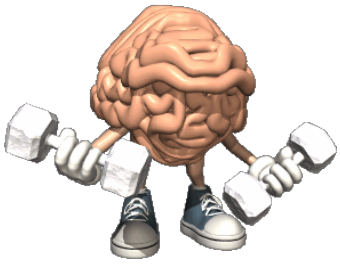
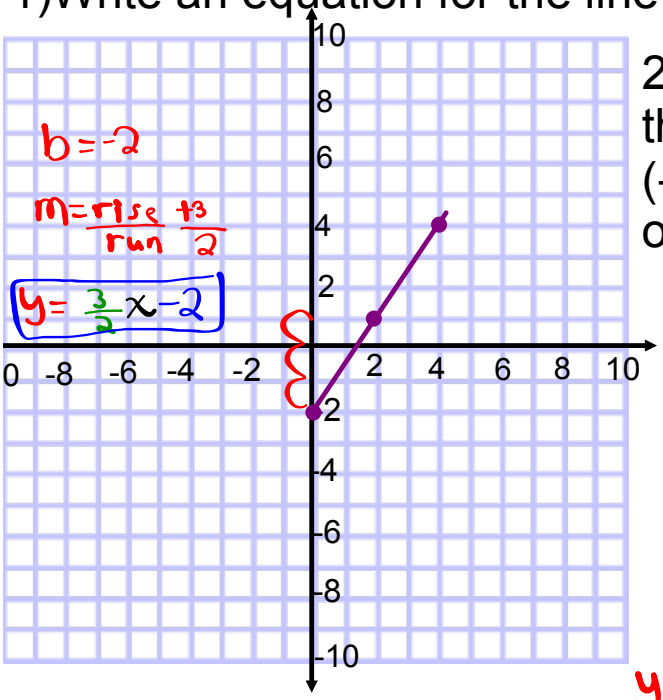
Test Dec. 13 Wednesday

$y = mx + b$

Warm Up



1)Write an equation for the line :



2)Write an equation of a line that passes through (-7, 4) and (-5, 10) and has a y intercept of -5.

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

$= \frac{(10) - (4)}{(-5) - (-7)}$

$= \frac{6}{2}$

$m = 3$ $\quad b = -5$

$y = mx + b$

$y = 3x - 5$

3) Given the equations $y = \frac{2}{5}x + 6$, state the

$y = mx + b$ (m: slope, b: y-intercept)

i) Slope $\frac{2}{5}$

ii) y-intercept = 6

iii) x- intercept

x-intercept Let $y = 0$

$y = \frac{2}{5}x + 6$

$0 - 6 = \frac{2}{5}x + 6 - 6$

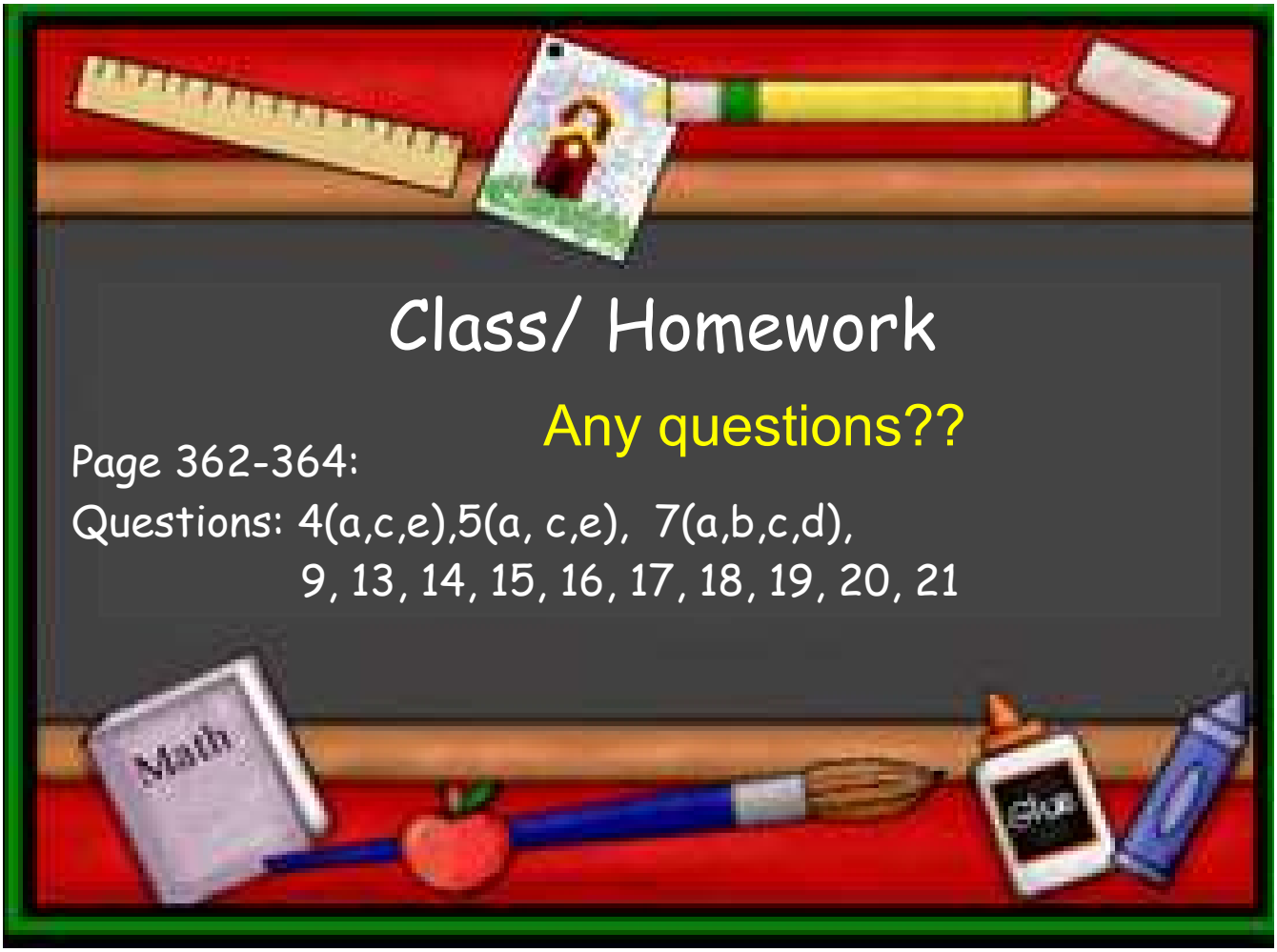
$-6 = \frac{2}{5}x$

$(5)\ -6 = \frac{2x}{5}(5)$

$-30 = 2x$

$\frac{-30}{2} = \frac{2x}{2}$

$-15 = x$


Class/ Homework
Any questions??
Page 362-364:
Questions: 4(a,c,e),5(a, c,e), 7(a,b,c,d),
9, 13, 14, 15, 16, 17, 18, 19, 20, 21
Math
Glue

$y = mx + b$ (y-intercept; slope)

Can you rearrange this to slope intercept form?

a) $2y = -3x - 10$

$\frac{2y}{2} = \frac{-3x}{2} - \frac{10}{2}$

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

$m = -\frac{3}{2}$ $b = -5$

b) $3y + 4 = 2x + 5$

$3y + 4 - 4 = 2x + 5 - 4$

$3y = 2x + 1$

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

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

$y = mx + b$

$m = \frac{2}{3}$ $b = \frac{1}{3}$

$y = mx + b$ (slope; y-intercept)

$$y = mx + b$$

You need a

Slope (m)

y-intercept (b)

$(x_2 - x_1)$ $m = \dfrac{(y_2) - (y_1)}{(x_2) - (x_1)}$ $[x_2 - x_1]$

$y_2 - y_1 = m(x_2 - x_1)$

Point - Slope Form

You can also find the equation of a line if you are given a point and the slope of the line. In order to do this you use the formula:

You need a -Point (Need) & a Slope

(x_1, y_1) m

slope

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

The x and y values from the given point

This equation can be rearranged to $y=mx+b$ (slope intercept)

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

Slope point form is a rearrangement of

$$m = \frac{y - y_1}{x - x_1}$$

$$\frac{m}{1} = \frac{(y - y_1)}{(x - x_1)}$$

$$(x - x_1) \cdot \frac{m}{1} = \frac{(y - y_1)}{(x - x_1)} \cdot (x - x_1)$$

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

Example 1:
Find the equation of a line that passes through (-3,4) and has the same slope as y = 3x + 2.

m

Write what you know:

x_1 y_1

m= 3 **(-3,4)**

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

$y - 4 = 3(x - -3)$

Fix signs

$y - 4 = 3(x + 3)$

multiply through bracket

$y - 4 = 3x + 9$

first get to **Point Slope Form**

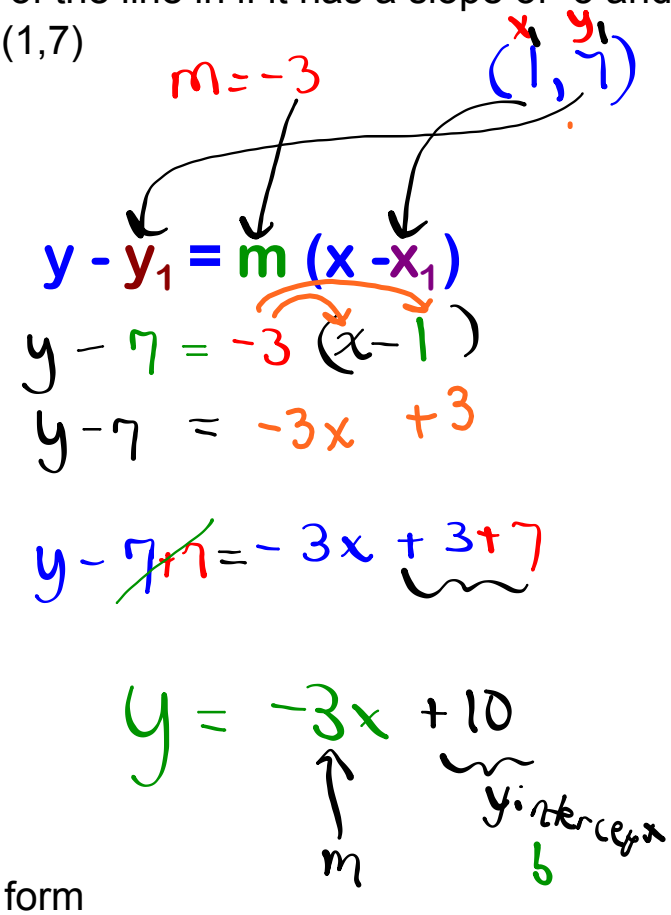
$y - 4 + 4 = 3x + 9 + 4$

$y = 3x + 13$

m y-intercept

then continue to rearrange to get to **Slope Intercept Form**

Find the equation of the line in if it has a slope of -3 and it goes through the point (1,7)



Leave in point slope form

Given $y - 3 = \frac{-2}{5}(x+4)$ determine the slope and a point on the line

$y - (y_1) = m(x - x_1)$ ← point slope

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

$m = -\frac{2}{5}$ $(\underset{-4}{x}, \underset{3}{y})$

point (x, y)
slope m $\rightarrow$ $y - y_1 = m(x - x_1)$

$\boxed{\begin{array}{l} y = mx + b \\ \text{slope} \\ \text{intercept} \end{array}}$

Homework

page 372-375

4(a,d), 5(a,c), 9(a~~,b~~)(i,~~d~~),11(a~~[illegible]~~)

4ad
5ac
9ai
11a

Attachments

Point slope form.docx