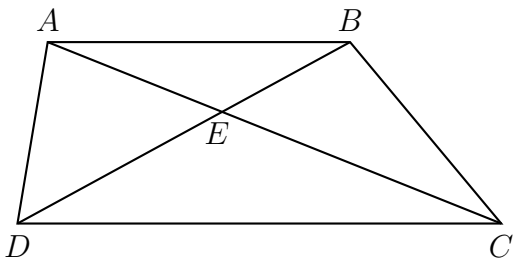
11.11 Similar triangles **HSG.SRT.B.5**

1. Triangle ABC is similar to triangle DEF. Which statement is *not* always true?

   (a) $\angle B \cong \angle E$
   (b) $\angle C \cong \angle D$
   (c) $\angle A \cong \angle D$
   (d) $\angle C \cong \angle F$

2. From a boat on the water three-quarters of a mile from the base of a lighthouse, the angle of elevation to its top is 2.74°. To the nearest foot, what is the height of the lighthouse? (1 mile = 5280 feet)

3. In trapezoid $ABCD$ below, $\overline{AB} \parallel \overline{CD}$.

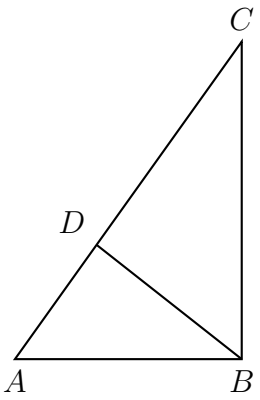


   If $AB = 11.7$, $BE = 5.4$, and $CD = 15.6$, what is the length of $\overline{BD}$?

4. The area of a sector of a circle with diameter measuring 10 cm is 3.75π cm^2. What is the measure of the central angle that forms the sector?

5. The equation of a cirle is $x^2 + y^2 - 2x - 14y = -14$. What are the center and radius of the circle?

6. In the accompanying diagram of right triangle ABC, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$.



Which statement must be true?

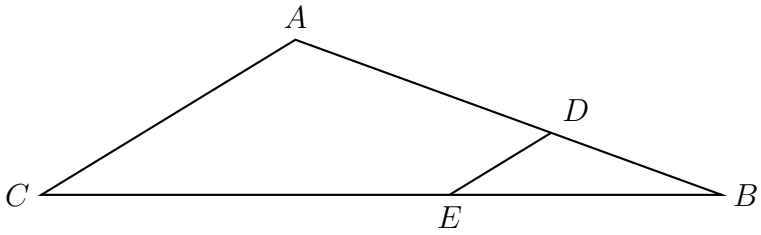
(a) $\frac{AB}{BC} = \frac{BD}{AC}$

(b) $\frac{BC}{AC} = \frac{AD}{AB}$

(c) $\frac{AD}{AB} = \frac{AB}{AC}$

(d) $\frac{BD}{BC} = \frac{AB}{AD}$

7. In the diagram of $\triangle ABC$ below, points D and E are on sides $\overline{AB}$ and $\overline{CB}$ respectively, such that $\overline{DE} \parallel \overline{AC}$.



IF DB is 2 less than EB, $AB = 18$, and $BC = 24$, what is the length of $\overline{CE}$?