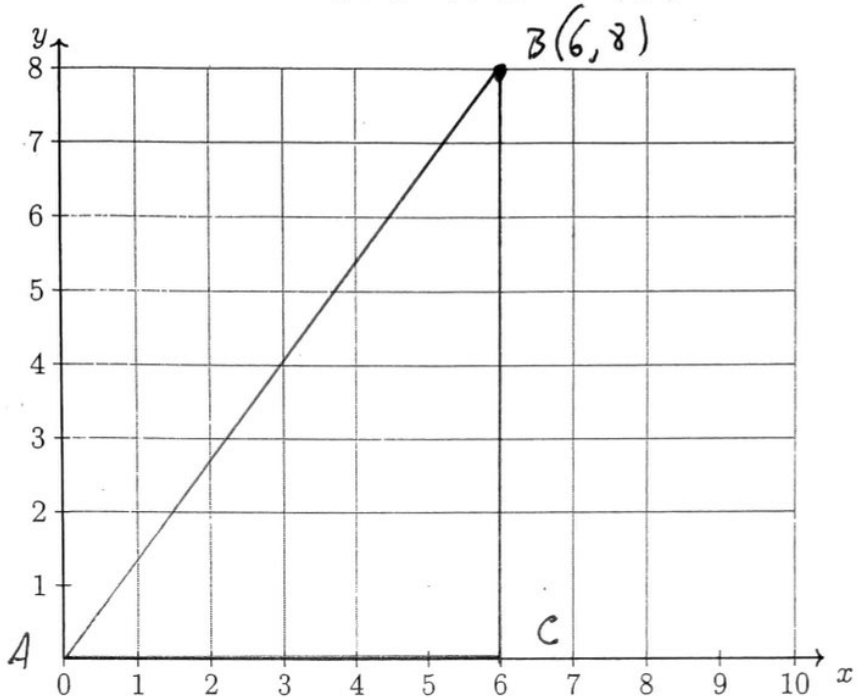
Name: Solutions

11.1 Classwork: Tangent **CCSS.HSG.SRT.C.8**

1. (a) Graph and label $\triangle ABC$ with $A(0,0)$, $B(6,8)$, and $C(6,0)$.



(b) Find the lengths of the sides of $\triangle ABC$.

$AC =$ 6 $\quad BC =$ 8 $\quad AB = \sqrt{AC^2 + BC^2}$

$= \sqrt{(36+64)}$

$= \sqrt{100} = 10$

(c) Find the slope and y-intercept of the line $\overleftrightarrow{AB}$.

$m_{AB} = \frac{8}{6} = \frac{4}{3} = 1.3\overline{3} \quad b_{AB} =$ 0

(d) Write down the equation of each line.

$\overleftrightarrow{AB}$: $y = \frac{4}{3}x + 0$ $\quad \overleftrightarrow{BC}$: $x = 6$ $\quad \overleftrightarrow{AC}$: $y = 0$

(e) Find the measure of $\angle BAC = \theta$ in degrees with a protractor.

53°

(f) Find the slope of $\overleftrightarrow{AB}$ using the calculator's tangent function.

$\tan(\theta) =$ 1.3270...

$\approx$ 1.33

2. Use a calculator. Complete the table mapping angle measures to slope.

(a) $\tan 15° =$ 0.2679...

(b) $\tan 30° =$ 0.57735...

(c) $\tan 45° =$ 1.000

(d) $\tan 60° =$ 1.73205...

(e) $\tan 75° =$ 3.73205...

(f) $\tan 90° =$ ∞

(3 decimal places)

angle θ	$\tan(\theta)$
0	0
15°	0.268
30	0.577
45	1.000
60	1.732
75	3.732
90	undefined

3. Complete the table. Use the Pythagorean theorem, $a^2 + b^2 = c^2$, and your table in #2.

coordinate pair (x, y)	hypotenuse (c)	slope (m)	angle θ
$(24, 7)$	25	0.29...	16°
$(15, 8)$	17	$0.5\overline{3}$	28°
$(4, 3)$	5	0.75	37°
$(6, 8)$	10	$1.3\overline{3}$	53°
$(5, 12)$	13	2.4	67°