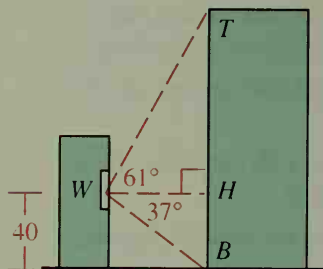
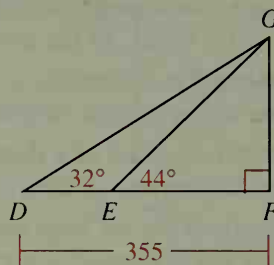


29. A person at window W , 40 ft above street level, sights points on a building directly across the street. H is chosen so that \overline{WH} is horizontal. T is directly above H , and B is directly below. By measurement, $m\angle TWH = 61^\circ$ and $m\angle BWH = 37^\circ$. How far above street level is T ?



Ex. 29



Ex. 30

30. Use the figure to find EF to the nearest integer.

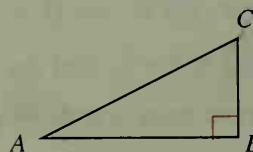
Explorations

These exploratory exercises can be done using a computer with a program that draws and measures geometric figures.

As you will learn in the next section, two other trigonometric ratios are the *sine* and *cosine*. If $\triangle ABC$ has a right angle at B , then:

$$\sin A = \frac{\text{leg opposite } \angle A}{\text{hypotenuse}} = \frac{BC}{AC}$$

$$\cos A = \frac{\text{leg adjacent to } \angle A}{\text{hypotenuse}} = \frac{AB}{AC}$$



Using ASA, draw nine right triangles using nine values for $m\angle A$: 10, 20, 30, 40, 45, 50, 60, 70, and 80. Keep $m\angle B = 90$.

Compute and record $\sin A$, $\cos A$, and $\tan A$ for each measure of $\angle A$. What do you notice?

If you change the length of \overline{AB} but keep the measures of $\angle A$ and $\angle B$ the same, do the sine, cosine, and tangent of $\angle A$ change?

Complete.

- $\cos x^\circ = \sin x^\circ$ when $x = \underline{\quad ? \quad}$
- $\cos (90 - x)^\circ = \sin \underline{\quad ? \quad}$
- $\sin (90 - x)^\circ = \cos \underline{\quad ? \quad}$
- $\tan x^\circ \cdot \tan (90 - x)^\circ = \underline{\quad ? \quad}$
- For acute angles, what trigonometric ratios have values between 0 and 1?
- What trigonometric ratio can have values greater than 1?