

Proficiency Scale:

Topic: Geometry	
Standard: G.SRT.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	
Score 4.0	<p>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was explicitly taught.</p> <ul style="list-style-type: none"> Solve problems involving irrational side lengths. Apply geometric methods to solve design problems such as finding the perimeter and area of regular polygons. (G.MG.3)
Score 3.5	<p>The student will:</p> <ul style="list-style-type: none"> Use trigonometric ratios and the Pythagorean Theorem to solve word problems.
Score 3.0	<p>The student will:</p> <ul style="list-style-type: none"> Use trigonometric ratios to find unknown sides and angles of right triangles.
Score 2.5	<i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content.</i>
Score 2.0	<p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> Hypotenuse, opposite, adjacent, sine, cosine, and tangent ratios, inverse trigonometric functions, degrees, radians, angle of elevation/depression. <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> Use Pythagorean Theorem to find unknown sides of right triangles. Write trigonometric ratios and equations for right triangles. Select appropriate trig ratio based on the given information. Understand when to use trig versus inverse trig functions. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas. (N.Q.1)
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content.

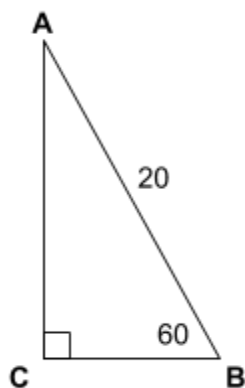
Assessment & Scoring Guide:

Module 6 Formative Quiz #3 (6.8-6.11)

Standards: G.SRT.8 - I can solve for missing sides and angles of right triangles using trig ratios.

Solve for all of the missing parts in the two triangles below. Round angles to the nearest whole degree and side lengths to the nearest tenth. (3.0):

1.

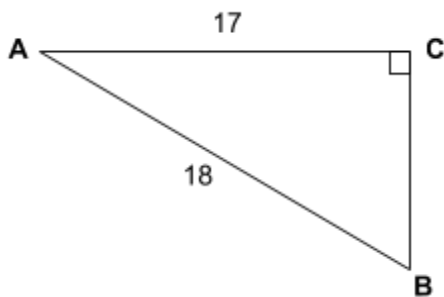


$$A = \underline{\hspace{2cm}}$$

$$AC = \underline{\hspace{2cm}}$$

$$CB = \underline{\hspace{2cm}}$$

2.



$$A = \underline{\hspace{2cm}}$$

$$B = \underline{\hspace{2cm}}$$

$$CB = \underline{\hspace{2cm}}$$

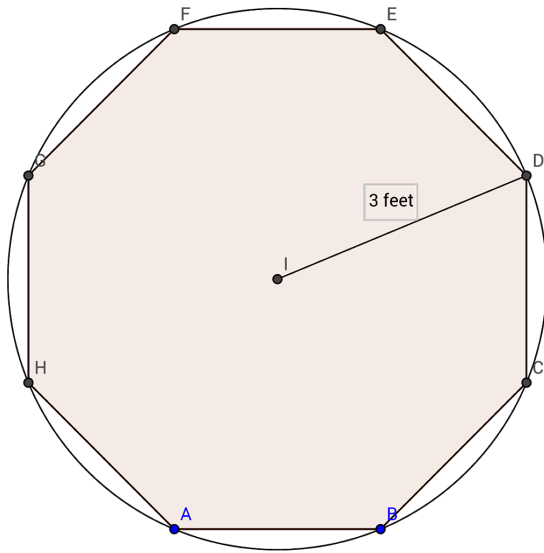
Use the given trigonometric ratio to sketch a right triangle and solve for all the missing angles & sides.

3. $\sin(B) = \frac{7}{10}$

4. Olivia is flying a kite outside in the sweet Wyoming wind. She is using 1000 feet of kite string and the angle of elevation to the kite is 47° . How high is the kite off of the ground? (3.5)

5. A ramp is used for loading equipment from a dock to a ship. The ramp is 14 feet long and the ship is 8 feet higher than the dock. What is the angle of elevation of the ramp? (3.5)

6. The figure below shows a regular octagon inscribed in a circle with **radius = 3 feet** (4.0)



a) Find the area of the circle.

b) Draw in lines to split the octagon into eight identical triangles. Find the length of the base and height of the triangles.

Base = _____

Height = _____

c) Find the total area of the octagon.

d) Find the area of the **unshaded** region in the figure.

CFA Protocol:

The following protocols will be followed by all teachers when giving this CFA:

- Must be taken under teacher supervision.
- All students with IEP or 504 will be allowed accommodations specified in their individual plan.
- No notes, books, etc will be allowed.
- No formulas on the board unless they are specified on the assessment itself.
- No phones out while taking assessments.
- Calculators are allowed unless otherwise specified.
- Students will be separated during the assessment.
- Common warmups will be given on the day of the assessment.
- Will be given in one sitting, unless extra time is deemed worthy by the PLC.

CFA Scoring Guide and Proficiency Guidelines: Scoring Guide

Item	Standard	Acceptable Answer	Proficiency Level
1 - 3	G.SRT.8	Please see attached answer key	3
4 - 5	G.SRT.8	Please see attached answer key	3.5
6	G.SRT.8	Please see attached answer key	4

Proficiency Level Guidelines

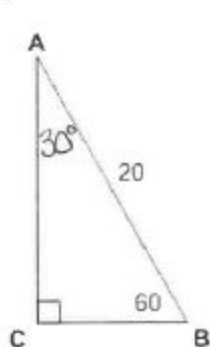
Standard G.SRT.8
<p>Level 1.5: Tried all problems but only got angle A correct on #1 or side CB correct on #2</p> <p>Level 2: Got angle A correct on #1 and side CB correct on #2</p> <p>Level 2.5: 3 out of 6 correct answers on missing sides and angles for questions 1 and 2</p> <p>Level 3: 5 out of 6 correct answers on missing sides and angles for questions 1 and 2.</p> <p>Level 3.5: All correct answers on questions 1-6 with one possible MINOR error (example- missed one angle) and one possible major error on questions 3-6 (example misses question 3 but gets the rest correct)</p> <p>Level 4: All correct answers on questions 1-6 with one possible MINOR error (example- missed one angle or one side)</p> <p>**Additional Scoring Note: Students when taking assessments often do strange things. As these issues occur the teacher will discuss these situations with the PLC and record the team's decisions below.</p>

Module 6 Formative Quiz #3 (6.8-6.11)

Standards: G.SRT.8 - I can solve for missing sides and angles of right triangles using trig ratios.

Solve for all of the missing parts in the two triangles below (3.0):

1.



A = 30°

AC = 17.3

CB = 10

$\sin 60^\circ = \frac{AC}{20}$

$20 \cdot \sin 60$

$\cos 60^\circ = \frac{CB}{20}$

$20 \cdot \cos 60$

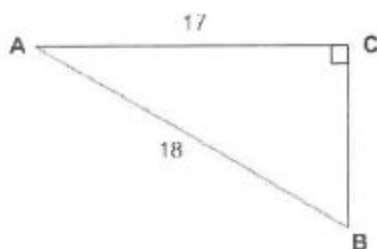
$\cos 30^\circ = \frac{AC}{20}$

$20 \cdot \cos 30$

$\sin 30 = \frac{CB}{20}$

$20 \cdot \sin 30$

2.



A = 19° $\cos A = \frac{17}{18} \cos^{-1}(17/18)$
19.19°

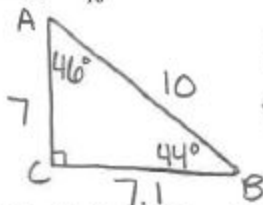
B = 71° $\sin B = \frac{17}{18} \sin^{-1}(17/18)$
70.81°

CB = 5.9

$CB^2 + 17^2 = 18^2$
 $CB^2 + 289 = 324$
 $\sqrt{CB^2} = \sqrt{35}$

Use the given trigonometric ratio to sketch a right triangle and solve for all the missing parts (3.5)

3. $\sin(B) = \frac{7}{10}$



$CB^2 + 7^2 = 10^2$

$CB^2 + 49 = 100$

$\sqrt{CB^2} = \sqrt{51}$

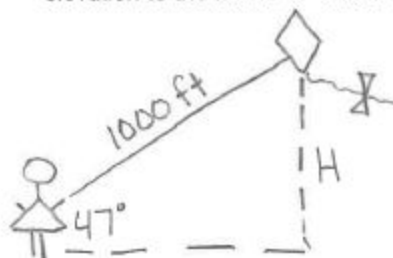
CB = 7.1

$\sin(B) = \frac{7}{10}$

$\sin^{-1}(7/10) = 44.4 = \boxed{44^\circ}$

$\angle A = 90 - 44 = \boxed{46^\circ}$

$\cos^{-1}(7/10) = 45.6^\circ$

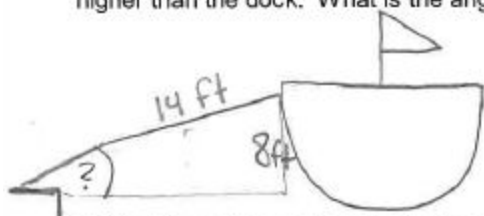
4. Olivia is flying a kite outside in the sweet Wyoming wind. She is using 1000 feet of kite string and the angle of elevation to the kite is 47° . How high is the kite off of the ground? (3.5)

$\sin 47^\circ = \frac{H}{1000}$

$H = 1000 \cdot \sin 47$

H = 731.4 ft

5. A ramp is used for loading equipment from a dock to a ship. The ramp is 14 feet long and the ship is 8 feet higher than the dock. What is the angle of elevation of the ramp? (3.5)

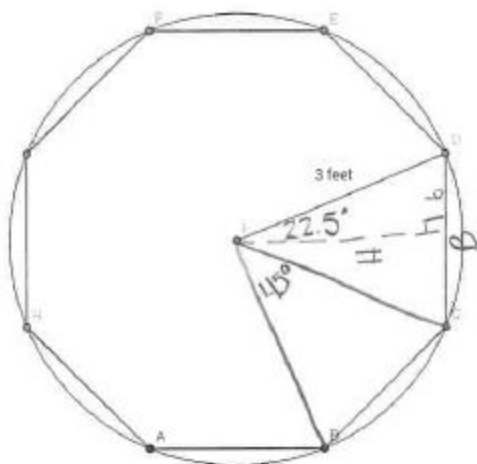


$$\sin A = \frac{8}{14}$$

$$\sin^{-1}(8/14) = 34.85$$

$$A = 35^\circ$$

6. The figure below shows a regular octagon inscribed in a circle with radius = 3 feet (4.0)



$$\frac{360^\circ}{8} = 45^\circ$$

$$\frac{45}{2} = 22.5^\circ$$

- a) Find the area of the circle.

$$A = \pi r^2 \quad A = \pi \cdot 3^2$$

$$A = 9\pi \text{ ft} \text{ or } 28.26 \text{ ft}$$

- b) Draw in lines to split the octagon into eight identical triangles. Find the length of the base and height of the triangles.

$$\text{Base} = 2.3 \text{ ft}$$

$$\text{Height} = 2.8 \text{ ft}$$

$$\sin 22.5^\circ = \frac{b}{3}$$

$$b = 3 \cdot \sin 22.5^\circ = 1.15$$

$$B = 2(1.15) = 2.3$$

$$\cos 22.5^\circ = \frac{H}{3}$$

$$H = 3 \cdot \cos 22.5^\circ = 2.77$$

- c) Find the total area of the octagon.

$$A = \frac{2.3(2.8)}{2} \times 8 = 3.22(8) = 25.76 \text{ ft}^2$$

$$25.8 \text{ ft}^2$$

- d) Find the area of the unshaded region in the figure.

Circle - octagon

$$28.3 - 25.8 = 2.5 \text{ ft}^2$$

$$\text{Range } 2.4 \text{ to } 3 \text{ ft}$$