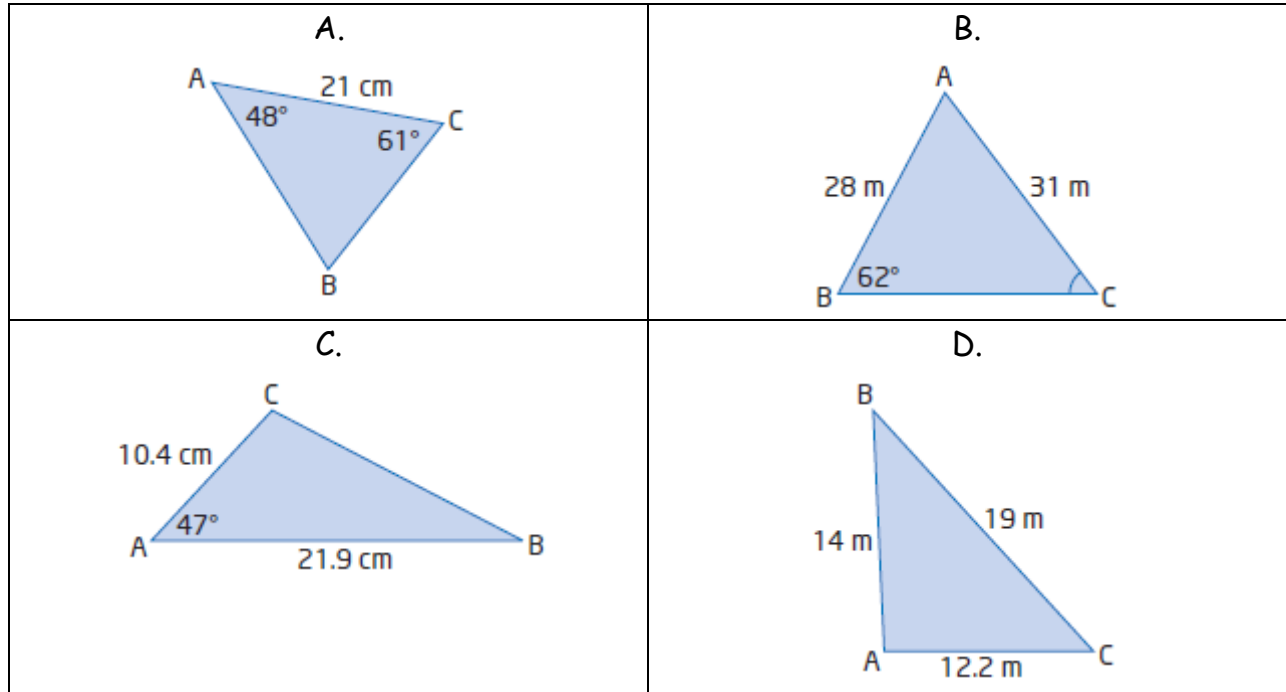


The Sine Law Practice

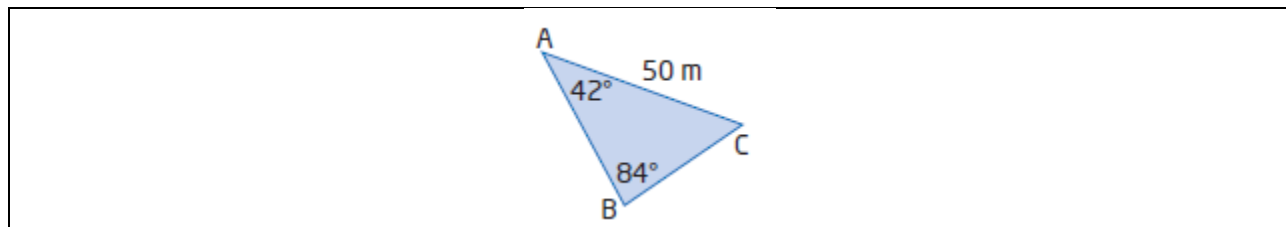
Use the following information to answer the first question.



1. For which 2 diagrams could the sine law be used?

- A) A and B B) C and D C) A and C D) B and D

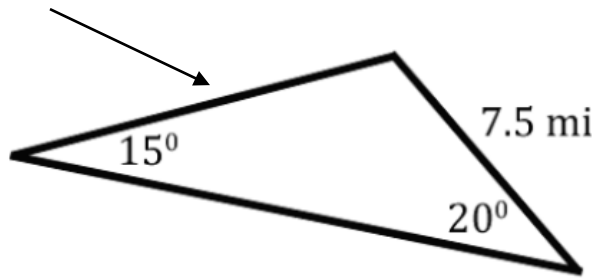
Use the following diagram to answer the next question.



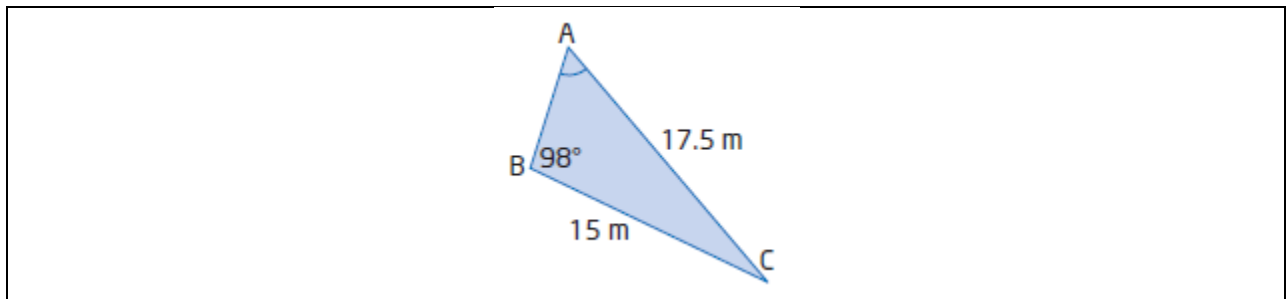
2. Which of the following equations can be used to find AB?

- A) $\frac{AB}{\sin 42} = \frac{50}{\sin 84}$ B) $\frac{AB}{\sin 54} = \frac{50}{\sin 84}$ C) $\frac{AB}{\sin 42} = \frac{50}{\sin 54}$ D) $\frac{AB}{\sin 54} = \frac{50}{\sin 42}$

3. Determine the length of this side, to the nearest 10^{th} of a mile.

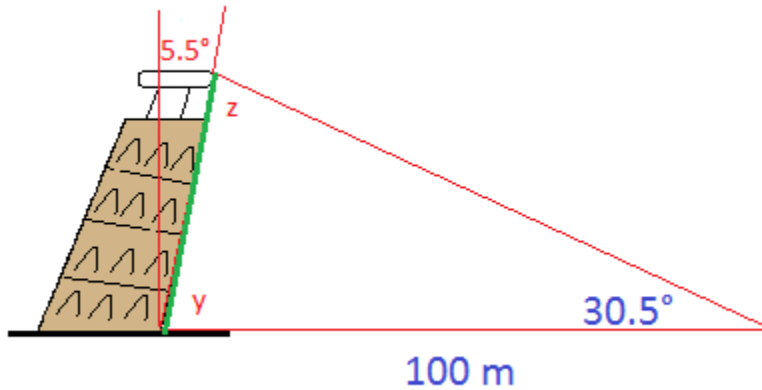


Use the following information to answer the next question.



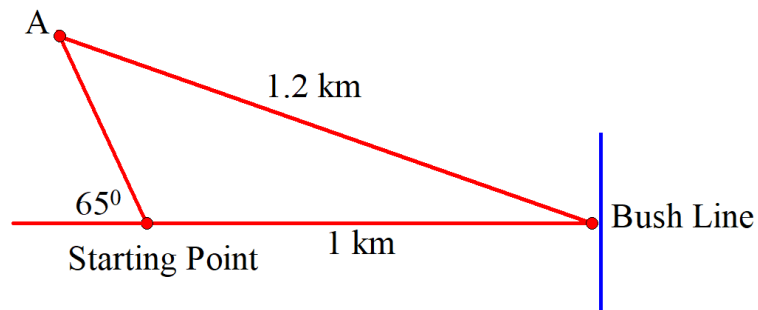
4. To the nearest degree, the measure of angle A can be written in the form KM , where K and M are integers. The values for K and M respectively, are, ___ and ___.

5. The leaning tower of Pisa is inclined 5.5° from the vertical. At a distance of 100 m from the wall of the tower, the angle of elevation to the top is 30.5° . Determine the height of the leaning tower.



Use the following information to answer the next question.

Olivia and Noah are planning a scavenger hike for their youth group. From the starting point, they go due east for 1 km, until they reach the bush line. Then they take a north westerly path for 1.2 km. At point A, they turn and go back to the starting point.

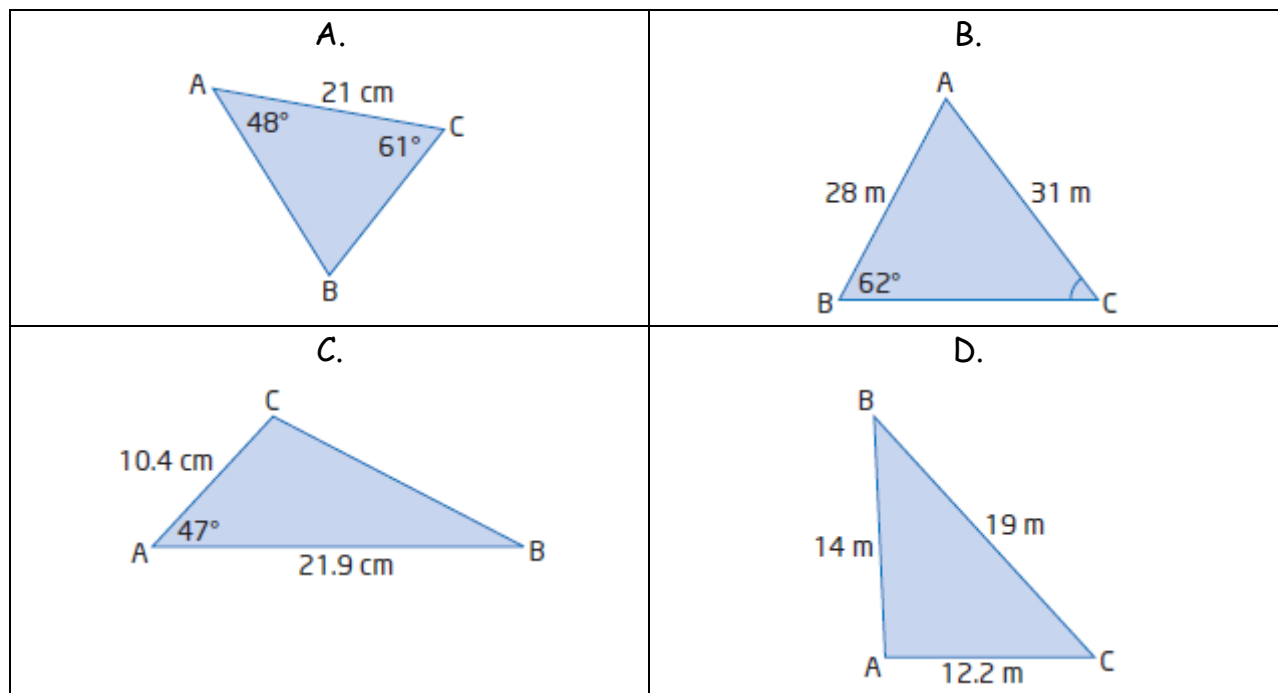


6. A) What angle is created at point A?

B) What is the perimeter of the triangle, to the nearest metre?

The Sine Law Practice Solutions

Use the following information to answer the first question.



1. For which 2 diagrams could the sine law be used?

- A) **A and B** B) C and D C) A and C D) B and D

Solution

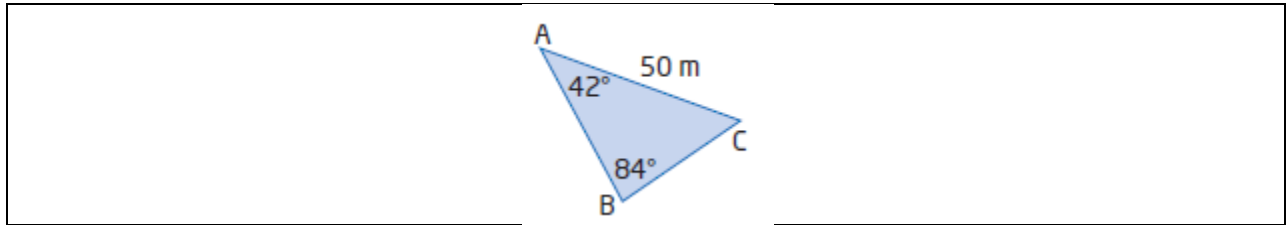
Use the sine law to solve a triangle when you are given the measures of

- Two angles and one side
- Two sides and an angle that is opposite to one of the given sides

Diagrams A and B satisfy the above criteria.

The correct answer is A.

Use the following diagram to answer the next question.

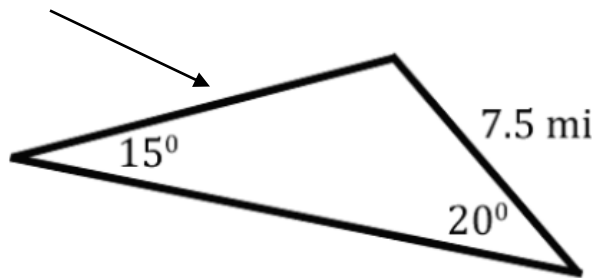


2. Which of the following equations can be used to find AB?

A) $\frac{AB}{\sin 42} = \frac{50}{\sin 84}$ B) $\frac{AB}{\sin 54} = \frac{50}{\sin 84}$ C) $\frac{AB}{\sin 42} = \frac{50}{\sin 54}$ D) $\frac{AB}{\sin 54} = \frac{50}{\sin 42}$

The correct answer is B.

3. Determine the length of this side, to the nearest 10th of a mile.



Solution

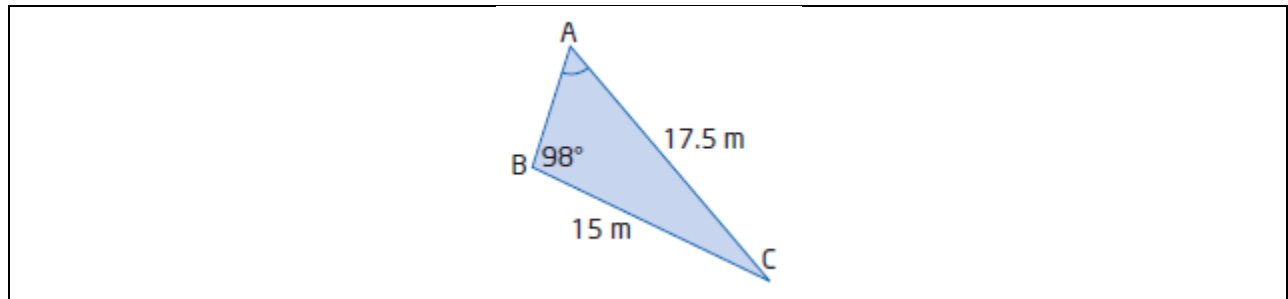
Let x = unknown side

$$\frac{x}{\sin 20} = \frac{7.5}{\sin 15}$$

$$x = \frac{(7.5)(\sin 20)}{\sin 15}$$

$x = 9.9$ miles.

Use the following information to answer the next question.



4. To the nearest degree, the measure of angle A can be written in the form KM, where K and M are integers. The values for K and M respectively, are, 5 and 8.

Solution

$$\frac{\sin A}{15} = \frac{\sin 98}{17.5}$$

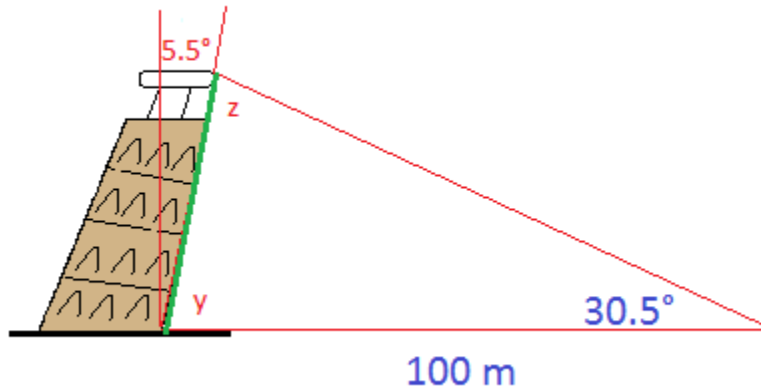
$$\sin A = \frac{(\sin 98)(15)}{17.5}$$

$$\sin A = 0.8488\dots$$

$$\sin^{-1}(0.8488\dots) = 58.0815\dots$$

The values for K and M respectively, are, 5 and 8.

5. The leaning tower of Pisa is inclined 5.5 degrees from the vertical. At a distance of 100 m from the wall of the tower, the angle of elevation to the top is 30.5 degrees. Determine the height of the leaning tower.



Solution

The angles 5.5° and y are complementary, which means that their sum is 90° .

Angle $y = 90^\circ - 5.5^\circ$, or 84.5° .

The sum of the angles in a triangle is 180° .

To find angle Z , add 84.5° and 30.5° , and then subtract this sum from 180° .

$$Z = 180^\circ - (84.5^\circ + 30.5^\circ)$$

$$Z = 65^\circ$$

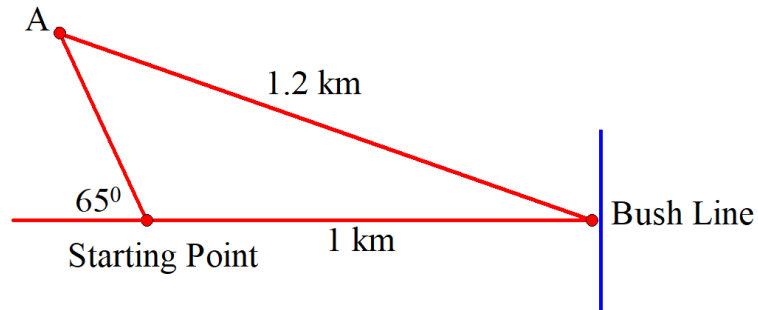
$$\frac{\text{tower}}{\sin 30.5} = \frac{100}{\sin 65}$$

$$\text{tower} = \frac{(100)(\sin 30.5)}{\sin 65}$$

The tower is equal to 56 m.

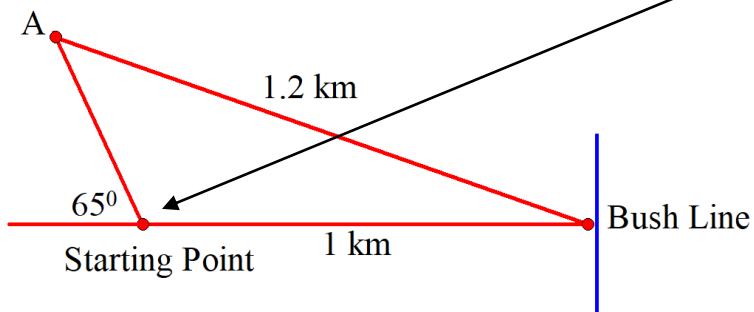
Use the following information to answer the next question.

Olivia and Noah are planning a scavenger hike for their youth group. From the starting point, they go due east for 1 km, until they reach the bush line. Then they take a north westerly path for 1.2 km. At point A, they turn and go back to the starting point.



6. A) What angle is created at point A?

Solution



The angle we need that is inside the triangle, and 65°, are supplementary.

$$180^\circ - 65^\circ = 115^\circ$$

$$\frac{\sin A}{1} = \frac{\sin 115}{1.2}$$

$$\sin A = \frac{(\sin 115)(1)}{1.2}$$

$$\sin A = 0.7552\dots$$

$$\sin^{-1}(0.7552\dots) = 49.0477\dots$$

The angle created at point A is 49°.

B) What is the perimeter of the triangle, to the nearest metre?

Solution

To find the perimeter, we need to determine the third side, which is from point A to the starting point. We will call this side x .

The angle at the bush line is also required. This angle is found by adding the two angles we know and subtracting the sum from 180° .

$$\text{Bush line angle} = 180^\circ - (115^\circ + 49^\circ)$$

$$= 16^\circ$$

$$\frac{x}{\sin 16} = \frac{1.2}{\sin 115}$$

$$x = \frac{(1.2)(\sin 16)}{\sin 115}$$

$$x = 0.36495... \text{ km.}$$

The side lengths are 365 m, 1000 m, and 1200 m.

The perimeter of the triangle is 2565 m.