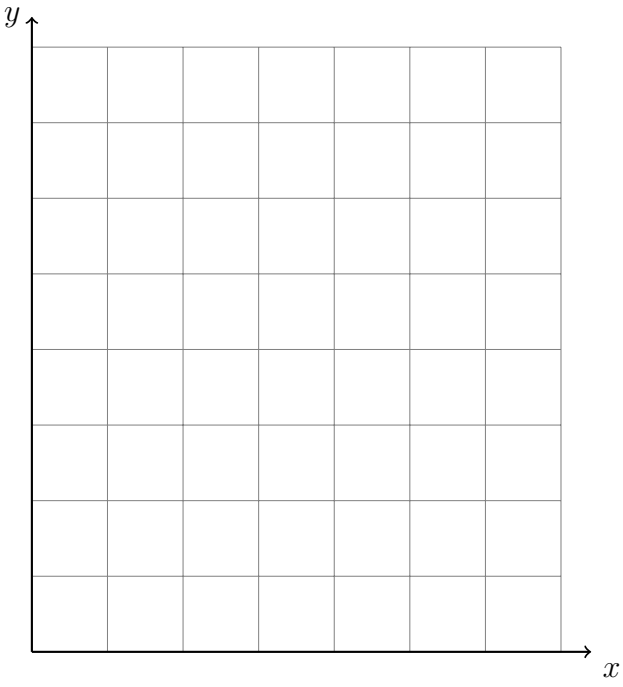
BECA / Dr. Huson / Geometry 07-Similarity Name:
pset ID: 109

7-4bCW-Tangent

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,
$m\angle BAC = \tan^{-1}(\frac{opp}{adj})$ (2 stars)

Mastery topic: Calculator use

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

   (a) $\tan 22° =$

   (b) $\tan 81° =$

   (c) $\tan 15° =$

   (d) $\tan 65° =$

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

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

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

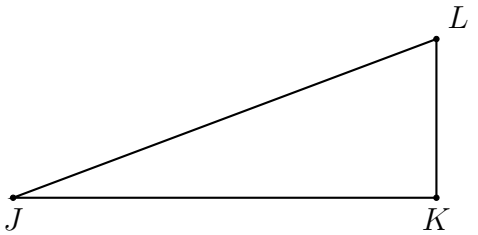
   (c) $\tan^{-1}(1) =$

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

Mastery topic: Modeling. Do Not Solve

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



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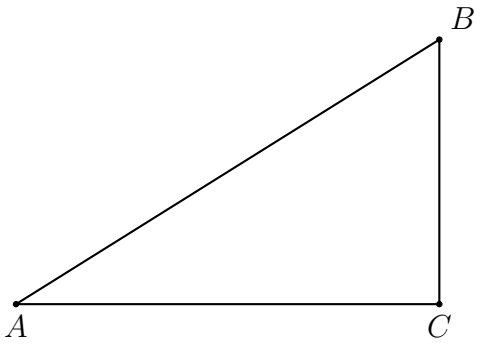
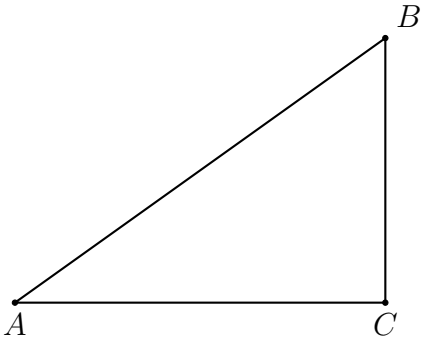
5. Given right $\triangle ABC$ with $m\angle C = 90°$, $BC = 5$, $m\angle A = 38°$. (mark the diagram)

   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)



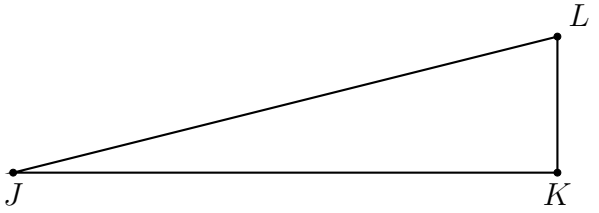
6. Given right $\triangle ABC$ with $m\angle C = 90°$, $BC = 11$, $AC = 17$, and $m\angle A = x°$. (mark the diagram)

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



7. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JK = 20$, $m\angle J = 11°$. (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. $\tan 75^\circ = \dfrac{x}{15}$ (2 stars)

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

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

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