Algebra 1 Name KEY ID: 1

FUNC.c Date Period

FUNC.c.1
Given two points, find the slope of a line.

Clearly show your work. Label your your calculations and final answer using the correct variable notation. Circle your final answer.

1) $(12, -2), (0, -11)$ (x_1, y_1) (x_2, y_2)

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{-11-(-2)}{0-(12)} = \frac{-11+2}{-12} = \frac{-9}{-12}$

$m = \frac{3}{4}$

① Reduce FRACTION
② Keep as an Improper FRACTION

Show work like this + LABEL "Variable "m"

2) $(5, -2), (-7, 4)$

$m = \frac{\Delta y}{\Delta x}$ order of variables does not matter

$m = \frac{-2-4}{5-(-7)} = \frac{-6}{5+7} = \frac{-6}{12}$

$m = \frac{-1}{2}$

3) $(9, -5), (9, -15)$

$m = \frac{-15-(-5)}{9-9} = \frac{-10}{0}$

m = UNDEFINED

4) $(-15, -14), (18, -14)$

$m = \frac{-14-(-14)}{-15-18} = \frac{0}{-33}$

$m = 0$

Algebra 1 Slope-Intercept Form: $y = mx + b$ Name KEY ID: 1

FUNC.c $f(x) = mx + b$ Date _____ Period ____

FUNC.c.2

Write the function of a line in slope-intercept form, given a point and the ordered pair for the y-intercept.

1) Clearly show work to find the slope using the correct variable notation. (Green)
2) Identify the y-intercept using the correct variable notation. (PINK)
3) Write the linear function in slope intercept form using function notation. (red)

1) through: $(-2, -1)$ and $(0, -4)$ ← y-intercept

$$m = \frac{-1 - (-4)}{-2 - 0} = \frac{-3}{2}$$

$$m = \frac{-3}{2}$$

$b = -4$

$f(x) = \frac{-3}{2}x - 4$

2) through: $(-4, 0)$ and $(0, -2)$ ← y-INTERCEPT

$$m = \frac{0 - (-2)}{-4 - 0} = \frac{2}{-4}$$

$$m = -\frac{1}{2}$$

$b = -2$

$f(x) = -\frac{1}{2}x - 2$

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FUNC.c.3
Write the function of a line in slope intercept form, given two points.

1) Clearly show work to find the slope using the correct variable notation. (Green)
2) Clearly show work to find the y-intercept using the correct variable notation. (purple)
3) Write the linear function in slope intercept form using function notation. (red)

1) through: $(-3, 5)$ and $(2, -5)$

$$m = \frac{5-(-5)}{-3-2} = \frac{10}{-5}$$

$$m = -2$$

2) through: $(1, -1)$ and $(-5, -1)$

$$m = \frac{-1-(-1)}{1-(-5)} = \frac{0}{6}$$

$$m = 0$$

Method I:
- pick a point and put in point-slope form:

$y - y_1 = m(x - x_1)$; point (x_1, y_1)

P/S
$y - 5 = -2(x+3)$
$y - 5 = -2x - 6$
$+5 \quad +5$
S/I
$y = -2x - 1$

$f(x) = -2x - 1$

P/S
$y + 1 = 0(x-1)$
$y + 1 = 0$
$-1 \quad -1$
S/I
$y = -1$

$f(x) = -1$

Method II: pick a point; put in slope-intercept form; and solve for "b".

$y = mx + b$
$5 = -2(-3) + b$
$5 = 6 + b$
$-6 \quad -6$
$b = -1$

$f(x) = -2x - 1$

$-1 = 0(1) + b$
$b = -1$

$f(x) = 0x - 1$ OR $f(x) = -1$

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FUNC.c.4

Given two points from two different functions, determine if the lines are parallel, perpendicular, or neither; justify the decision.

1) Clearly show work for function f(x). Label f(x). (Green)
2) Clearly show work for function g(x). Label g(x).
3) Determine if the lines are parallel, perpendicular, or neither; justify your decision.

1) Function f(x) has points (-3, 1) and (3, 5)
Function g(x) has points (-2, 6) and (4, 3)

f(x): $m = \frac{1-5}{-3-3} = \frac{-4}{-6}$ $m = -\frac{2}{3}$

g(x): $m = \frac{6-3}{-2-4} = \frac{3}{-6}$ $m = -\frac{1}{2}$

Neither

2) Function f(x) has points (-2, 8) and (3, -2)
Function g(x) has points (-2, -3) and (6, 1)

f(x): $m = \frac{8-(-2)}{-2-3} = \frac{10}{-5}$ $m = -2$

g(x): $m = \frac{-3-1}{-2-6} = \frac{-4}{-8}$ $m = \frac{1}{2}$

⊥ LINES

3) Function f(x) has points (-4, 5) and (8,2)
Function g(x) has points (4, -3) and (12, -5)

f(x): $m = \frac{5-2}{-4-8} = \frac{3}{-12}$ $m = -\frac{1}{4}$

g(x): $m = \frac{-3-(-5)}{4-12} = \frac{2}{-8}$ $m = -\frac{1}{4}$

// LINES

Parallel (//) lines have the same slopes.

Perpendicular (⊥) lines have negative reciprocal slopes.