

**12.7 Extension: Regents trigonometry problems**

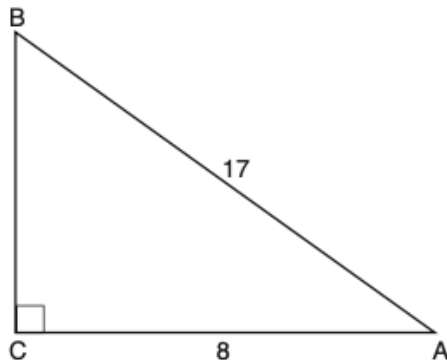
**HSG.SRT.C.8**

**Start by sketching the situation for each problem**

1. A 12-foot ladder leans against a building and reaches a window 10 feet above ground. What is the measure of the angle, to the *nearest degree*, that the ladder forms with the ground?
2. A support wire reaches from the top of a pole to a clamp on the ground. The pole is perpendicular to the level ground and the clamp is 10 feet from the base of the pole. The support wire makes a  $68^\circ$  angle with the ground. Find the length of the support wire to the *nearest foot*.
3. In right triangle  $ABC$ , hypotenuse  $\overline{AB}$  has a length of 26 cm, and side  $\overline{BC}$  has a length of 17.6 cm. What is the measure of angle  $B$ , to the *nearest degree*?

## 4. Regents January 2019

In the diagram below of right triangle  $ABC$ ,  $AC = 8$ , and  $AB = 17$ .



Which equation would determine the value of angle  $A$ ?

- |                             |                              |
|-----------------------------|------------------------------|
| (1) $\sin A = \frac{8}{17}$ | (3) $\cos A = \frac{15}{17}$ |
| (2) $\tan A = \frac{8}{15}$ | (4) $\tan A = \frac{15}{8}$  |

## Sine and cosine values of complementary angles

HSG.SRT.C.7

## 5. Regents June 2019

The expression  $\sin 57^\circ$  is equal to

- |                     |                     |
|---------------------|---------------------|
| (1) $\tan 33^\circ$ | (3) $\tan 57^\circ$ |
| (2) $\cos 33^\circ$ | (4) $\cos 57^\circ$ |

## 6. Regents Jan 2019

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

- |              |              |
|--------------|--------------|
| (1) $\cos A$ | (3) $\tan A$ |
| (2) $\cos B$ | (4) $\tan B$ |

7. If  $\sin(2x + 7)^\circ = \cos(4x - 7)^\circ$ , what is the value of  $x$ ?

Regents August 2018

8. In a right triangle, the acute angles have the relationship  $\sin(2x + 4) = \cos(46)$ .

What is the value of  $x$ ?

Regents June 2018