Name: Solutions

10.8 Regents trigonometry problems

HSG.SRT.C.8

Start by sketching the situation for each problem

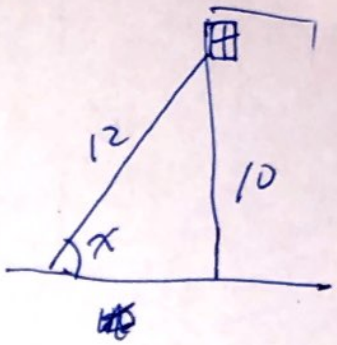
1. A 12-foot ladder leans against a building and reaches a window 10 feet above ground. What is the measure of the angle, to the *nearest degree*, that the ladder forms with the ground?

$\sin x = \frac{10}{12}$

$x = \sin^{-1}\left(\frac{10}{12}\right)$

$= 56.44\ldots$

$\approx 56°$

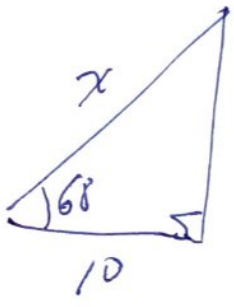


2. A support wire reaches from the top of a pole to a clamp on the ground. The pole is perpendicular to the level ground and the clamp is 10 feet from the base of the pole. The support wire makes a 68° angle with the ground. Find the length of the support wire to the *nearest foot*.

$\cos 68 = \frac{10}{x}$

$x = \frac{10}{\cos 68} = 26.694\ldots$

≈ 27 ft.

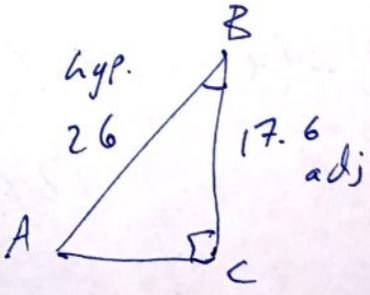


3. In right triangle ABC, hypotenuse $\overline{AB}$ has a length of 26 cm, and side $\overline{BC}$ has a length of 17.6 cm. What is the measure of angle B, to the *nearest degree*?

$\cos B = \frac{17.6}{26}$

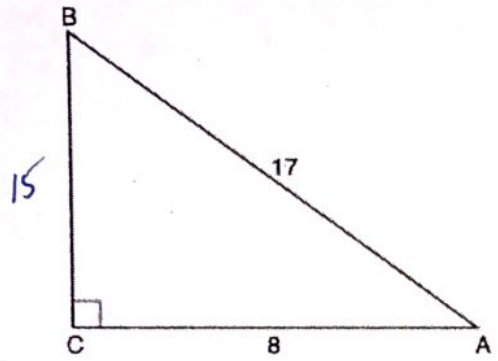
$B = \cos^{-1}\left(\frac{17.6}{26}\right)$

$=$



4. Regents January 2019

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



$x^2 + 8^2 = 17^2$

$x = 15$

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 $\sin 57°$ is equal to

(1) $\tan 33°$ (3) $\tan 57°$

(2) $\cos 33°$ (4) $\cos 57°$

6. Regents Jan 2019

In right triangle ABC, $m\angle C = 90°$ 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 $\sin(2x + 7)° = \cos(4x - 7)°$, what is the value of x? Regents August 2018

$(2x+7) + (4x-7) = 90$ $x = 15$

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

What is the value of x? $(2x+4) + 46 = 90$ $x = 20$ Regents June 2018