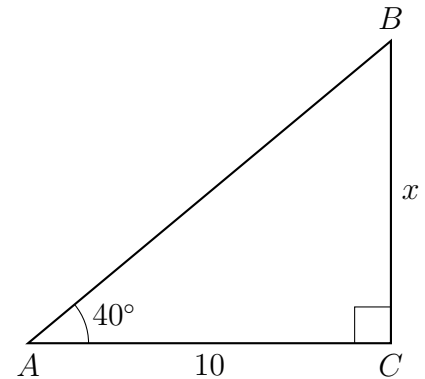**10.7 Quiz: The tangent function**   **CCSS.HSG.SRT.C.8**
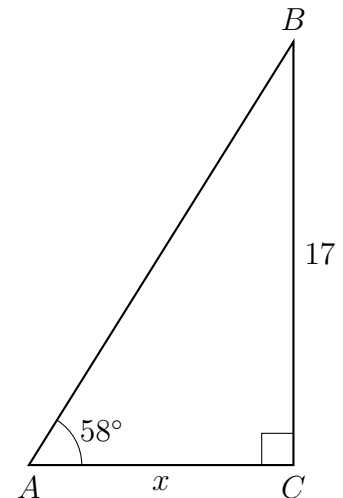
You must write an equation before solving it. Figures are not necessarily drawn to scale.
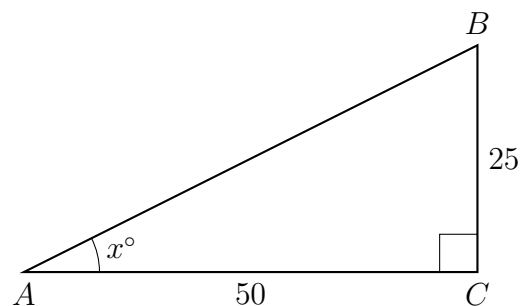
1. Given right $\triangle ABC$ with $AC = 10$, m$\angle A = 40°$. Find the value of $BC = x$.

2. The right $\triangle ABC$ has a height of $BC = 17$ and m$\angle A = 58°$. Find the length of its base $AC = x$.

3. The lengths of the legs of right $\triangle ABC$ are $AC = 50$ and $BC = 25$. Find m$\angle A = x$.

Mastery topic: Algebraic solution

Use your calculator and solve each equation for x, rounding to the nearest tenth.

4. $\tan 75° = \dfrac{x}{15}$

5. $\tan 26° = \dfrac{4}{x}$

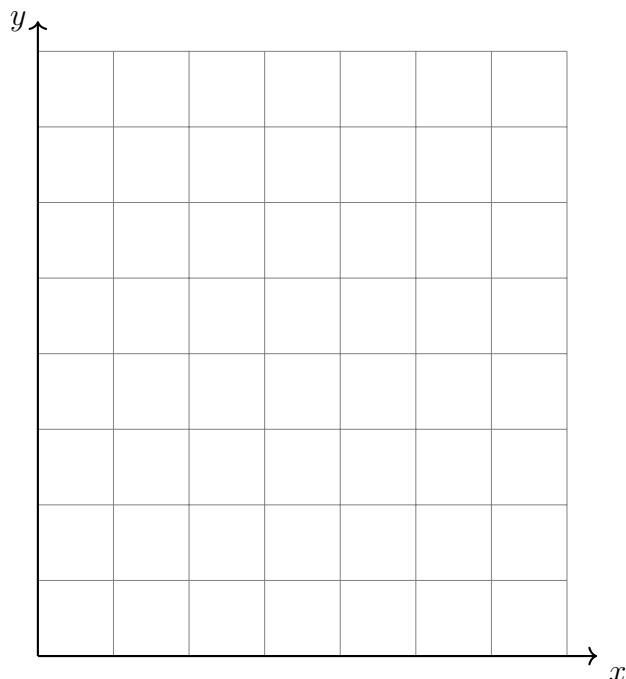6. $x = \tan^{-1}\left(\dfrac{2}{3.5}\right)$

7. $\tan x° = \dfrac{17}{9}$

8. Graph and label $\triangle ABC$ with $A(0,0)$, $B(3,6)$, and $C(3,0)$. Calculate each value:

(a) $AC =$

(b) $BC =$

(c) Express first as a radical, then approximate with a decimal rounded to two decimal places.

$AB =$

(d) Use a protractor to measure $m\angle BAC = \theta$ in degrees.

(e) The tangent of an angle is the ratio of the side lengths *opposite* over *adjacent* to the angle. Write down the value as a fraction.

$\tan \theta =$

(f) Find $m\angle BAC = \theta$ in degrees with a calculator's inverse tangent function.
$\theta = \tan^{-1}(\frac{opp}{adj})$

(g) Convert θ to radians. ($180° = \pi$ radians)

Mastery topic: Calculator use

9. Express the result to the nearest thousandth.

    (a) $\tan 22° =$ (c) $\tan 15° =$

    (b) $\tan 81° =$ (d) $\tan 65° =$

10. Round each value to the nearest degree.

    (a) $\tan^{-1}(2) =$ (c) $\tan^{-1}(1) =$

    (b) $\tan^{-1}(0.5) =$ (d) $\tan^{-1}(\dfrac{1}{\sqrt{3}}) =$

Mastery topic: Modeling. Do Not Solve

11. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JK = 11$, $m\angle J = 18°$. (mark the diagram)

Let x be the length of the side opposite $\angle J$, $x = KL$. Write an equation expressing $\tan \angle J$ as a ratio of *opposite* over *adjacent*.