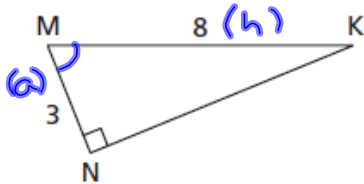


Section 2.4: The Sine and Cosine Ratio Continued

Using Sine or Cosine to Determine the Measure of an Angle

1. Determine the measures of $\angle K$ and $\angle M$ to the nearest tenth of a degree.



Sum of angles of a triangle = 180.

$$\sin K = \frac{o}{h}$$

$$\sin K = \frac{3}{8}$$

$$\angle K = \sin^{-1}\left(\frac{3}{8}\right)$$

$$\angle K = 22.0^\circ$$

$$\angle M = 90^\circ - 22^\circ = 68.0^\circ$$

OR

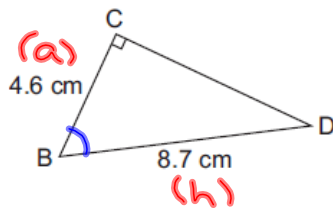
$$\cos M = \frac{a}{h}$$

$$\cos M = \frac{3}{8}$$

$$M = \cos^{-1}\left(\frac{3}{8}\right)$$

$$M = 68.0^\circ$$

2. Find the measures of $\angle B$ and $\angle D$ to the nearest degree.



$$\cos B = \frac{a}{h}$$

$$\cos B = \frac{4.6}{8.7}$$

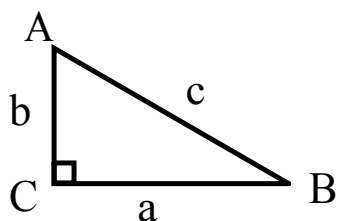
$$B = \cos^{-1}\left(\frac{4.6}{8.7}\right)$$

$$B = 58^\circ$$

$$\therefore \angle D = 90^\circ - 58^\circ = 32^\circ$$

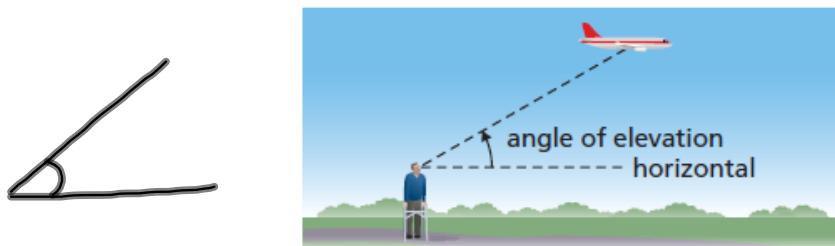
Other Problems

1. In $\triangle ABC$, vertex C is a right angle. Which trigonometric ratio has the same trigonometric value as the $\sin A$?

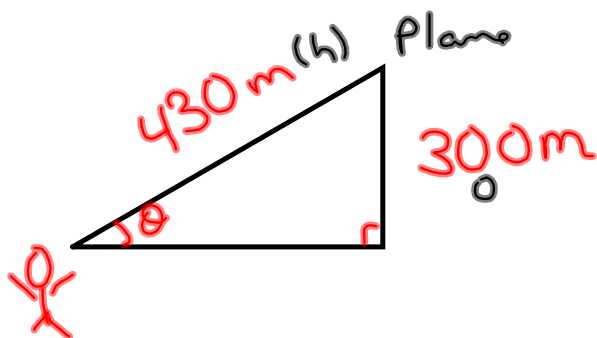


Using Sine or Cosine to Solve a Problem

The **angle of elevation** of an object above the horizontal is the angle between the horizontal and the line of sight from an observer. (same as angle of inclination)



1. An observer is sitting on a dock watching a float plane in Vancouver harbour. At a certain time, the plane is 300 m above the water and 430 m from the observer. Determine the angle of elevation of the plane measured from the observer, to the nearest degree.



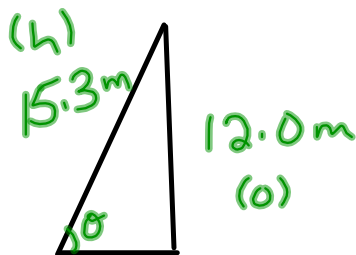
$$\sin \theta = \frac{o}{h}$$

$$\sin \theta = \frac{300}{430}$$

$$\theta = \sin^{-1}(300/430)$$

$$\theta = 44^\circ$$

2. A storm caused a 15.3-m hydro pole to lean over. The top of the pole is now 12.0 m above the ground. What angle does the pole make with the ground? Give the answer to the nearest degree.



$$\sin \theta = \frac{o}{h}$$

$$\sin \theta = \frac{12}{15.3}$$

$$\theta = \sin^{-1}(12/15.3)$$

$$\theta = 52^\circ$$

Homework: p. 95-96
7, 8, 10, 11-14