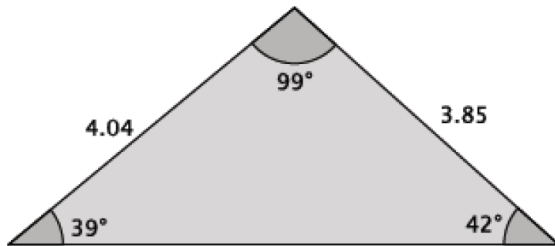
Johanna borrowed some tools from a friend so that she could precisely, but not exactly, measure the corner space in her backyard to plant some vegetables. She wants to build a fence to prevent her dog from digging up the seeds that she plants. Johanna returned the tools to her friend before making the most important measurement: the one that would give the length of the fence!

Johanna decided that she could just use the Pythagorean theorem to find the length of the fence she'd need. Is the Pythagorean theorem applicable in this situation? Explain.



(5)  
calculator

The measurements of the triangle shown below are rounded to the nearest hundredth. Calculate the missing side length to the nearest hundredth.



(6)  
calculator

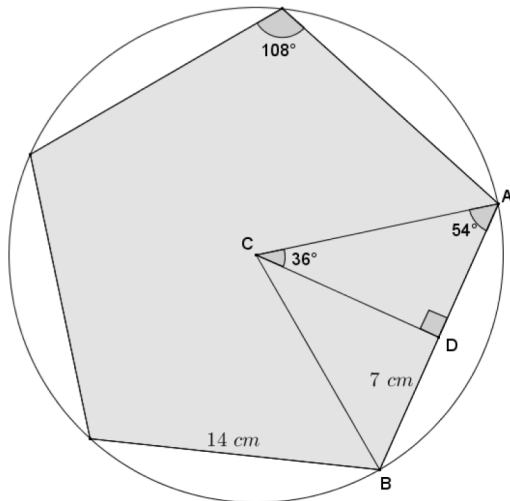
### Using sine, cosine and tangent with a calculator to solve problems

Tim is designing a roof truss in the shape of an isosceles triangle. The design shows the base angles of the truss to have measures of  $18.5^\circ$ . If the horizontal base of the roof truss is 36 ft. across, what is the height of the truss?

(7)  
calculator

### Using sine, cosine and tangent with a calculator to solve problems

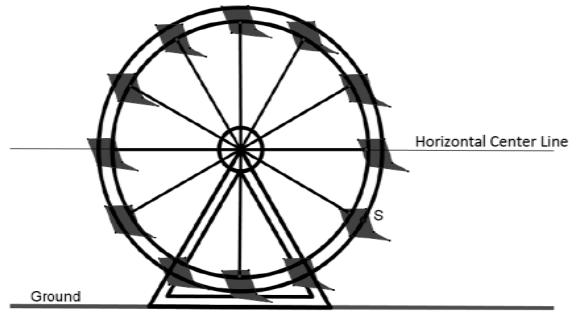
A regular pentagon with side lengths of 14 cm is inscribed in a circle. What is the radius of the circle?



(8)  
calculator

### Using sine, cosine and tangent with a calculator to solve problems

The circular frame of a Ferris wheel is suspended so that it sits 4 ft. above the ground and has a radius of 30 ft. A segment joins center  $C$  to point  $S$  on the circle. If  $\overline{CS}$  makes an angle of  $48^\circ$  with the horizon, what is the distance of point  $S$  to the ground?



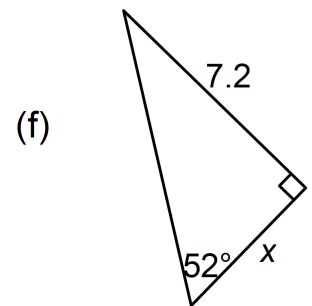
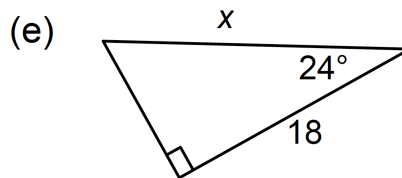
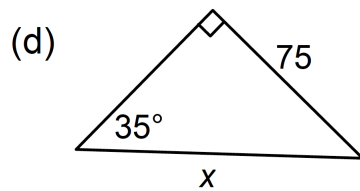
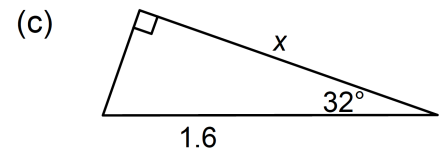
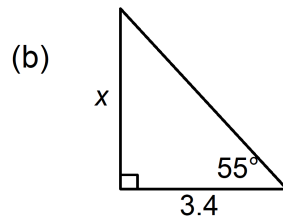
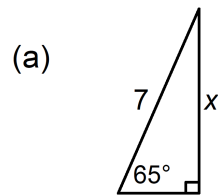
(9) **Exit Ticket**

calculator

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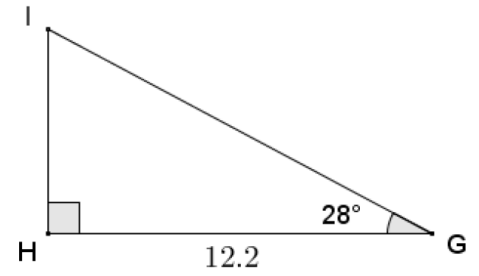
 (10) **Homework**

calculator

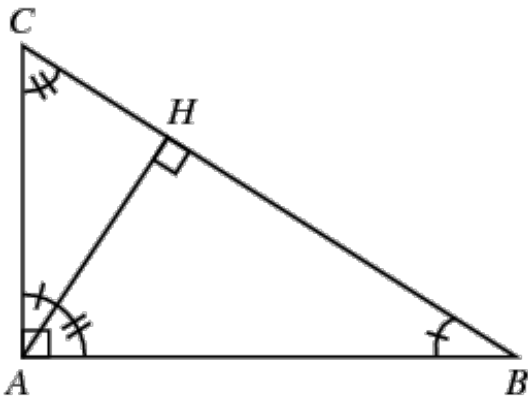
(1) Write an equation and solve for  $x$ .

(10) Homework  
calculator

- (2) Given right triangle  $GHI$ , with right angle at  $H$ ,  $GH = 12.2$ , and  $m\angle G = 28^\circ$ , find the measures of the remaining sides and angle to the nearest tenth.



- (3) Describe a sequence of transformations that will map triangle  $CHA$  to triangle  $AHB$  and then to triangle  $CAB$ .



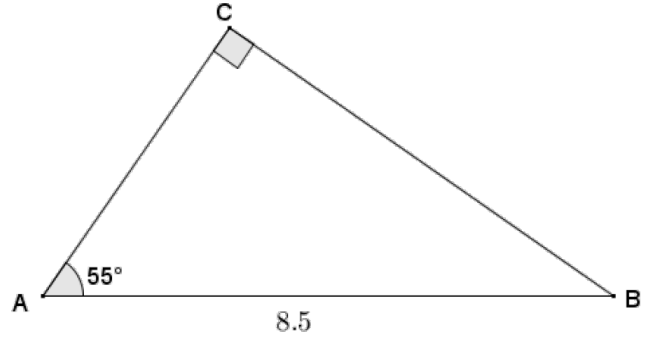


Exit Ticket Name \_\_\_\_\_ Date \_\_\_\_\_ Per \_\_\_\_\_

7.5R

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

1. Given right triangle  $ABC$  with hypotenuse  $AB = 8.5$  and  $\angle A = 55^\circ$ , find  $AC$  and  $BC$  to the nearest hundredth.



**(1) CHECK EACH BOX AS YOU COMPLETE THE TASK**

- Find the sin, cos, and tan buttons on your calculator
- Make sure your calculator is working with degrees by
- Press the mode button at the top of the calculator
  - Use the arrows to move the cursor to degrees
  - Press enter

- Use a calculator to find the sine and cosine of  $\theta$ . Give your answer rounded to the ten-thousandth place.  
START BY MAKING SURE YOU GET THE VALUES FOR  $\sin 10$  and  $\cos 10$  that are already in the table for you.

$\theta$	0	10	20	30	40	50	60	70	80	90
$\sin \theta$		.1736								
$\cos \theta$		.9848								

- What do you notice from the table? Why do you think that happens?

**(2) What is meant to be humorous about the cartoon below?**