

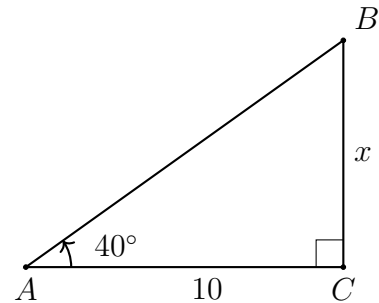
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10.7 Quiz: The tangent function

CCSS.HSG.SRT.C.8

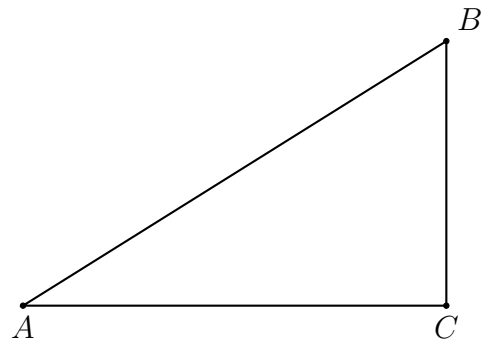
You must write an equation before solving it. Figures are not necessarily drawn to scale.

1. Given right $\triangle ABC$ with $AC = 10$, $m\angle A = 40^\circ$. Find the value of $BC = x$.



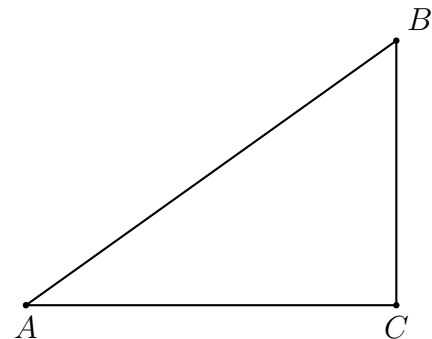
2. Given right $\triangle ABC$ with $m\angle C = 90^\circ$, $BC = 5$, $m\angle A = 38^\circ$. (mark the diagram)

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



3. Given right $\triangle ABC$ with $m\angle C = 90^\circ$, $BC = 11$, $AC = 17$, and $m\angle A = x^\circ$. (mark the diagram)

Write an equation expressing $\tan x$ as a ratio of *opposite* over *adjacent*.

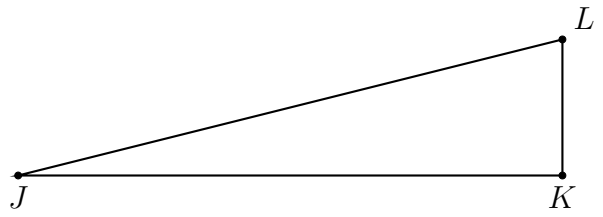


4. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JK = 20$, $m\angle J = 11^\circ$. (mark the diagram)

Let x be the length of the side opposite $\angle J$, $x = KL$. Write an equation expressing

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$\tan \angle J$ as a ratio of *opposite* over *adjacent*.



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Mastery topic: Algebraic solution

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

5. $\tan 75^\circ = \frac{x}{15}$

6. $\tan 26^\circ = \frac{4}{x}$

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

8. $\tan x^\circ = \frac{17}{9}$

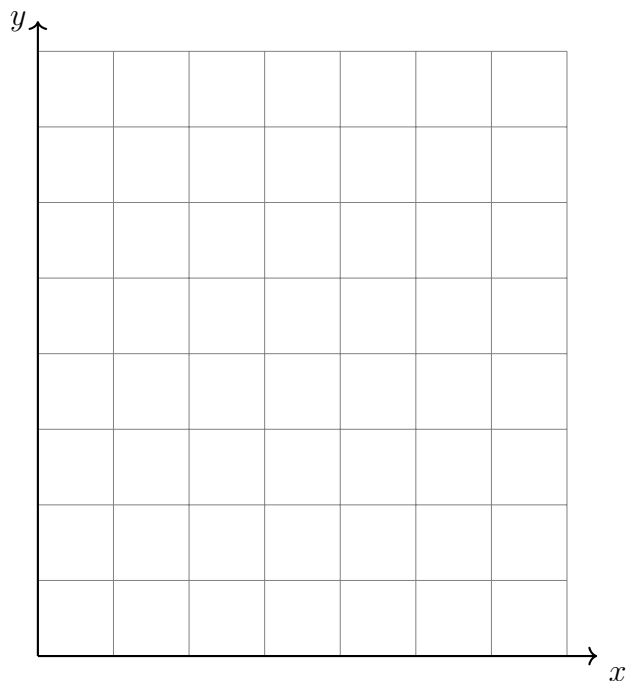
9. Graph and label $\triangle ABC$ with $A(0, 0)$, $B(3, 6)$, and $C(3, 0)$. Calculate each value:

(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.

$\theta = \tan^{-1}\left(\frac{opp}{adj}\right)$

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

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Mastery topic: Calculator use

10. Express the result to the nearest thousandth.

(a) $\tan 22^\circ =$

(c) $\tan 15^\circ =$

(b) $\tan 81^\circ =$

(d) $\tan 65^\circ =$

11. Round each value to the nearest degree.

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

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

(b) $\tan^{-1}(0.5) =$

(d) $\tan^{-1}\left(\frac{1}{\sqrt{3}}\right) =$

Mastery topic: Modeling. Do Not Solve

12. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JK = 11$, $m\angle J = 18^\circ$. (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*.

