

$$y = mx + b \quad (\text{Slope intercept form})$$

$$ax + by + c = 0 \quad (\text{General form})$$

Ex: $4x + 5y - 10 = 0$ (General form)

$$\frac{5y}{5} = \frac{-4x + 10}{5}$$

$$y = -\frac{4}{5}x + 2 \quad (\text{Slope Intercept Form})$$

Ex. $y = \frac{2}{3}x - 7$ (Slope Intercept form)

$$0 = \frac{2}{3}x - \frac{4}{1} - \frac{7}{1} \quad \text{common denominator} = 3$$

$$0 = 2x - 3y - 21 \quad (\text{General form})$$

① a) Determine the equation of a line Parallel to
 $\underline{5y = 10 - 3x}$ and passing through $(-2, 7)$
 $x_1 = -2$
 $y_1 = 7$

① Determine Slope

$$5y = 10 - 3x$$

$$\frac{5y}{5} = \frac{-3x + 10}{5}$$

$$y = -\frac{3}{5}x + 2$$

$$m = -\frac{3}{5}$$

$$m_{||} = -\frac{3}{5}$$

② Determine equation

$$y - y_1 = m(x - x_1)$$

$$y - 7 = -\frac{3}{5}(x - (-2))$$

$$y - 7 = -\frac{3}{5}(x + 2)$$

$$y - 7 = -\frac{3x}{5} - \frac{6}{5}$$

$$y = -\frac{3x}{5} - \frac{6}{5} + \frac{7}{1}$$

$$y = -\frac{3x}{5} - \frac{6}{5} + \frac{35}{5}$$

(Slope Intercept) $y = -\frac{3}{5}x + \frac{29}{5}$

$$3x + 5y - 29 = 0 \quad \text{CD} = 5$$

(General form) $3x + 5y - 29 = 0$

Equations of Lines



Kicking it up a notch!!



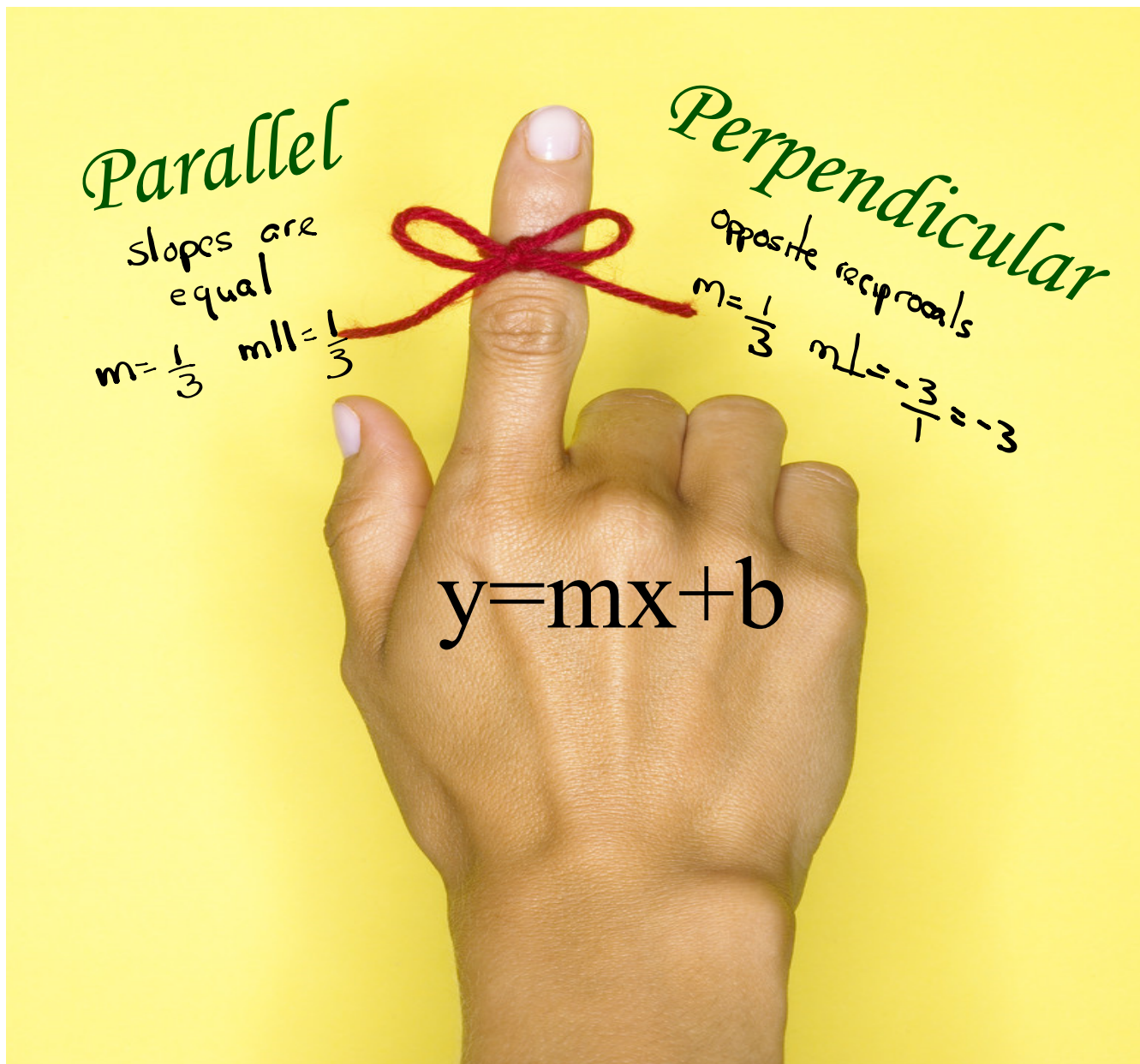
$$y - \underline{y_1} = \underline{m}(x - \underline{x_1})$$

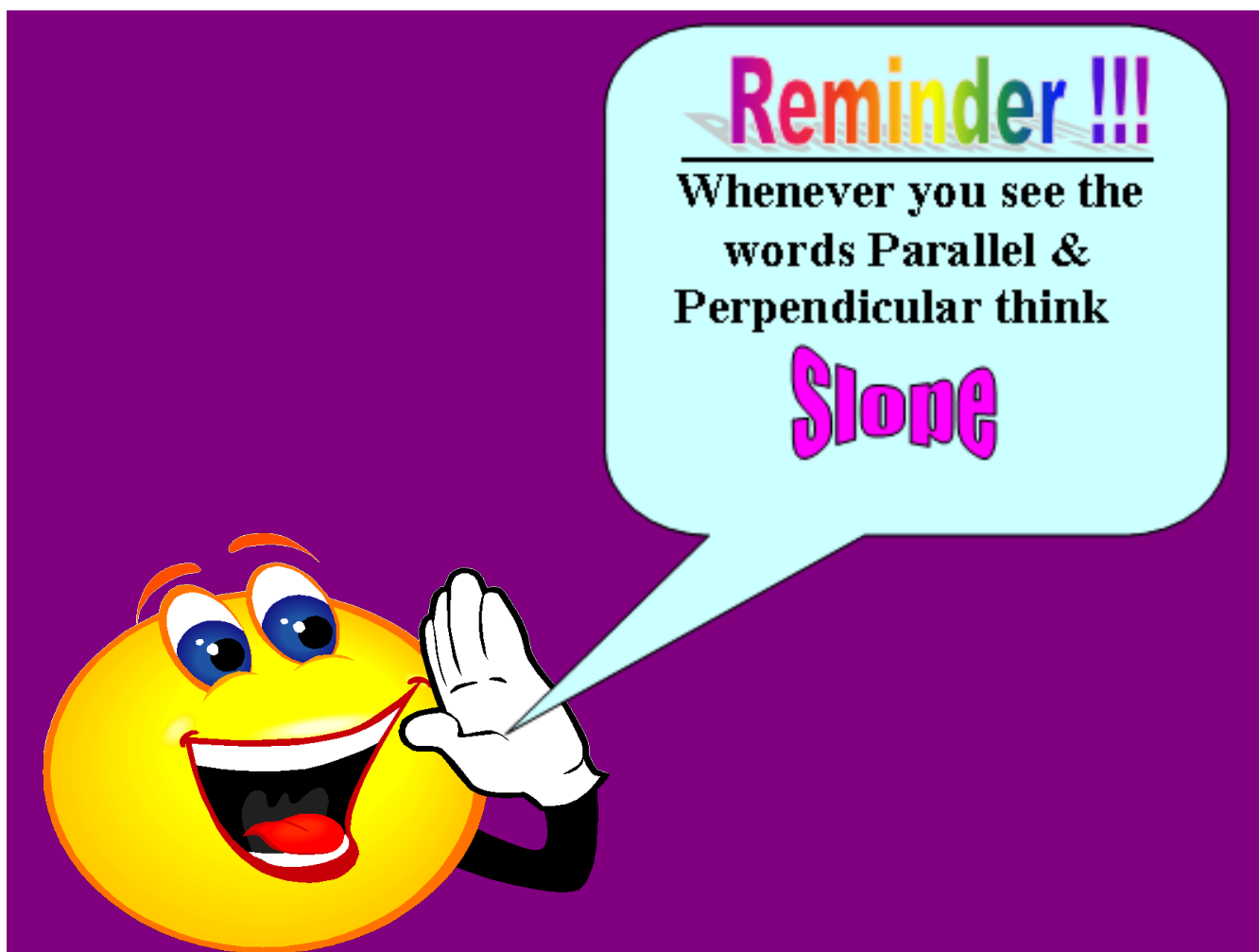
m = Slope

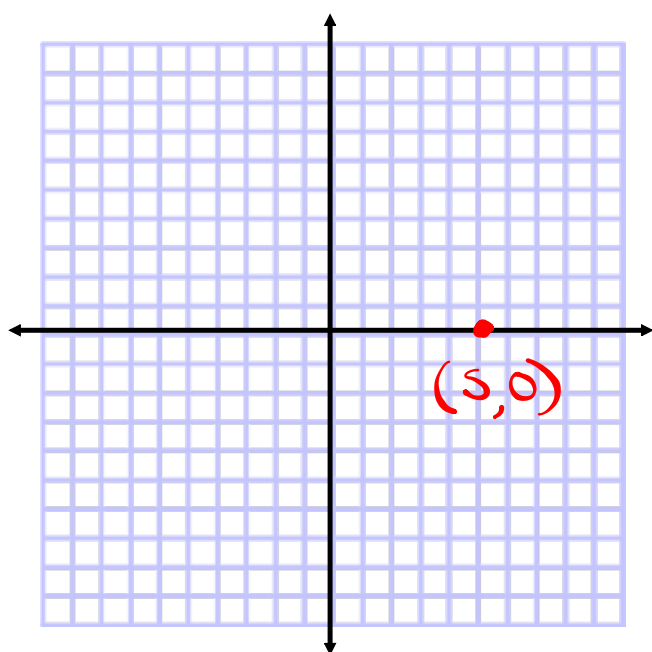
(x_1, y_1) = Point

$$x = x$$

$$y = y$$







(Points) = (x, y)

x-intercept = 5

$(y=0)$

Do you know the
co-ordinate?



#1 Find the equation of a line parallel to $3y=4x-1$ and passing through the point $(4,2)$.

(Express your answer in point slope form please.)



#2 Determine the equation of a line perpendicular to $4x+5y=7$ and having an x -intercept of -2 .
(Express your answer in slope intercept form please.)



#3 Determine the equation of a horizontal line with a y-intercept of -3
(Express your answer in general form please.)



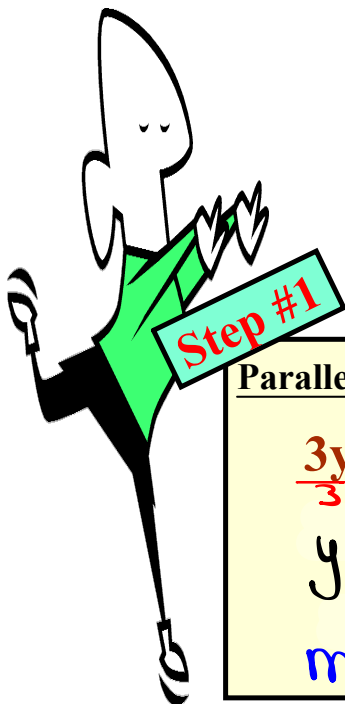


Check out the sheet.

Find the equation of a line parallel to $3y=4x-1$ and passing through the point $(4,2)$.

$$x_1 = 4$$

$$y_1 = 2$$



Step #1

Parallel - (Same Slope)

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

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

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

$$m_{||} = \frac{4}{3}$$

Step #2

Write Equation in
General Form

$$y - y_1 = m(x - x_1)$$

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

$$3(y - 2) = 4x - 16 \quad CD = 3$$

$$3y - 6 = 4x - 16$$

$$0 = 4x - 3y - 16 + 6$$

$$0 = 4x - 3y - 10$$

Determine the equation of a line perpendicular to $4x+5y=7$ and having an x-intercept of -2 . $(-2,0)$

Page 372 # 4,5 (put equations in general form)

Step #1	Step #2	Step #3
<p><u>Opposite Reciprocal Slope</u></p> $4x + 5y = 7$ $\frac{5y}{5} = \frac{-4x + 7}{5}$ $y = \frac{-4}{5}x + \frac{7}{5}$ $m = -\frac{4}{5}$ <div style="border: 1px solid blue; padding: 5px; display: inline-block;"> $m \perp = \frac{5}{4}$ </div>	<p><u>Point x-int (y = 0)</u></p> <p>Point $(-2, 0)$</p> $x_1 = -2$ $y_1 = 0$	<p><u>Write Equation in General Form</u></p> $y - y_1 = m(x - x_1)$ $y - 0 = \frac{5}{4}(x - (-2))$ $y = \frac{5}{4}(x + 2)$ $4 \cdot y = \frac{4 \cdot 5x}{4} + \frac{4 \cdot 10}{4}$ $4y = 5x + 10$ <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $0 = 5x - 4y + 10$ </div>

Determine the equation of a horizontal line with a y-intercept of -3 $(0, -3)$

<p>Step #1</p> <p><u>Horizontal Line</u></p> $m = 0 = 0$	<p>Step #2</p> <p><u>Point y-int = -3</u></p> <p>Point $(0, -3)$</p> $x_1 = 0$ $y_1 = -3$	<p>Step #3</p> <p><u>Write Equation in General Form</u></p> $y = mx + b$ $y = 0x + (-3)$ $y = 0 - 3$ $y = -3$
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$$y - y_1 = m(x - x_1)$$

$$y - (-3) = 0(x - 0)$$

$$y + 3 = 0 - 0$$

$$y + 3 = 0$$

M(3, 5) U(-2, -1) D(0, -4)

Find the equation of a line
parallel to MD and passing
through U.