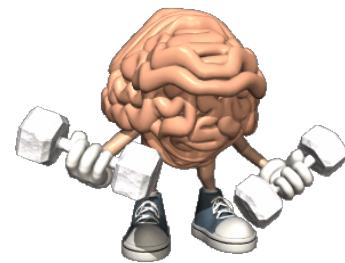


Warm Up

 $x_1 y_1$ $x_2 y_2$ 1) Given $(-1, 4)$ and $(5, -2)$, write an equation for the line in:**a) Point slope**

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

$$= \frac{(-2) - (4)}{(5) - (-1)}$$

b) Slope Intercept

$$= \frac{-2 - 4}{5 + 1}$$

c) General

$$= \frac{-6}{6}$$

$$\boxed{m = -1}$$

a) $(-1, 4) \quad m = -1$

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

$$y - 4 = -1(x - -1)$$

watch sign

$$y - 4 = -1(x + 1)$$

(x + 1)

b) $y - 4 = -1x - 1 + 4$

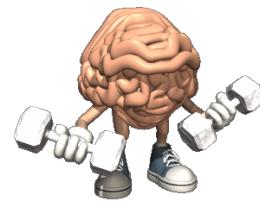
$$y = -1x + 3$$

$$y = -1x + 3 - 3$$

(x + 1) ← (x + 1) ←

c) $1x + y - 3 = 0$

Warm Up



1) Given (-1, 4) and (5, -2), write an equation for the line in:

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 4}{5 - (-1)} = \frac{-6}{6} = -1$$

a) Point slope

$$\begin{aligned} y - y_1 &= m(x - x_1) \\ y + 2 &= -1(x - 5) \\ \text{or} \\ y - 4 &= -1(x + 1) \end{aligned}$$

b) Slope Intercept $y = mx + b$

$$\begin{aligned} y + 2 &= -1(x - 5) \\ y &= -1(x - 5) - 2 \\ y &= -1x + 5 - 2 \end{aligned}$$

$$y = -1x + 3$$

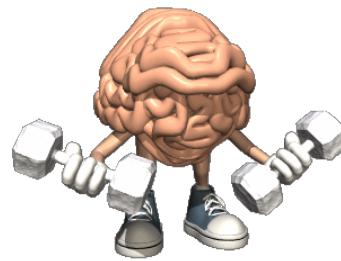
c) General $Ax + By + C = 0$

$$y = -x + 3$$

$$x + y^{-3} = 3^{-3}$$

$$x + y - 3 = 0$$

Warm Up



2) Given $3x - 4y = 12$, find

a) Slope

$$y = \underset{\uparrow}{m}x + b \quad 3x - 4y = 12$$

$$\frac{-4y}{-4} = \frac{-3x}{-4} + \frac{12}{-4}$$

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

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

$$b = -3$$

y-intercept

b) Y- Intercept

$$= -3$$

$$(0, -3)$$

c) X-Intercept = 4

$$y = 0$$

$$3x - 4y = 12$$

$$3x - 4(0) = 12$$

$$3x = 12$$

$$x = 4$$

$$(4, 0)$$

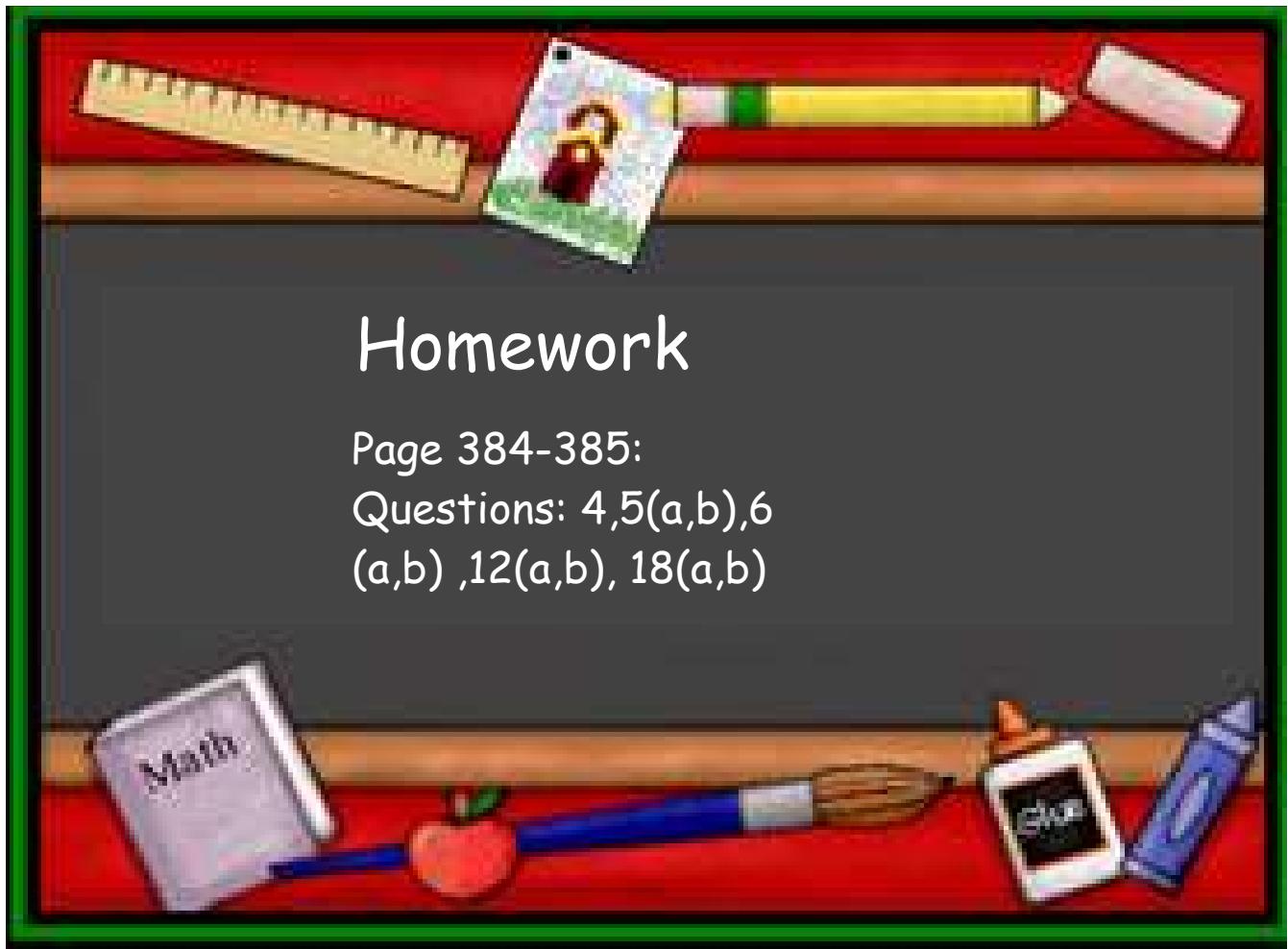
$$3x - 4y = 12$$

x-intercept (Let $y=0$)

$$3x - 4(0) = 12$$
$$3x - 0 = 12$$
$$\cancel{3x} = \frac{12}{3}$$
$$x = 4$$

let $x=0$ for y-intercept

$$3x - 4y = 12$$
$$\cancel{3(0)} - 4y = 12$$
$$0 - 4y = 12$$
$$\cancel{-4y} = \frac{12}{-4}$$
$$y = -3$$



4. In which form is each equation written?

a) $8x - 3y = 52$

Standard

b) $9x + 4y + 21 = 0$

General



c) $y = 4x + 7$

Slope Intercept

d) $y - 3 = 5(x + 7)$

Point Slope

5. Determine the x -intercept and the y -intercept for the graph of each equation.

a) $8x - 3y = 24$

x int $\rightarrow y=0$

$$8x - 3(0) = 24$$

$$8x = 24$$

$$x = \frac{24}{8}$$

$$x = 3$$

$$(3, 0)$$

y int $\rightarrow x=0$

$$8(0) - 3y = 24$$

$$-3y = 24$$

$$y = \frac{24}{-3}$$

$$y = -8$$

$$(0, -8)$$



b) $7x + 8y = 56$

x int $\rightarrow y=0$

$$7x + 8(0) = 56$$

$$7x = 56$$

$$x = \frac{56}{7}$$

$x = 8$

$$(8, 0)$$

y int $\rightarrow x=0$

$$7(0) + 8y = 56$$

$$8y = 56$$

$$y = \frac{56}{8}$$

$$y = 7$$

$$(0, 7)$$

$$c) 4x - 11y = 88$$

x int $\rightarrow y = 0$

$$4x - 11(0) = 88$$

$$4x = 88$$

$$x = \frac{88}{4}$$

$$x = 22$$

$$(22, 0)$$

y int $\rightarrow x = 0$

$$4(0) - 11y = 88$$

$$-11y = 88$$

$$y = \frac{88}{-11}$$

$$y = -8$$

$$(0, -8)$$

$$d) 2x - 9y = 27$$

x int $\rightarrow y = 0$

$$2x - 9(0) = 27$$

$$2x = 27$$

$$x = \frac{27}{2}$$

$$\left(\frac{27}{2}, 0\right)$$

y int $\rightarrow x = 0$

$$2(0) - 9y = 27$$

$$-9y = 27$$

$$y = \frac{27}{-9}$$

$$y = -3$$

$$(0, -3)$$

6. Write each equation in general form.

a) $4x + 3y = 36$

$4x + 3y - 36 = 0$

c) $y = -2x + 6$

$2x + y - 6 = 0$

$-2x - y + 6 = 0$

$2x + y - 6 = 0$

b) $2x - y = 7$

$2x - y - 7 = 0$

d) $y = 5x - 1$

$5x - y - 1 = 0$

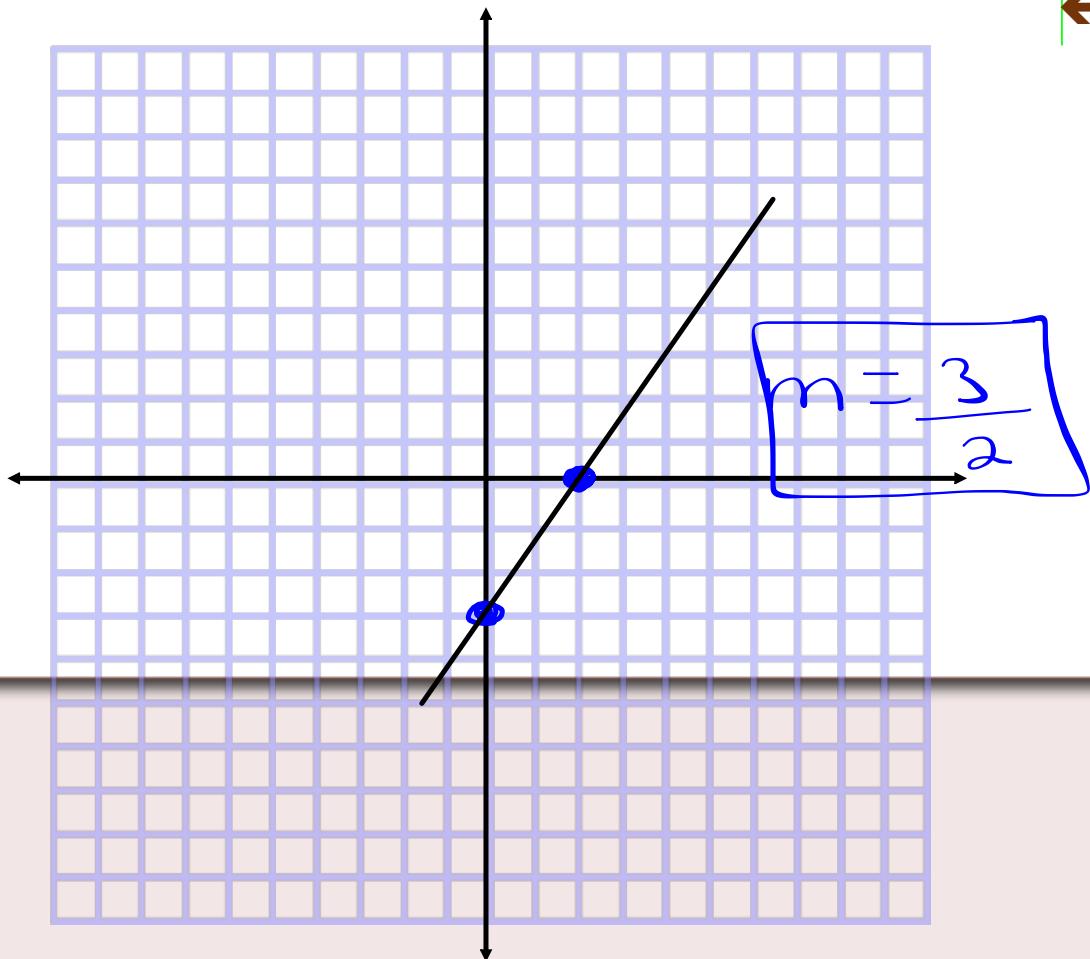
6.6 General Form of the Equation for a Linear Relation

7. Graph each line.

a) The x -intercept is 2 and the y -intercept is -3.

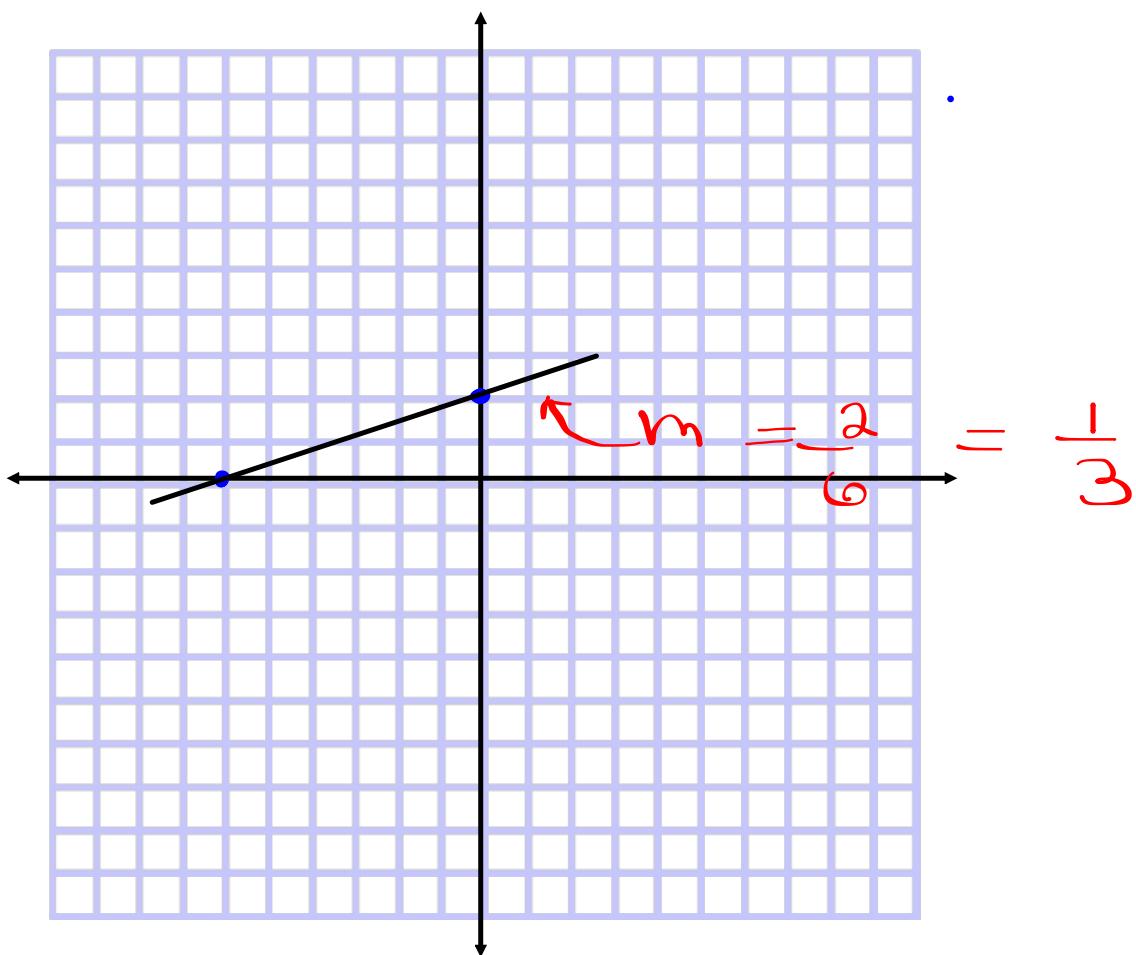
$$(2, 0)$$

$$(0, -3)$$



b) The x -intercept is -6 and the y -intercept is 2 .

$$(-6, 0) \quad (0, 2)$$

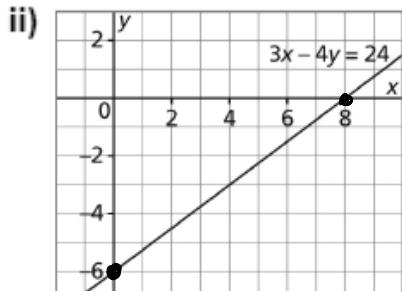


9. For each equation below:

- Determine the x - and y -intercepts of the graph of the equation.
- Graph the equation.
- Verify that the graph is correct.

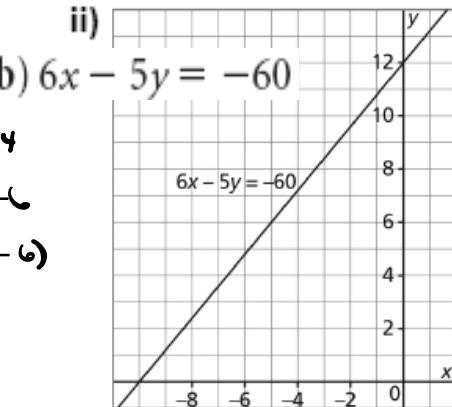


9. a) i) x -intercept: 8; y -intercept: -6

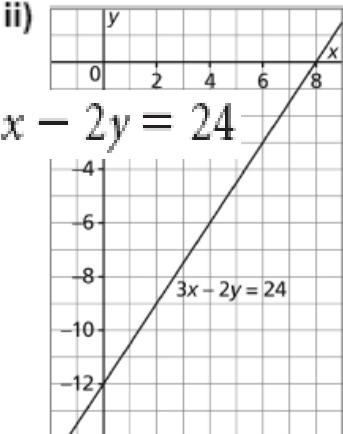


a) $3x - 4y = 24$

b) i) x -intercept: -10; y -intercept: 12

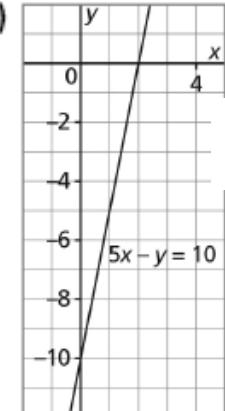


c) i) x -intercept: 8; y -intercept: -12



c) $3x - 2y = 24$

d) i) x -intercept: 2; y -intercept: -10



d) $5x - y = 10$

$$y = mx + b$$

12. Write each equation in slope-intercept form.

a) $4x + 3y - 24 = 0$

$$3y = -4x + 24$$

$$y = -\frac{4}{3}x + \frac{24}{3}$$

$$y = -\frac{4}{3}x + 8$$

b) $3x - 8y + 12 = 0$

$$-8y = -3x - 12$$

$$y = \frac{-3}{-8}x - \frac{12}{-8}$$

$$y = \frac{3}{8}x + \frac{3}{2}$$

c) $2x - 5y - 15 = 0$ d) $7x + 3y + 10 = 0$

$$-5y = -2x + 15$$

$$y = \frac{-2x + 15}{-5}$$

$$3y = -7x - 10$$

$$y = \frac{-7}{3}x - \frac{10}{3}$$

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

$$18 \text{ a) } y = \frac{1}{3}x - 4$$

$$Ax + By + C = 0$$

$$3y = 1x - 12$$

↳

$$0 = 1x - 3y - 12$$

$$k^3[y - 2] = \cancel{\left[\frac{1}{3}(x+5) \right]}$$

$$\text{or } y - 2 = \frac{1}{3}x + \frac{5}{3}$$

$$3(y-2) = 1(x+5)$$

$$3(y-2) = 1(x+5)$$

$$3y - 6 + b = 1x + 5 + b$$

↳

$$3y = 1x + 11$$

$$0 = 1x - 3y + 11$$

Point-slope to General form

$$\begin{aligned}
 b) y - 1 &= \frac{3}{5}(x + 2) \\
 5(y - 1) &= 3(x + 2) \\
 5y - 5 &= 3x + 6 \\
 5y &= 3x + 11 \\
 0 &= 3x - 5y + 11 \quad \text{General}
 \end{aligned}$$

$y - 1 = \frac{3}{5}x + \frac{6}{5}$
 $y = \frac{3}{5}x + \frac{6}{5}$
 $5y = 3x + 6$
 $\frac{5y}{5} = \frac{3x}{5} + \frac{6}{5}$
 $y = \frac{3}{5}x + \frac{6}{5}$
 $y = \frac{3}{5}x + \frac{11}{5}$ Slope intercept

Example 2**Graphing a Line in General Form**

- a) Determine the x - and y -intercepts of the line whose equation is: $3x + 2y - 18 = 0$



SOLUTION
 $x\text{-intercept}$
let $y=0$

$$\begin{aligned}3x + 2y - 18 &= 0 \\3x + 2(0) - 18 &= 0 \\3x + 0 - 18 &= 0 \\3x - 18 &= 0 + 18\end{aligned}$$

$$\frac{3x}{3} = \frac{18}{3}$$

$x = 6$

$$\frac{2y}{2} = \frac{-3x + 18}{2}$$

$$y = \frac{-3}{2}x + 9$$

$y\text{-intercept}$

let $x=0$

$$\begin{aligned}3x + 2y - 18 &= 0 \\3(0) + 2y - 18 &= 0 \\+ 2y - 18 &= 0 \\2y - 18 &= 0 + 18 \\2y &= 18 \\y &= \frac{18}{2} \\y &= 9\end{aligned}$$

6.6 General Form of the Equation for a Linear Relation



CHECK YOUR UNDERSTANDING



Example 2 Graphing a Line in General Form

- Determine the x - and y -intercepts of the line whose equation is: $3x + 2y - 18 = 0$
- Graph the line.
- Verify that the graph is correct.

- a) To determine the x -intercept:

$$\begin{aligned} 3x + 2y - 18 &= 0 && \text{Substitute: } y = 0 \\ 3x + 2(0) - 18 &= 0 && \text{Solve for } x. \\ 3x &= 18 \\ \frac{3x}{3} &= \frac{18}{3} \\ x &= 6 \end{aligned}$$

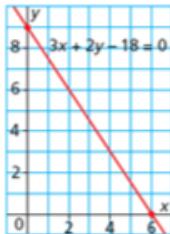
The x -intercept is 6 and is described by the point $(6, 0)$.

- To determine the y -intercept:

$$\begin{aligned} 3x + 2y - 18 &= 0 && \text{Substitute: } x = 0 \\ 3(0) + 2y - 18 &= 0 && \text{Solve for } y. \\ 2y &= 18 \\ \frac{2y}{2} &= \frac{18}{2} \\ y &= 9 \end{aligned}$$

- b) On a grid, plot the points that represent the intercepts.

Draw a line through the points.



- c) The point $T(2, 6)$ appears to be on the graph.

Verify that $T(2, 6)$ satisfies the equation.

Substitute $x = 2$ and $y = 6$ in the equation $3x + 2y - 18 = 0$.

$$\begin{aligned} \text{L.S.} &= 3x + 2y - 18 && \text{R.S.} = 0 \\ &= 3(2) + 2(6) - 18 \\ &= 6 + 12 - 18 \\ &= 0 \end{aligned}$$

Since the left side is equal to the right side, the point satisfies the equation and the graph is probably correct.

Add to notes

Write the following in GENERAL form

$$\text{Q3} y = \frac{-3x}{2} + \frac{4}{3}$$

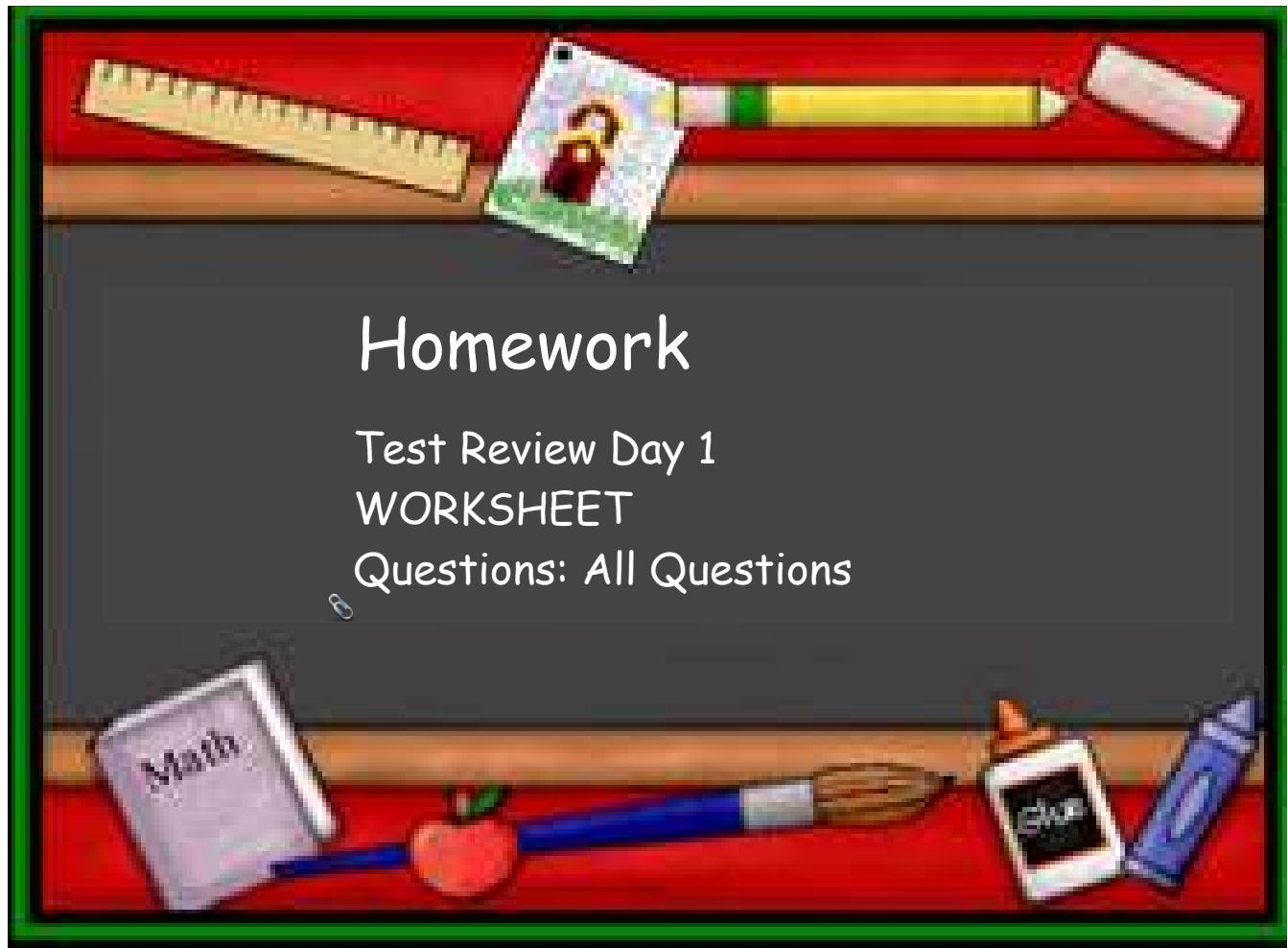
$$6y = -9x + 8.$$

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

$$6y = -\frac{18}{2}x + \frac{24}{3}$$

\checkmark Reduce

$$6y = -9x + 8$$



Attachments

Chapter 6 Linear Functions Day 9 WORKSHEET TEST REVIEW.notebook