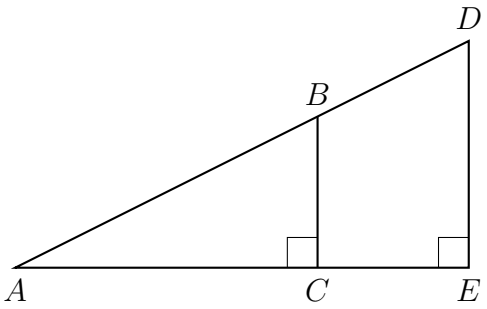
11.15 Similarity ratios

1. In the diagram below of right triangle AED, $\overline{BC} \parallel \overline{DE}$.



Which statement is always true?

(a) $\frac{AC}{BC} = \frac{DE}{AE}$

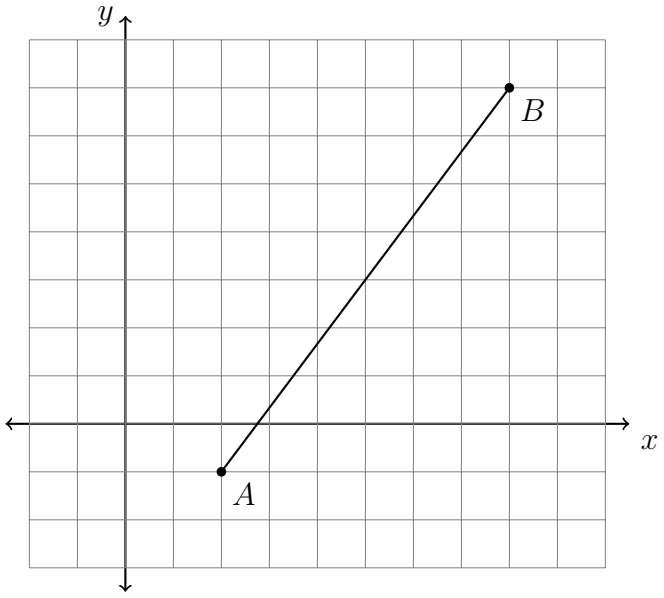
(b) $\frac{AB}{AD} = \frac{BC}{DE}$

(c) $\frac{AC}{CE} = \frac{BC}{DE}$

(d) $\frac{DE}{BC} = \frac{DB}{AB}$

2. Determine and state an equation of the line perpendicular to the line $5x - 4y = 10$ and passing through the point $(5, 12)$.

3. What is the equation of a circle whose diameter is $\overline{AB}$ with $A(2, -1)$ and $B(8, 7)$?



4. Lou has a solid clay brick in the shape of a rectangular prism with a length of 8 inches, a width of 3.5 inches, and a height of 2.25 inches. If the clay weighs 1.055 oz/in^3, how much does Lou's brick weigh, to the nearest ounce?

5. From a point on the ground one-half mile from the base of a historic monument, the angle of elevation to its top is 11.87°. To the nearest foot, what is the height of the monument? (1 mile = 5280 feet)

6. The coordinates of the endpoints of directed line segment ABC are $A(-8, 7)$ and $C(7, -13)$. If $AB : BC = 3 : 2$, what are the coordinates of B?

7. In right triangle ABC, $m\angle C = 90°$ and $AC \neq BC$. Which trigonometric ratio is equivalent to $\sin B$?

   (a) $\cos A$
   (b) $\cos B$
   (c) $\tan A$
   (d) $\tan B$

8. Line segment CD is the altitude drawn to hypotenuse in right triangle ECF. If $EC = 10$ and $EF = 24$, then, to the *nearest tenth*, ED is what length?