

### 9.3 Radicals

1. Do Now: Given a triangle  $\triangle ABC$  having angles with measures  $m\angle A = 60^\circ$  and  $m\angle C = 90^\circ$ . Find the measure of the third angle,  $m\angle B$ .

2. Do Now: Write down the slope perpendicular to the given slope. (negative reciprocal)

(a)  $m = 4$        $m_{\perp} =$

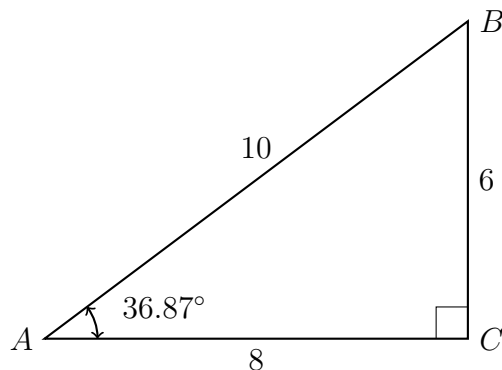
(b)  $m = -\frac{5}{2}$        $m_{\perp} =$

3.  $\triangle ABC$  is shown with  $m\angle C = 90^\circ$  and the lengths of the triangle's sides are  $BC = 6$ ,  $AC = 8$ , and  $AB = 10$ . (not drawn to scale)

(a) How long is the side *opposite*  $\angle A$ ?

(b) How long is the side *adjacent* to  $\angle A$ ?

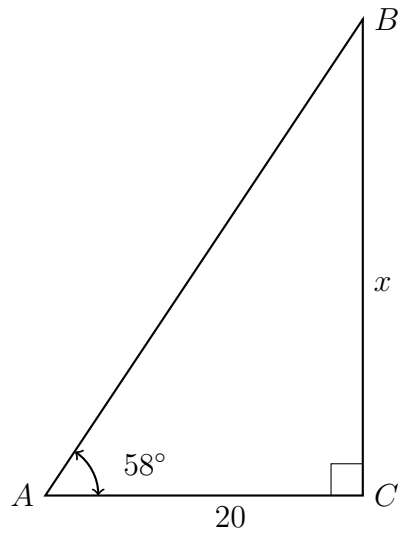
(c) How long is the *hypotenuse*?



Use Graspable Math to verify the tangent calculation.

$$\tan 36.87^\circ = \frac{6}{8}$$

4.  $\triangle ABC$  is shown with  $m\angle C = 90^\circ$ ,  $m\angle A = 58^\circ$ , and the base with length  $AC = 20$ . Find the height  $BC = x$ .



Use Graspable Math and the tangent function:  $\tan 58^\circ = \frac{x}{20}$

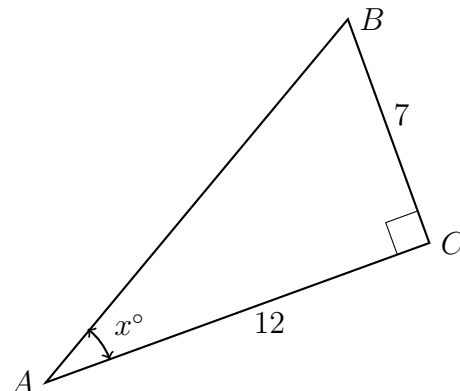
5.  $\triangle ABC$  is shown with  $m\angle C = 90^\circ$  and  $m\angle A = x^\circ$ . The lengths of the legs are  $AC = 10$  and  $BC = 7$ .

(a) Express  $\tan x$  as a fraction.

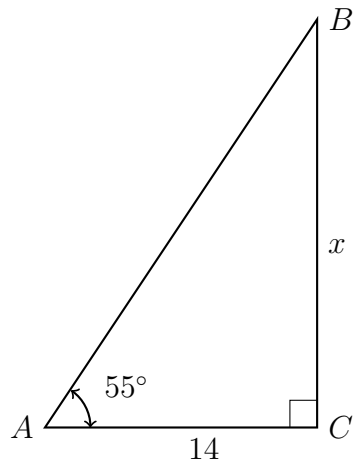
$$\tan x^\circ = \frac{?}{?}$$

(b) Which side is *opposite*  $\angle B$ ?

(c) Which leg is *adjacent* to  $\angle B$ ?



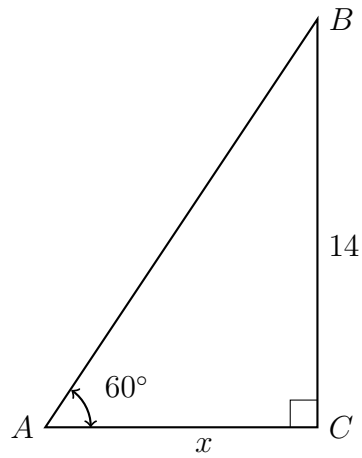
6.  $\triangle ABC$  is shown with  $m\angle C = 90^\circ$ ,  $m\angle A = 55^\circ$ , and the base with length  $AC = 14$ . Find the height  $BC = x$ .



Use Graspable Math and paste the solution starting with the substitution step.

7.  $\triangle ABC$  is shown with  $m\angle C = 90^\circ$ ,  $m\angle A = 60^\circ$ , and height  $BC = 14$ .

Find the base  $AC = x$ .



Use Graspable Math and paste the solution starting with the substitution step.

8. Right  $\triangle ABC$  is drawn in *standard position* with vertex  $A$  on the origin and right  $\angle C$  on the  $x$ -axis, as shown.

(a) Find the slope of the line segment  $\overline{AB}$ .

(b) Find the measure of  $\angle A$ .  
Hint: isosceles triangle

(c) Find the length of the hypotenuse  $AB$  using the Pythagorean Theorem  $a^2 + b^2 = c^2$ . (leave as a radical)

