BECA / Dr. Huson / Geometry
Unit 10: Trigonometry
19 May 2023

Name: Solutions

10.15 Classwork: Unit review **HSG.SRT.C.8**

1. As shown, right $\triangle ABC$ has $AC = 8, BC = 15, AB = 17$, $m\angle C = 90°$.

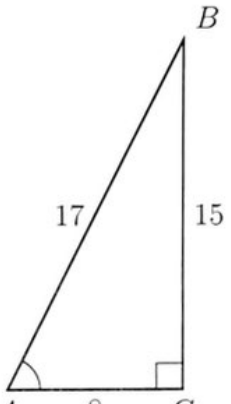
   Express each trigonometric ratio as a fraction.

   (a) $\sin A = \frac{15}{17}$

   (b) $\cos A = \frac{8}{17}$

   (c) $\tan A = \frac{15}{8}$

   (d) Find $m\angle A$. $= \sin^{-1}\left(\frac{15}{17}\right) = 61.9275\ldots \approx 62°$

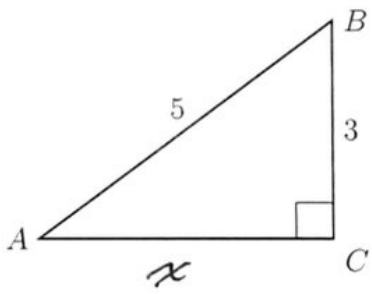


2. Right triangle $\triangle ABC$ is shown with measures as marked.

   (a) Write down $\sin A$. $\frac{3}{5}$

   (b) Find the length of side AC.

   $x^2 + 3^2 = 5^2$
   $x^2 = 25 - 9 = 16$
   $x = 4$



   (c) Find the angle measure of $\angle A$.

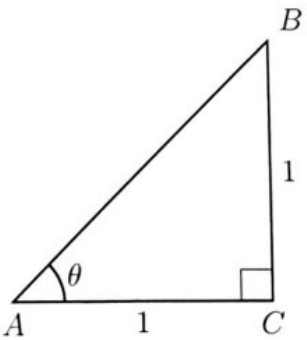
   $= \sin^{-1}\left(\frac{3}{5}\right) = 36.8698\ldots \approx 37°$

3. Isosceles right $\triangle ABC$ is shown with legs $AC = BC = 1$ as marked.

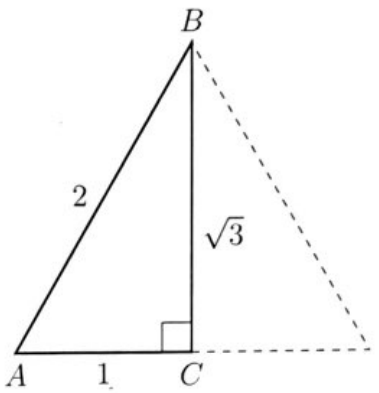
   (a) Write down θ. $45°$

   (b) Find the length of hypotenuse AB.

   $c = \sqrt{1^2 + 1^2} = \sqrt{2}$



4. Right $\triangle ABC$ has base $AC = 1$, height $BC = \sqrt{3}$, and hypotenuse $AB = 2$ as marked. (A reflection $\triangle ABC$ of is also shown.)



(a) Write down the angle measure of $\angle A$.

$60°$

(b) Write down the angle measure of $\angle ABC$.

$30°$

(c) Write down $\cos A$.

$\frac{1}{2}$

5. At an angle of elevation of 17°, the top of a structure B is visible from point A on the ground 100 meters away, as shown below.

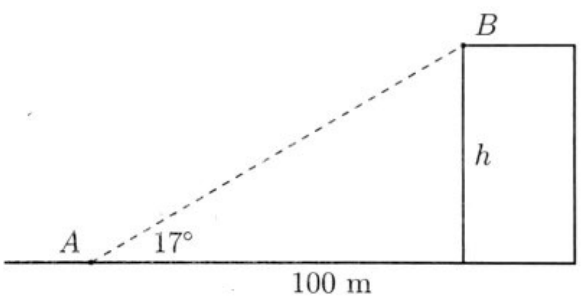
Find the height h of the structure to the *nearest meter*. (not to scale)

$\tan 17 = \frac{h}{100}$

$h = 100 \tan 17$

$= 30.5730...$

≈ 31 m



6. A 15-foot ladder leans against a building and reaches a window 12 feet above ground. What is the measure of the angle, to the *nearest degree*, that the ladder forms with the ground?

$\sin\theta = \frac{12}{15}$

$\theta = \sin^{-1}\left(\frac{12}{15}\right)$

$= 53.130...$

$\approx 53°$