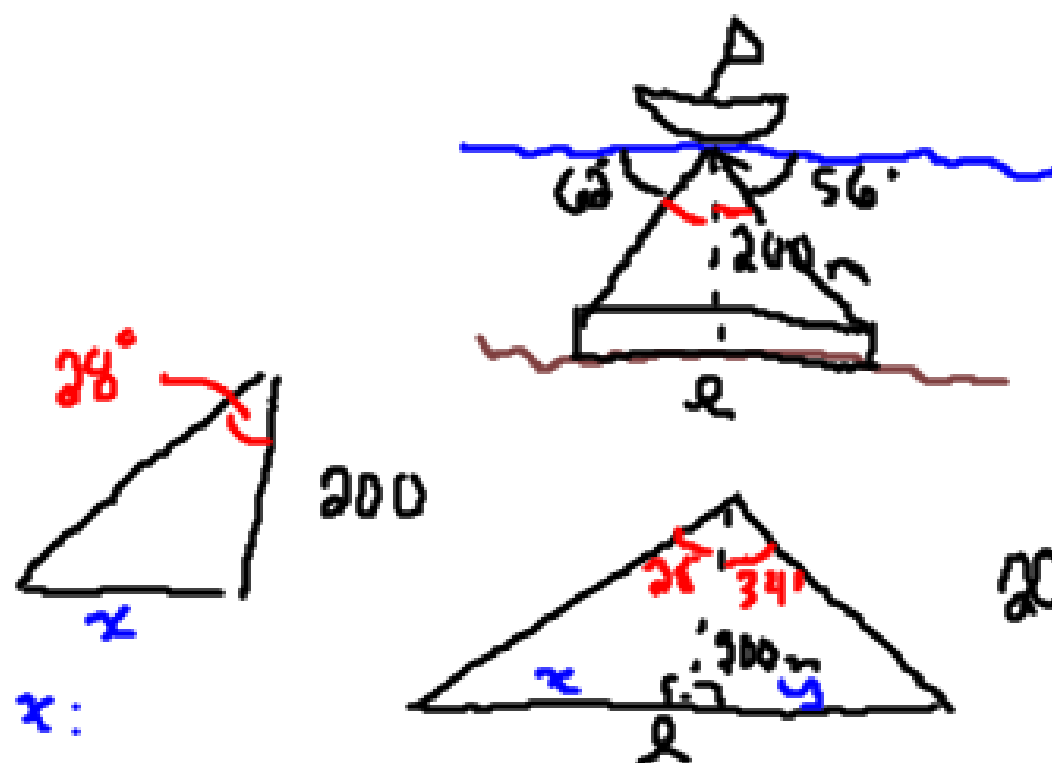


## HW Review

7. A radar operator on a ship discovers a large sunken vessel lying parallel to the ocean surface, 200 m directly below the ship. The length of the vessel is a clue to which wreck has been found. The radar operator measures the angles of depression to the front and back of the sunken vessel to be  $56^\circ$  and  $62^\circ$ . How long, to the nearest tenth of a metre, is the sunken vessel?



$$\tan 28 = \frac{x}{200}$$

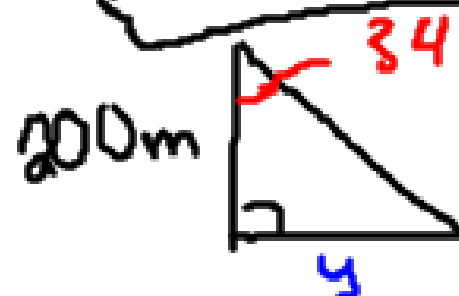
$$x = (\tan 28) 200$$

$$x \approx 106.3 \text{ m}$$

$$l = x + y$$

$$l = 106.3 + 134.9$$

$$l = 241.2 \text{ m}$$

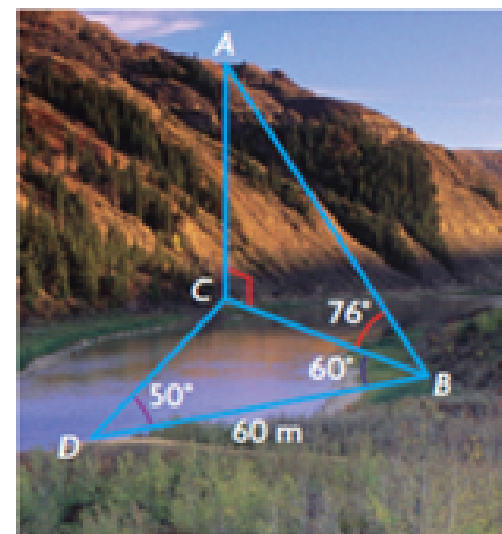


$$\tan 34 = \frac{y}{200}$$

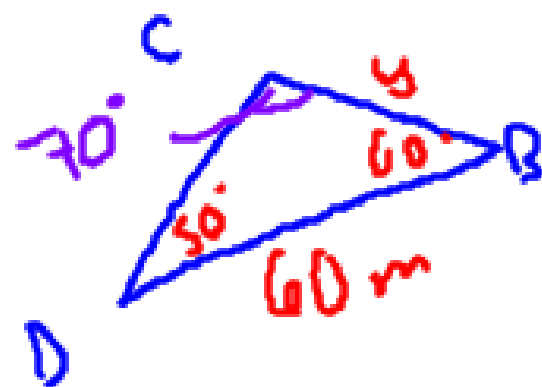
$$y = (\tan 34) \cdot 200 = 134.9$$

Brendan and Diana plan to climb the cliff at Dry Island Buffalo Jump, Alberta. They need to know the height of the climb before they start. Brendan stands at point  $B$ , as shown in the diagram. He uses a clinometer to determine  $\angle ABC$ , the angle of elevation to the top of the cliff. Then he estimates  $\angle CBD$ , the angle between the base of the cliff, himself, and Diana, who is standing at point  $D$ . Diana estimates  $\angle CDB$ , the angle between the base of the cliff, herself, and Brendan.

Determine the height of the cliff to the nearest metre.

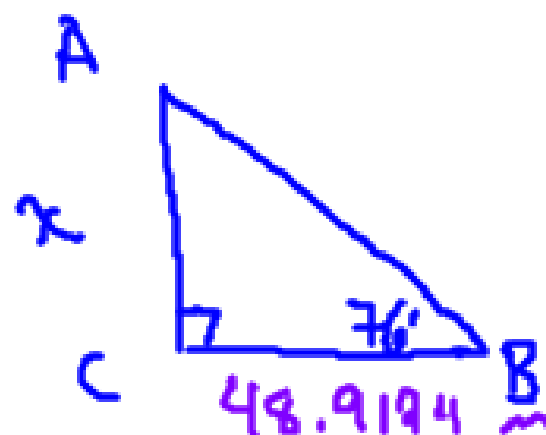


AC



$$\frac{y}{\sin 50} = \frac{60}{\sin 70}$$

$$y = \frac{60 \cdot \sin 50}{\sin 70} = 48.9124 \text{ m}$$



$$x: \tan 76 = \frac{x}{48.9124}$$

$$x = (\tan 76)(48.9124)$$

$$x = 196 \text{ m}$$

## In Summary

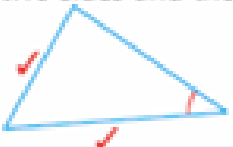




### Key Idea

### SOH CAH TOA

- The sine law, the cosine law, the primary trigonometric ratios, and the sum of angles in a triangle may all be useful when solving problems that can be modelled using acute triangles.

### Need to Know

- To decide whether you need to use the sine law or the cosine law, consider the information given about the triangle and the measurement to be determined.

Information Given	Measurement to be Determined	Use
two sides and the angle opposite one of the sides 	angle —	sine law /
two angles and a side  	side	sine law —
two sides and the contained angle 	side	cosine law —
three sides 	angle	cosine law /



- Drawing a clearly labelled diagram makes it easier to select a strategy for solving a problem.



## / 3.4 Homework. /

Do p. 147-149 - #1-6, 8-12, 14

