Day 6 – Equations of Lines – Putting it all Together

Geometry (G.GPE.5)

Name ___KEY___

Date _____ Per _____

1. Identify the lines that are perpendicular __A & D__

   Identify the lines that are parallel __A & C__.

   A) $y = 2x + 3$
   B) $y - 4 = \frac{1}{2}(x + 5)$
   C) $y = 2x$
   D) $y + 1 = -\frac{1}{2}(x + 7)$

2. Find the slope of each line. Then determine if the lines are parallel, perpendicular or neither.

   Line 1: $(2, 3), (-1, 4)$, slope = __$-\frac{1}{3}$__

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

   Line 2: $(3, -1), (4, -4)$, slope = __-3__

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

   Parallel, perpendicular, or (neither?)

3. Find the slope of each line. Determine if the lines are parallel, perpendicular, or neither and **explain your answer**.

   Line 1: $y = \frac{1}{3}x + 2$

   $m = \frac{1}{3}$

   Line 2: $y - \frac{1}{3} = 2(x + 1)$

   $m = 2$

   Parallel/Perpendicular/(Neither?)

   SLOPES ARE NEITHER THE SAME NOR OPPOSITE RECIPROCALS

4. Find the slopes of lines 1, 2, and 3. Then determine which lines are parallel or perpendicular to each other and **explain your answer**.

   Line 1: $(2, 3)(0, 2)$

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

   Line 2: $y = -\frac{1}{2}x + 4$

   Line 3: $y + 5 = \frac{1}{2}(x - 4)$

   LINES 1 AND 3 ARE PARALLEL, BECAUSE THEY HAVE THE SAME SLOPES

   NO PERPENDICULAR LINES

   slope: __$\frac{1}{2}$__

   slope: __$-\frac{1}{2}$__

   slope: __$\frac{1}{2}$__

5. Determine the equation of the line that is parallel to the line $y = \frac{1}{2}x - 3$ and passes through (-2, 4) in slope-intercept and point-slope form. $m = \frac{1}{2}$

$$y - 4 = \frac{1}{2}(x - (-2))$$

$$y - 4 = \frac{1}{2}(x + 2) \quad \text{POINT-SLOPE}$$

$$y - 4 = \frac{1}{2}x + 1$$
$$+4 \qquad\qquad +4$$

$$y = \frac{1}{2}x + 5 \quad \text{SLOPE-INTERCEPT FORM}$$

6. Determine the equation of the line that is perpendicular to the line $y = 3x + 5$ and passes through (6, 4) in slope-intercept and point-slope form. $m = -\frac{1}{3}$

$$y - 4 = -\frac{1}{3}(x - 6) : \text{POINT-SLOPE}$$

$$y - 4 = -\frac{1}{3}(x - 6)$$

$$y - 4 = -\frac{1}{3}x + 2$$
$$+4 \qquad\qquad +4$$

$$y = -\frac{1}{3}x + 6 : \text{SLOPE-INTERCEPT}$$

7. Give an equation of a line in slope-intercept form that is parallel to $y = 4x + 3$ $y = 4x - 12$

Give an equation of a line in slope-intercept form that is parallel to $y = -\frac{1}{4}x - 1$ $y = -\frac{1}{4}x + 7$

If all 4 of the lines were graphed on the same coordinate plane, would they form a rectangle?

Why or why not?   YES: ① 2 PAIR OF OPPOSITE SIDES ARE PARALLEL, AND:

② LINES WITH SLOPES OF 4 AND $-\frac{1}{4}$ ARE ⊥ (FORM RIGHT ∡ CORNERS)