

**Topic:** Cosecant, secant, cotangent, and the reciprocal identities

**Question:** The cosecant of an angle  $\theta$  is equal to which of the following?

**Answer choices:**

A  $\frac{1}{\sin \theta}$

B  $\frac{1}{\cos \theta}$

C  $\frac{1}{\tan \theta}$

D  $\frac{1}{\sec \theta}$



**Solution: A**

Sine is the reciprocal of cosecant, and vice versa.

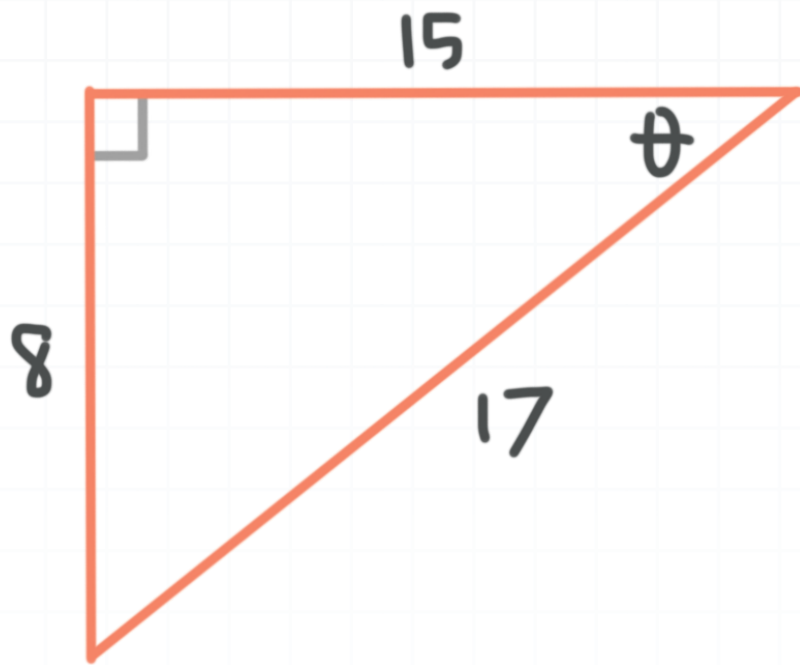
$$\sin \theta = \frac{1}{\csc \theta}$$

$$\csc \theta = \frac{1}{\sin \theta}$$



**Topic:** Cosecant, secant, cotangent, and the reciprocal identities

**Question:** Find the cotangent of  $\theta$ .



**Answer choices:**

A  $\frac{15}{17}$

B  $\frac{8}{15}$

C  $\frac{1}{8}$

D  $\frac{15}{8}$



**Solution: D**

Given the position of the angle  $\theta$  in the right triangle, the length of the opposite side is 8, the length of the adjacent side is 15, and the length of the hypotenuse is 17.

Then the cotangent of the angle is

$$\cot \theta = \frac{\text{adjacent}}{\text{opposite}}$$

$$\cot \theta = \frac{15}{8}$$



**Topic:** Cosecant, secant, cotangent, and the reciprocal identities

**Question:** Which ratio defines the secant function?

**Answer choices:**

A  $\frac{\text{hypotenuse}}{\text{opposite}}$

B  $\frac{\text{hypotenuse}}{\text{adjacent}}$

C  $\frac{\text{adjacent}}{\text{opposite}}$

D  $\frac{\text{opposite}}{\text{adjacent}}$



**Solution: B**

Cosine is the reciprocal of secant, and vice versa. Remember that the reciprocal of a fraction is what we get when we flip the fraction upside down. So the reciprocal of  $a/b$  is  $b/a$ . Therefore,

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\sec \theta = \frac{\text{hypotenuse}}{\text{adjacent}}$$

