Trigonometry Diagnostic Task
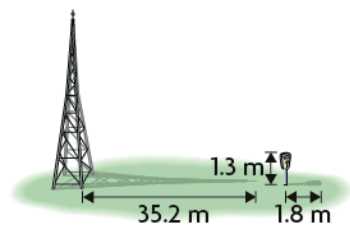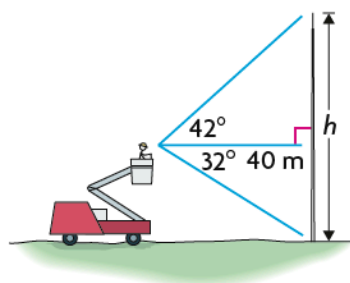
SKILLS AND CONCEPTS You Need

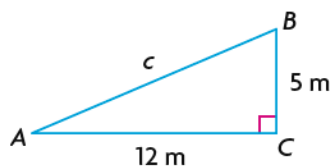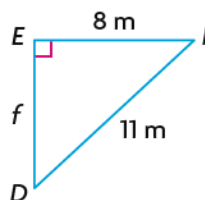**1.** Use the Pythagorean theorem to determine each unknown side length.

a)

b)

2. Using the triangles in question 1, determine the sine, cosine, and tangent ratios for each given angle.

a) $\angle A$ b) $\angle D$

3. Using the triangles in question 1, determine each given angle to the nearest degree.

a) $\angle B$ b) $\angle F$

4. Use a calculator to evaluate to the nearest thousandth.

a) $\sin 31°$ b) $\cos 70°$

5. Use a calculator to determine θ to the nearest degree.

a) $\cos \theta = 0.3312$ b) $\sin \theta = 0.7113$ c) $\tan \theta = 1.1145$

6. Mario is repairing the wires on a radio broadcast tower. He is in the basket of a repair truck 40 m from the tower. When he looks up, he estimates the **angle of elevation** to the top of the tower as 42°. When he looks down, he estimates the **angle of depression** to the bottom of the tower as 32°. How high is the tower to the nearest metre?

7. On a sunny day, a tower casts a shadow 35.2 m long. At the same time, a 1.3 m parking meter that is nearby casts a shadow 1.8 m long. How high is the tower to the nearest tenth of a metre?

8. The **sine law** states that in any triangle, the side lengths are proportional to the sines of the opposite angles.
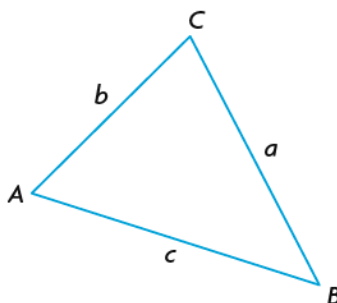
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Use a graphic organizer to show how to use the **sine law** to calculate an unknown angle.