

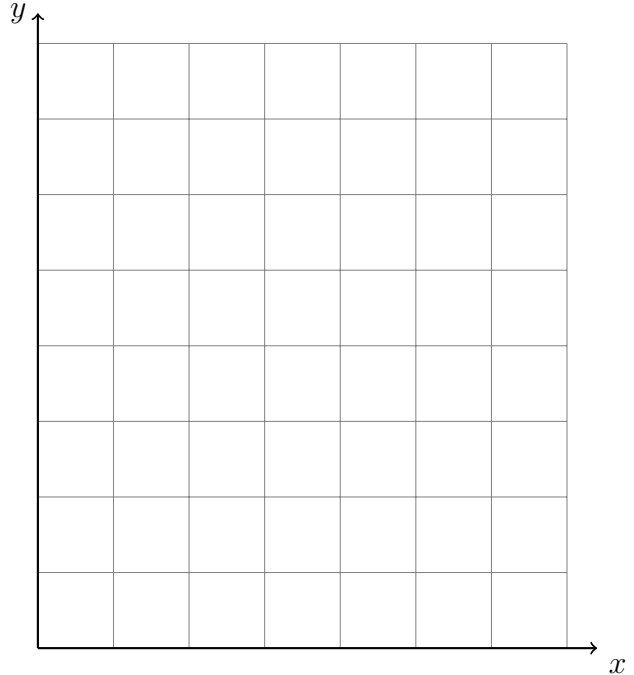
7 January 2020

7.4b Classwork Mastery: Tangent function (collect 8 stars for each topic)**Mastery topic: Interpreting tangent graphically**

1. Graph and label $\triangle ABC$ with $A(0, 0)$, $B(4, 7)$, and $C(4, 0)$. Calculate each length:

(a) $AC =$

(1 star)



(b) $BC =$

(1 star)

(c) $AB = \sqrt{AC^2 + BC^2}$

(2 stars)

- (d) Use a protractor to measure
- $\angle BAC$
- in degrees.

(1 star)

- (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.

(1 star)

$\tan \angle BAC =$

- (f) Find
- $m\angle BAC$
- with a calculator's inverse tangent function,

$$m\angle BAC = \tan^{-1}\left(\frac{\text{opp}}{\text{adj}}\right)$$

(2 stars)

Mastery topic: Calculator use

2. Express the result to the nearest thousandth. (1 star each)

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

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

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

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

3. Round each value to the nearest degree. (1 star each)

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

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

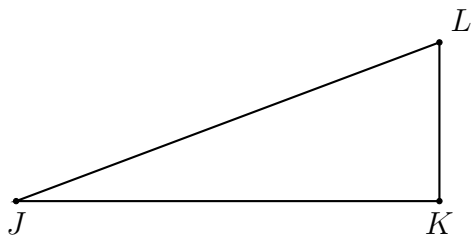
(b) $\tan^{-1}(0.5) =$

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

Mastery topic: Modeling. Do Not Solve

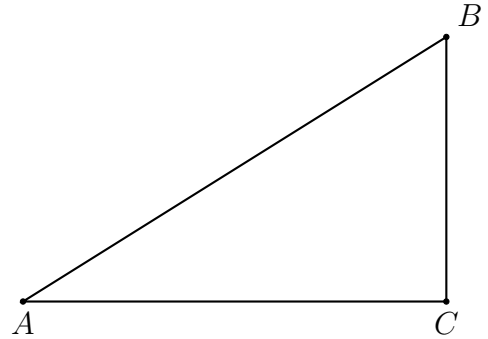
4. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JK = 11$, $m\angle J = 18^\circ$. (mark the diagram)

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*. (2 stars)



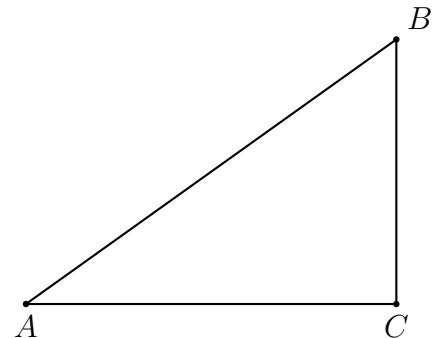
5. Given right $\triangle ABC$ with $m\angle C = 90^\circ$, $BC = 5$, $m\angle A = 38^\circ$. (mark the diagram)

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*. (2 stars)



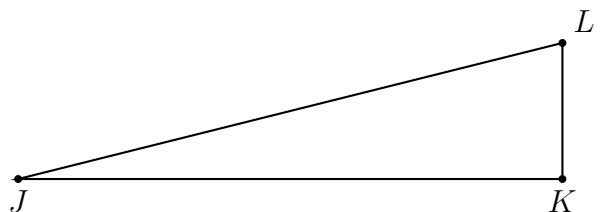
6. Given right $\triangle ABC$ with $m\angle C = 90^\circ$, $BC = 11$, $AC = 17$, and $m\angle A = x^\circ$. (mark the diagram)

Write an equation expressing $\tan x$ as a ratio of *opposite* over *adjacent*. (2 stars)



7. 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 $\tan \angle J$ as a ratio of *opposite* over *adjacent*. (2 stars)



Mastery topic: Algebraic solution

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

8. $\tan 75^\circ = \frac{x}{15}$ (2 stars)

9. $\tan 26^\circ = \frac{4}{x}$ (3 stars)

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

11. $\tan x^\circ = \frac{17}{9}$ (3 stars)