

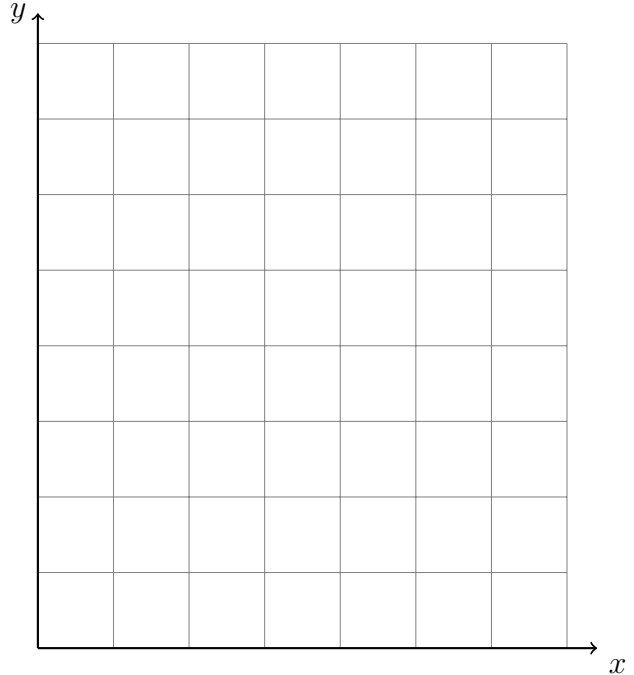
9 January 2020

7.6b Classwork Mastery: Tangent function (collect 8 stars for each topic)**Mastery topic: Interpreting tangent graphically**

1. Graph and label $\triangle ABC$ with $A(0, 0)$, $B(5, 5)$, and $C(5, 0)$. 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,

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

(2 stars)

Mastery topic: Algebraic solution**(2 stars each)**

2. Solve each equation for x , rounding to the nearest hundredth.

(a) $\tan 63^\circ = \frac{x}{14}$

(c) $\sin 46^\circ = \frac{x}{3.5}$

(b) $\tan 77^\circ = \frac{10}{x}$

(d) $\cos 35^\circ = \frac{x}{21}$

3. Solve for x , rounding to the nearest whole degree.

(a) $x = \tan^{-1}\left(\frac{12}{5}\right)$

(b) $\tan x^\circ = \frac{3.2}{4.8}$

Name:

Mastery topic: Calculator use

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

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

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

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

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

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

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

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

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

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

6. Round each value to the nearest hundredth. (2 stars each)

(a) $AB = \sqrt{11^2 + 7^2}$

(c) $AB = \sqrt{(-8.0)^2 + (14.5)^2}$

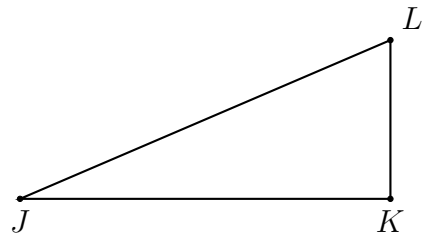
(b) $AB = \sqrt{3.2^2 + 1.9^2}$

(d) $AB = \sqrt{(4 - 3)^2 + (7 - 11)^2}$

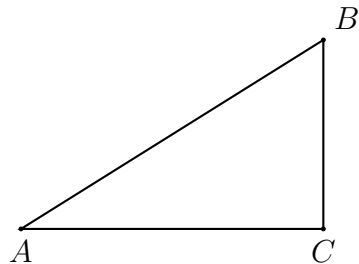
Modeling: Mark each diagram and write an equation. Do Not Solve!

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

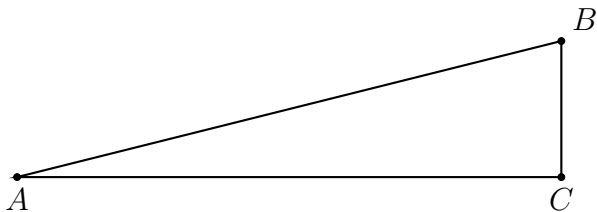
7. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JK = 8$, $m\angle J = 24^\circ$. Let x be the length of the side opposite $\angle J$, $x = KL$. (2 stars)



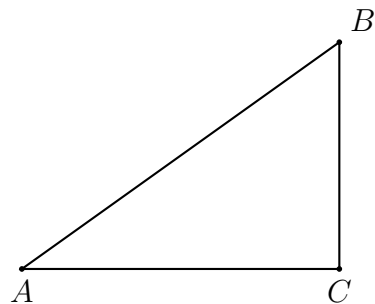
8. Given right $\triangle ABC$ with $m\angle C = 90^\circ$, $BC = 15$, $m\angle A = 41^\circ$. Let $x = AC$. (2 stars)



9. Given right $\triangle ABC$ with $m\angle C = 90^\circ$, $BC = 4$, $AC = 19$, and $m\angle A = x^\circ$. (2 stars)



10. Given right $\triangle ABC$ with $\overline{AC} \perp \overline{BC}$, $BC = 7$, $m\angle B = 55^\circ$. Let $x = AC$. (3 stars)



Name:

Mixed practice (test tomorrow)

11. Convert each equation to slope-intercept form, $y = mx + b$.

(a) $3x + y = 2$ (2 stars)

(b) $x - 4y = 12$ (2 stars)

12. Given $\triangle ABC$ is isosceles but not equilateral with $\angle A \cong \angle C$. (not draw to scale)

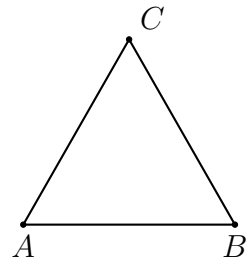
- (a) Mark the congruent sides & angles of $\triangle ABC$.

Circle True or False:

(b) True False $\overline{AB} \cong \overline{BC}$

(c) True False $\overline{AB} \cong \overline{AC}$

(d) True False $\overline{BC} \cong \overline{AC}$



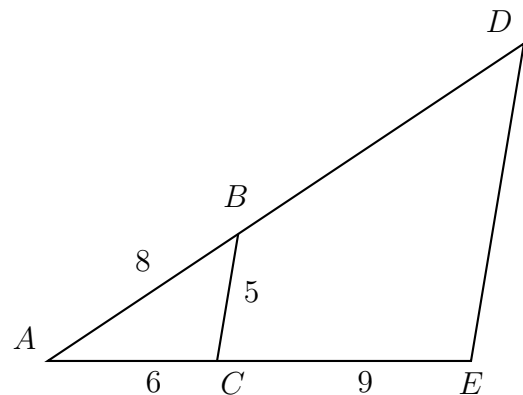
13. A dilation centered at A maps $\triangle ABC \rightarrow \triangle ADE$. Given the lengths $AC = 6$, $BC = 5$, $AB = 8$, and $CE = 9$. Find AE and then the scale factor k . Then find the lengths AD and DE .

(a) $AE =$

(b) $k =$

(c) $AD =$

(d) $DE =$



14. (a) Graph and label the two equations. Mark their intersection as an ordered pair.

$$y = \frac{2}{3}x - 5$$

$$y = -2x + 3$$

(4 pts)

- (b) Find the slopes of the two lines.

(2 points)

$$m_1 =$$

$$m_2 =$$

- (c) Are the lines parallel, perpendicular, or neither? Justify your answer with an equation or inequality using the slopes. (2 points)

