

# Geometry Unit 1—Coordinate Geometry Review

1. Write an equation in slope-intercept form that is perpendicular to  $2x-4y=10$  and goes through  $(4,1)$ .

$2x-4y=10 \rightarrow y = \frac{1}{2}x - \frac{5}{2}$      $\perp m = -2$      $y-1 = -2(x-4)$      $y = -2x+9$   
 $\frac{-4y}{-4} = \frac{-2x+10}{-4}$      $\text{so } m = \frac{1}{2}$      $y-1 = -2x+8$

2. Write an equation in slope-intercept form that is parallel to  $x+3y=10$  and goes through  $(2,3)$

$x+3y=10 \rightarrow 3y = -x+10 \rightarrow y = -\frac{1}{3}x + \frac{10}{3}$      $m = -\frac{1}{3}$      $\text{so } y-3 = -\frac{1}{3}(x+2)$   
 $3y = -x+10$      $\parallel m = -\frac{1}{3}$      $y-3 = -\frac{1}{3}x - \frac{2}{3}$   
 $y = -\frac{1}{3}x + \frac{10}{3}$      $y = -\frac{1}{3}x + \frac{11}{3}$

3. Determine if the lines are parallel, perpendicular, or neither. Explain why.

$6x-2y=4 \rightarrow -2y = -6x+4 \rightarrow y = 3x-2$   
 $-3x+9y=5 \rightarrow 9y = 3x+5 \rightarrow y = \frac{1}{3}x + \frac{5}{9}$

Neither. They are not parallel b/c their slopes are not  $=$ . They are not perpendicular b/c even though the slopes are reciprocals they are not opposite reciprocals.

4. Write the equation of the line that goes through  $(1,4)$  and  $(-2,-11)$  in

$m = \frac{-11-4}{-2-1} = \frac{-15}{-3} = 5$

A. point-slope form

$y-4 = 5(x-1)$  or  $y+11 = 5(x+2)$

B. slope-intercept form

$y-4 = 5x-5$   
 $y = 5x-1$

C. standard form.

$-1(-5x+y=-1)$   
 $5x-y=1$

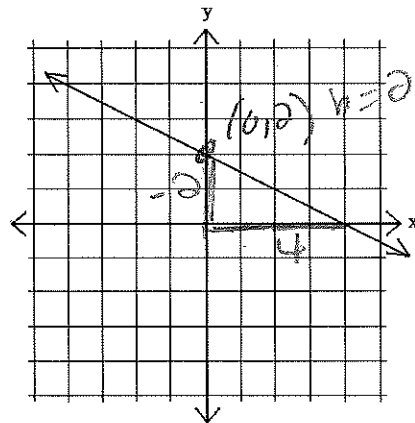
5. Write the equation of the line in

A. slope-intercept form

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

B. standard form.

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



$m = \frac{\text{rise}}{\text{run}}$   
 $= \frac{-2}{4}$   
 $= -\frac{1}{2}$

6. Solve the equation  $\frac{1}{2} - a = \frac{3}{4} + \frac{1}{3}a$

$6 - 12a = 9 + 4a$   
 $+12a$      $+12a$   
 $6 = 9 + 16a$   
 $-9$      $-9$

$-3 = 16a$   
 $a = -\frac{3}{16}$

7.  $x - (1 - 4x) = 5x - 6$

$x - 1 + 4x = 5x - 6$

$5x - 1 = 5x - 6$

$-1 \neq -6$

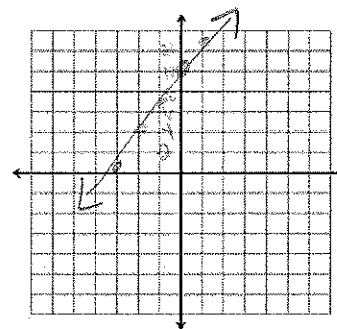
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8. Graph the equation  $y - 4 = 3(x + 2)$  and identify the slope and y-intercept.

Slope 3

Y-intercept (0, 10)

$y - 4 = 3x + 6$   
 $y = 3x + 10$



9. Graph the equation  $3x + 6y = 18$ . Identify the intercepts.

x-intercept (6, 0)

y-intercept (0, 3)

x int  
 $3x + 6(0) = 18$   
 $3x = 18$   
 $x = 6$   
 $(6, 0)$

y int  
 $3(0) + 6y = 18$   
 $6y = 18$   
 $y = 3$   
 $(0, 3)$

