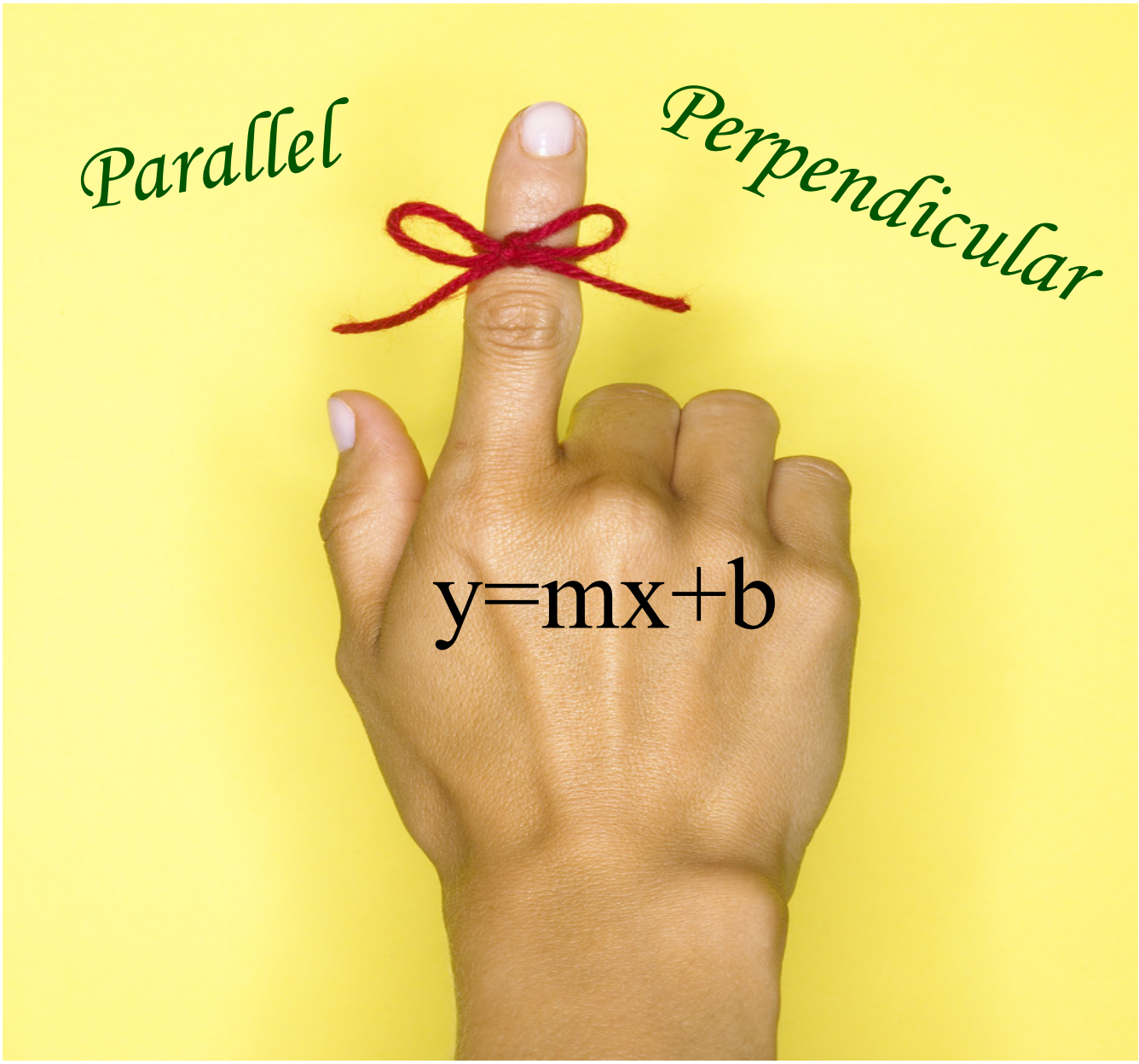

Parallel
Perpendicular
y=mx+b


Reminder !!!
Whenever you see the words Parallel & Perpendicular think
Slope


y-intercept
x=0
Reminder!
x-intercept
y=0

To Find the equation of any line:

① Find slope (m)

② Find point (x_1, y_1)

③ Find equation using $y - y_1 = m(x - x_1)$

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

Step #1

Parallel - (Same Slope)

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

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

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

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

Step #2

Point

(4,2)

$x_1 = 4$

$y_1 = 2$

Step #3

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

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

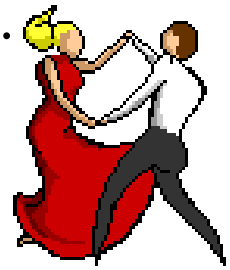
$3(y - 2) = 3(\frac{4}{3}x - \frac{16}{3})$

$3y - 6 = 4x - 16$

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

$0 = 4x - 3y - 10$

Determine the equation of a line perpendicular to $4x+5y=7$ and having the same x-intercept as $10x+7y=-20$.



Step #1

Opposite Reciprocal Slope

$4x+5y=7$

$\frac{5y}{5} = \frac{-4x}{5} + \frac{7}{5}$

$y = \frac{-4}{5}x + \frac{7}{5}$

$m = -\frac{4}{5}$

$m_\perp = \frac{5}{4}$

Step #2

Point x-int (y = 0)

$10x+7y=-20$

$10x+7(0)=-20$

$10x+0=-20$

$\frac{10x}{10} = \frac{-20}{10}$

$x=-2$

Point $(-2,0)$

$x_1=-2$

$y_1=0$

Step #3

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

$y-0=\frac{5}{4}(x-(-2))$

$y-0=\frac{5}{4}(x+2)$

Slope point form

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

$y=\frac{5}{4}x+\frac{5}{2}$

Slope intercept form

$4y=5x+10$

$0=5x-4y+10$

general form

Determine the equation of a horizontal line passing through the same point on the y-axis as $3y = 6x - 9$

y-intercept

Step #1

Slope of a horizontal line

$m = 0$

Step #2

Point y-int ($x=0$)

$3y = 6x - 9$

$3y = 6(0) - 9$

$3y = 0 - 9$

$\frac{3y}{3} = \frac{-9}{3}$

$y = -3$

Point $(0, -3)$

$x_1 = 0$

$y_1 = -3$

Step #3

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

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

$y + 3 = 0$

M(3, 5) U(-2, -1) D(0, -4)
Find the equation of a line parallel to MD and passing through U.

slope:

point:

(x,y):