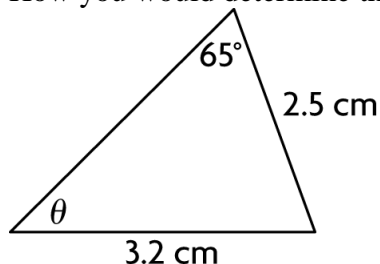


Unit 3 Practice Test Questions – Trigonometry

Multiple Choice

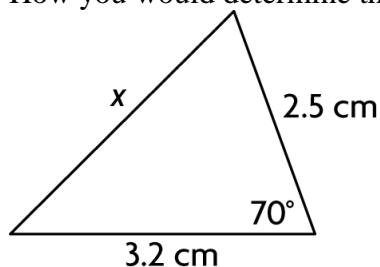
Identify the choice that best completes the statement or answers the question.

- _____ 1. How you would determine the indicated angle measure, if it is possible?



- a. not possible
- b. primary trigonometric ratios
- c. the cosine law
- d. the sine law

- _____ 2. How you would determine the indicated side length, if it is possible?



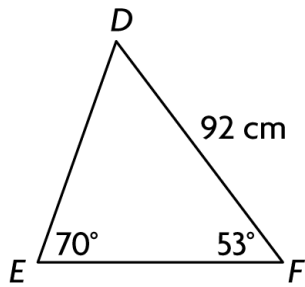
- a. the cosine law
- b. primary trigonometric ratios
- c. not possible
- d. the sine law

- _____ 3. Solve for the unknown side length. Round your answer to one decimal place.

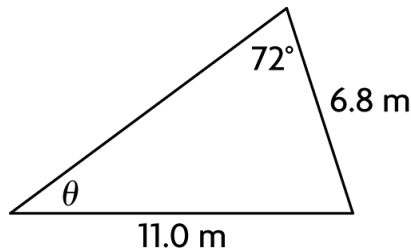
$$\frac{q}{\sin 30^\circ} = \frac{10.0}{\sin 80^\circ}$$

- a. 5.0
- b. 5.1
- c. 20.3
- d. 0.5

- _____ 4. Determine the length of f to the nearest tenth of a centimetre.



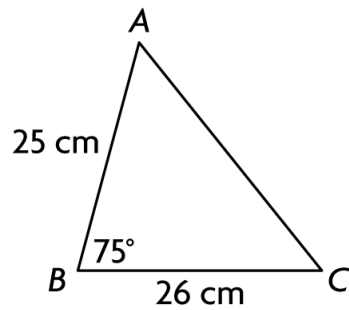
- a. 78.6 cm
 - b. 79.0 cm
 - c. 79.4 cm
 - d. 78.2 cm
- _____ 5. Determine the measure of θ to the nearest degree.



- a. 40°
 - b. 38°
 - c. 36°
 - d. 42°
- _____ 6. In $\triangle DEF$, $d = 10.0$ cm, $e = 8.6$ cm, and $\angle E = 45^\circ$. Determine the measure of $\angle D$ to the nearest degree.

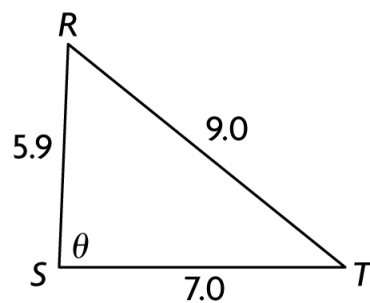
- a. 35°
 - b. 55°
 - c. 45°
 - d. 65°
- _____ 7. The proof of cosine law is based on which of the following
- a. Angles in a Triangle Add to 180
 - b. Pythagorean Theorem
 - c. Slope (Rise over Run)
 - d. The Golden Ratio

8. Determine the length of AC to the nearest tenth of a centimetre.



- a. 31.1 cm
- b. 31.0 cm
- c. 30.1 cm
- d. 30.2 cm

9. Determine the measure of θ to the nearest degree.



- a. 88°
- b. 86°
- c. 84°
- d. 90°

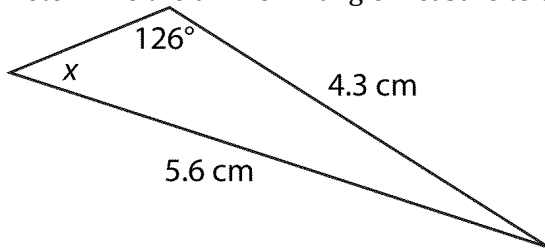
10. In $\triangle DEF$, $d = 13.5$ cm, $e = 18.2$ cm, and $\angle F = 60^\circ$. Determine the measure of f to the nearest tenth of a centimetre.

- a. 17.0 cm
- b. 16.4 cm
- c. 16.6 cm
- d. 16.8 cm

11. Which one of the following equations is valid?

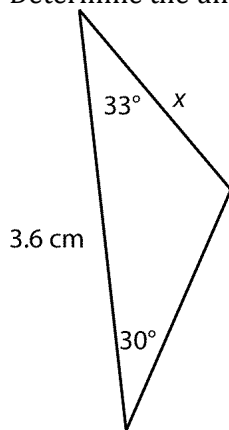
- a. $\cos 36^\circ = -\cos 144^\circ$
- b. $\cos 36^\circ = -\cos 36^\circ$
- c. $\cos 36^\circ = \cos 144^\circ$
- d. none of the above

___ 12. Determine the unknown angle measure to the nearest degree.



- a. 24°
- b. 54°
- c. 38°
- d. none of these

___ 13. Determine the unknown side length to the nearest centimetre.



- a. 2.5 cm
- b. 1.8 cm
- c. 2.3 cm
- d. 2.0 cm

___ 14. Which set of measurements will not produce a triangle?

- a. $\angle A = 35^\circ, a = 10.8 \text{ m}, b = 8.0 \text{ m}$
- b. $\angle A = 35^\circ, a = 3.5 \text{ m}, b = 8.0 \text{ m}$
- c. $\angle A = 35^\circ, a = 6.2 \text{ m}, b = 8.0 \text{ m}$
- d. $\angle A = 35^\circ, a = 4.6 \text{ m}, b = 8.0 \text{ m}$

___ 15. Which set of measurements will produce one right triangle with b as the hypotenuse?

- a. $\angle A = 60^\circ$, $a = 10.4$ m, $b = 12.0$ m
- b. $\angle A = 60^\circ$, $a = 11.6$ m, $b = 12.0$ m
- c. $\angle A = 60^\circ$, $a = 8.7$ m, $b = 12.0$ m
- d. $\angle A = 60^\circ$, $a = 14.5$ m, $b = 12.0$ m

___ 16. Which set of measurements can produce two possible triangles?

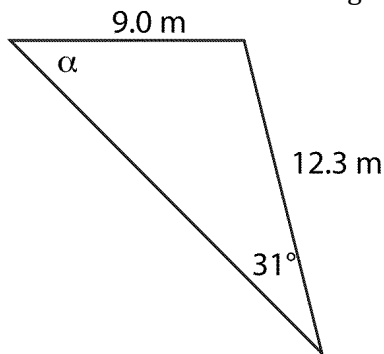
- a. $\angle A = 48^\circ$, $a = 4.2$ m, $b = 5.0$ m
- b. $\angle A = 48^\circ$, $a = 8.2$ m, $b = 13.0$ m
- c. $\angle A = 48^\circ$, $a = 5.2$ m, $b = 7.0$ m
- d. $\angle A = 35^\circ$, $a = 10.8$ m, $b = 8.0$ m

___ 17. In $\triangle EFG$, $\angle G = 32^\circ$, $f = 9.5$ m, and $g = 12.5$ m.

Which statement is true for this set of measurements?

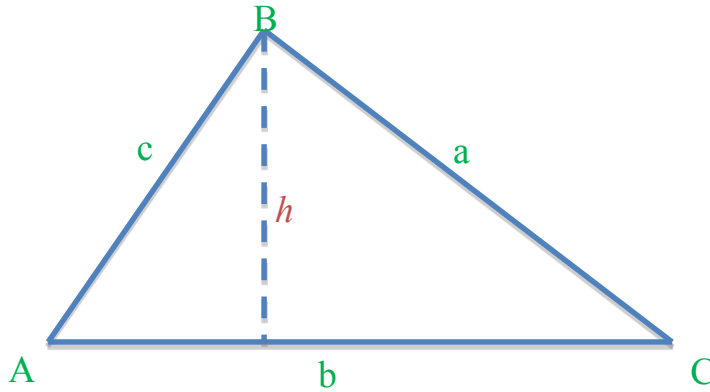
- a. This is not a SSA situation.
- b. This is a SSA situation; no triangle is possible.
- c. This is a SSA situation; only one triangle is possible.
- d. This is a SSA situation; two triangles are possible.

___ 18. Determine the indicated angle measure to the nearest degree.



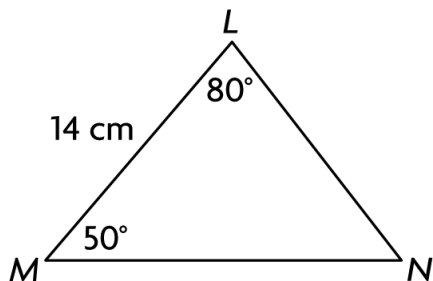
- a. 45° or 135°
- b. 35° or 145°
- c. 31° or 149°
- d. No possible answer

1. Prove the Sine Law using the following triangle (2 marks)



2. In $\triangle ABC$, $\angle A = 65^\circ$, $a = 23.5$ cm, and $\angle C = 71^\circ$. Determine the length of side c to the nearest tenth of a centimetre. (2 marks)

3. Solve the triangle (find all the missing sides and angles). Round angles to the nearest degree and sides to the nearest tenth of a centimetre. Show your work. (3 marks)



4. Write another sine ratio that is equivalent to $\sin 44^\circ$. (1 mark) _____
5. Determine two angles between 0° and 180° that have the sine ratio 0.8480. (1 mark)
- _____
6. Give a detailed explanation for **why** two different angles between 0° and 180° can have the same sine ratio and why that leads to ambiguous questions. Use pictures and words for your explanation (not a formal proof). (2 marks)
7. Determine if there are zero, one, or two possible triangles.
- In $\triangle JKL$, $\angle J = 55^\circ$, $j = 10.4\text{km}$, $k = 11.6\text{km}$.
8. The pilot of an airplane in flight looks down at a point on the ground that is some distance away. The angle of depression is 28° , and the plane's altitude is 1200 meters. What is the distance from the pilot to the point on the ground?
9. Two boats leave the dock at the same time. One is going an average of 30 km/h in the direction N30W, and the other is going an average of 24 km/h in the direction N25E. How far apart are the boats after 1.5 hours?

10. A radio tower is supported by two wires on opposite sides. On the ground, the ends of the wire are 235 m apart. One wire makes a 75° angle with the ground. The other makes a 55° angle with the ground. Draw a diagram of the situation. Then, determine the length of each wire to the nearest metre.

BONUS

11. A canoeist leaves the dock and paddles toward a buoy 140 m away. After reaching the buoy, she changes directions and paddles another 80 m. From the dock, the angle between the buoy and the canoeist's current position measures 25° . How far is the canoeist from the dock? Give two possible answers. Show your work.