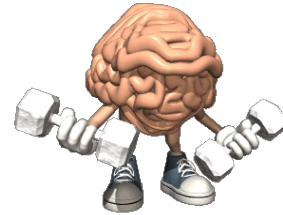
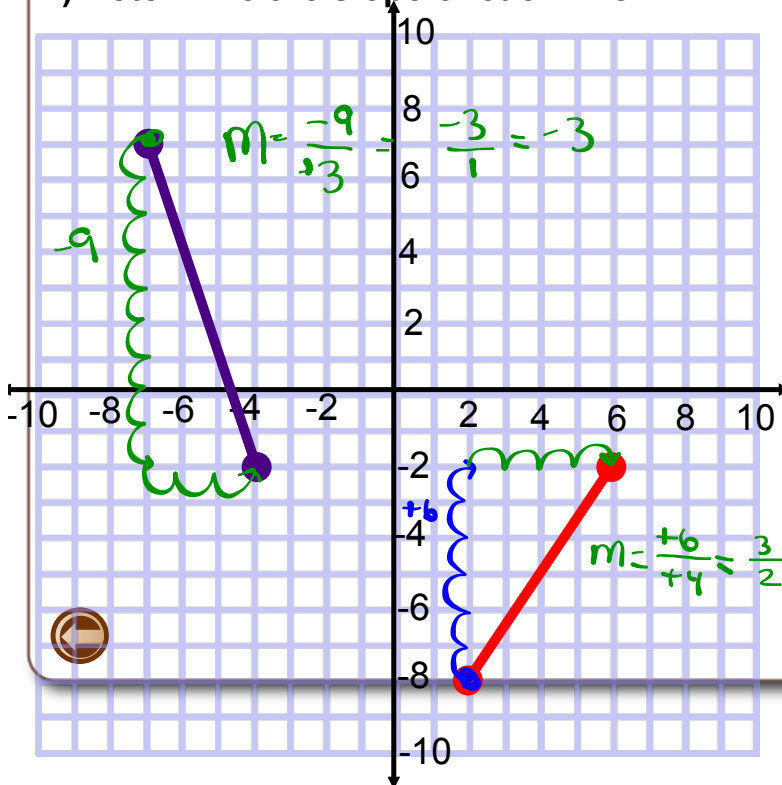


Quiz Tuesday Warm Up



1) Determine the slope of each line



2) What is the slope of a line with points $(-3, 4)$ and $(11, -1)$?

3) Given $(8, 4)$ and $(4, y)$ and the slope is $\frac{3}{2}$?

4) Given $(x, 4)$ and $(5, 10)$ and the slope is $\frac{1}{2}$?

2) What is the slope of a line with points $(-3, 4)$ and $(11, -1)$?

x_1 y_1 Warm Up
 $(-3, 4)$ $(11, -1)$
 x_2 y_2

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

$$= \frac{(-1) - (4)}{(11) - (-3)}$$

$$= \frac{(-1) + (-4)}{(11) + (+3)}$$

$$m = \frac{-5}{14}$$

3) Given $(8, 4)$ and $(4, y)$
and the slope is $\frac{3}{2} m$

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

$$\frac{3}{2} = \frac{y - (4)}{4 - (8)}$$

$$\frac{-4}{1} \left(\frac{3}{2} \right) = \left(\frac{y - 4}{-4} \right) \times 4$$

$$\frac{-12}{2} = y - 4$$

$$-6 = y - 4$$

$$-6^{+4} = y - 4 + 4$$

$$\boxed{-2 = y}$$

Warm Up

$$\begin{matrix} x_1, y_1 \\ (8, 4) \end{matrix} \quad \begin{matrix} x_2, y_2 \\ (4, y) \end{matrix} \quad m = \frac{3}{2}$$

4) Given $(x, 4)$ and $(5, 10)$
and the slope is $\frac{1}{2}$?

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

$$\frac{1}{2} = \frac{10 - 4}{5 - x}$$

$$(5-x) \cdot \frac{1}{2} = \frac{6}{(5-x)} \cdot (5-x)$$

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

$$5-x = 12$$

$$\frac{-x}{-1} = \frac{7}{-1}$$

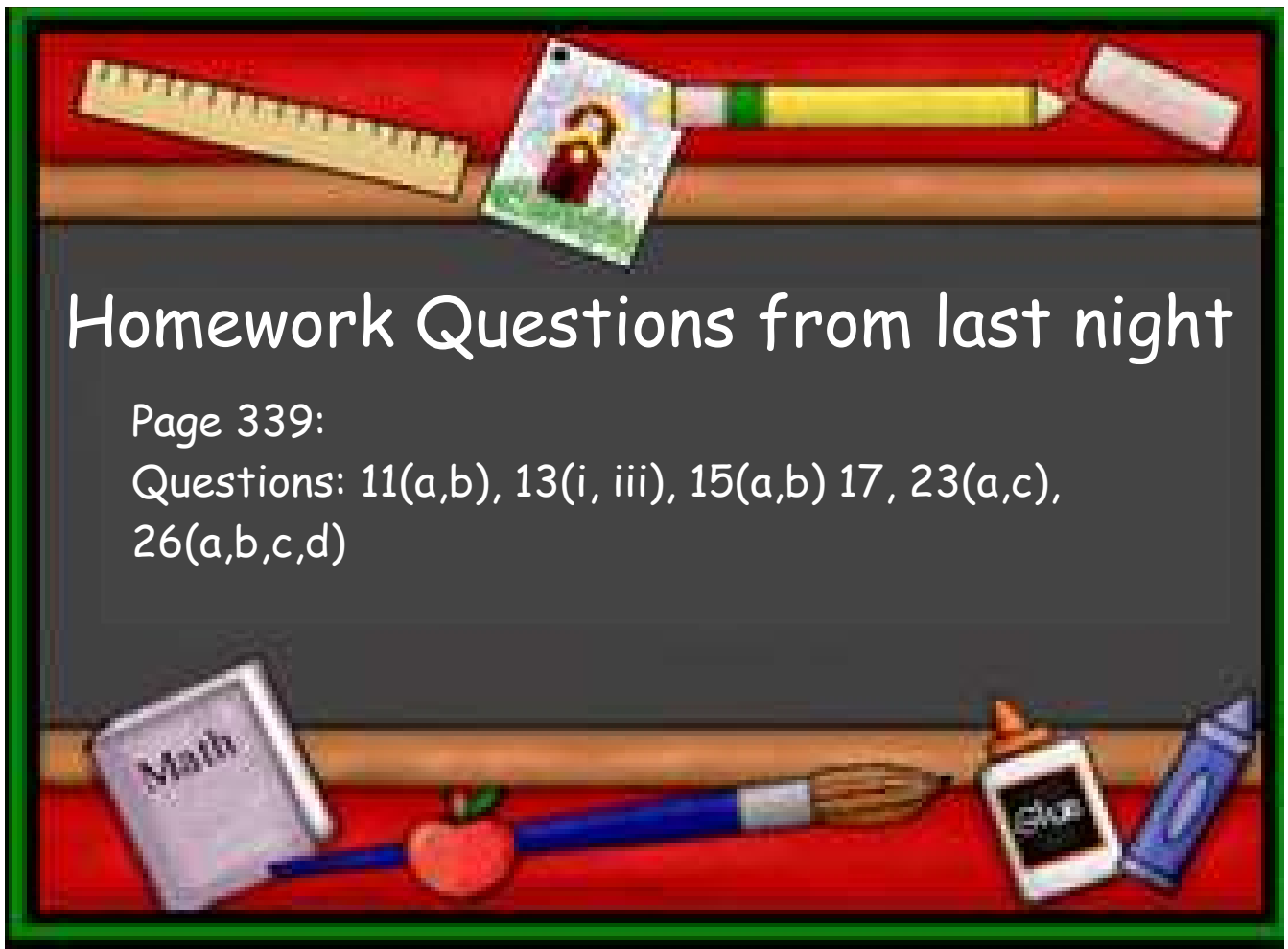
$$\boxed{x = -7}$$

Warm Up
 $(x_1, y_1) (x_2, y_2) m = \frac{1}{2}$

$$\frac{1}{2} = \frac{6}{5-x}$$

$$1(5-x) = 6(2)$$

$$5-x = 12$$



Homework Questions from last night

Page 339:

Questions: 11(a,b), 13(i, iii), 15(a,b) 17, 23(a,c),
26(a,b,c,d)

$$26 = m = \frac{150}{10} = 0.15$$

y-intercept = 0

↙ # of text

$$y = mx + b$$

↓

$y = 0.15x$

a) 1 text

$$y = 0.15(1)$$
$$= 0.15$$

15 cent

b) $x = 33$

$$y = 0.15(33)$$
$$= 4.95$$



Parallel & Perpendicular Lines & Collinear Points

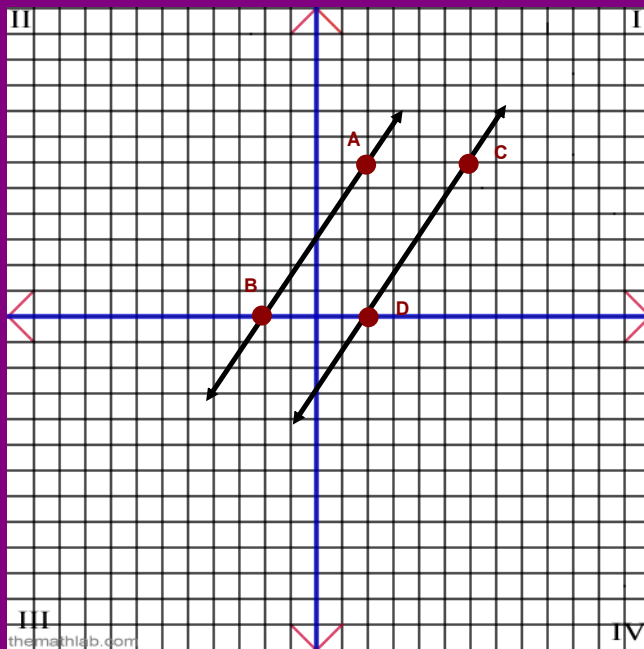




Parallel Lines

Parallel Lines are two lines that are always the same distance apart, and that never intersect.

Parallel Lines



the-mathlab.com

Calculate the slope of
AB & DC

<i>1st</i>	<i>x₁</i>	<i>2nd</i>	<i>x₂</i>	<i>y₁</i>	<i>y₂</i>	<i>1st</i>	<i>x₁</i>	<i>2nd</i>	<i>x₂</i>	<i>y₁</i>	<i>y₂</i>
(-2,0)		(2,6)		(2,0)		(6,6)					
$m_{AB} = \frac{y_2 - y_1}{x_2 - x_1}$				$m_{DC} = \frac{y_2 - y_1}{x_2 - x_1}$							

Do on next page

What Do You Notice?

What Do You Notice?

$$\begin{array}{cc} \text{1st } x_1, y_1 & \text{2nd } x_2, y_2 \\ (-2, 0) & (2, 6) \end{array}$$

$$\begin{aligned} m_{AB} &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{6 - 0}{2 - (-2)} \\ &= \frac{6}{2 + 2} \\ &= \frac{6}{4} \end{aligned}$$

$$m_{AB} = \frac{3}{2}$$

$$\begin{array}{cc} \text{1st } x_1, y_1 & \text{2nd } x_2, y_2 \\ (2, 0) & (6, 6) \end{array}$$

$$\begin{aligned} m_{DC} &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{6 - 0}{6 - 2} \\ &= \frac{6}{4} \end{aligned}$$

$$m_{CD} = \frac{3}{2}$$

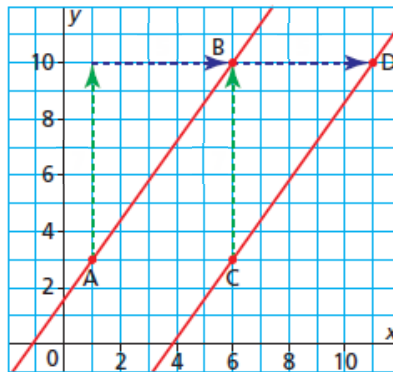
Don't have a copy

When two lines have the same slope, congruent triangles can be drawn to show the rise and the run.

Lines that have the same slope are parallel.

$$\text{Slope of AB} = \frac{7}{5}$$

$$\text{Slope of CD} = \frac{7}{5}$$



Recall:

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$

Since the slope of AB is equal to the slope of CD, line AB is parallel to line CD.



Slopes of parallel lines are equal

When given an equation $y = mx + b$

Two lines that are parallel will have the same "m"

Example: $y = 3x + 7$ & $y = 3x + 144$

Same slope so parallel

$$y = \boxed{m}x + b$$

1) What is the slope of a line parallel to $y = 5x - 6$?

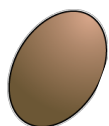
The slope has to be $\boxed{m=5}$ $m=5$

2) What is the slope of a line parallel to $y = \frac{-6}{7}x - 10$?

The slope of a line parallel to $y = \frac{-6}{7}x - 10$ is $m = \frac{-6}{7}$.

$$m = \frac{-6}{7}$$

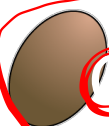
1 What is the slope of a line parallel to AB?



-2



$\frac{1}{2}$



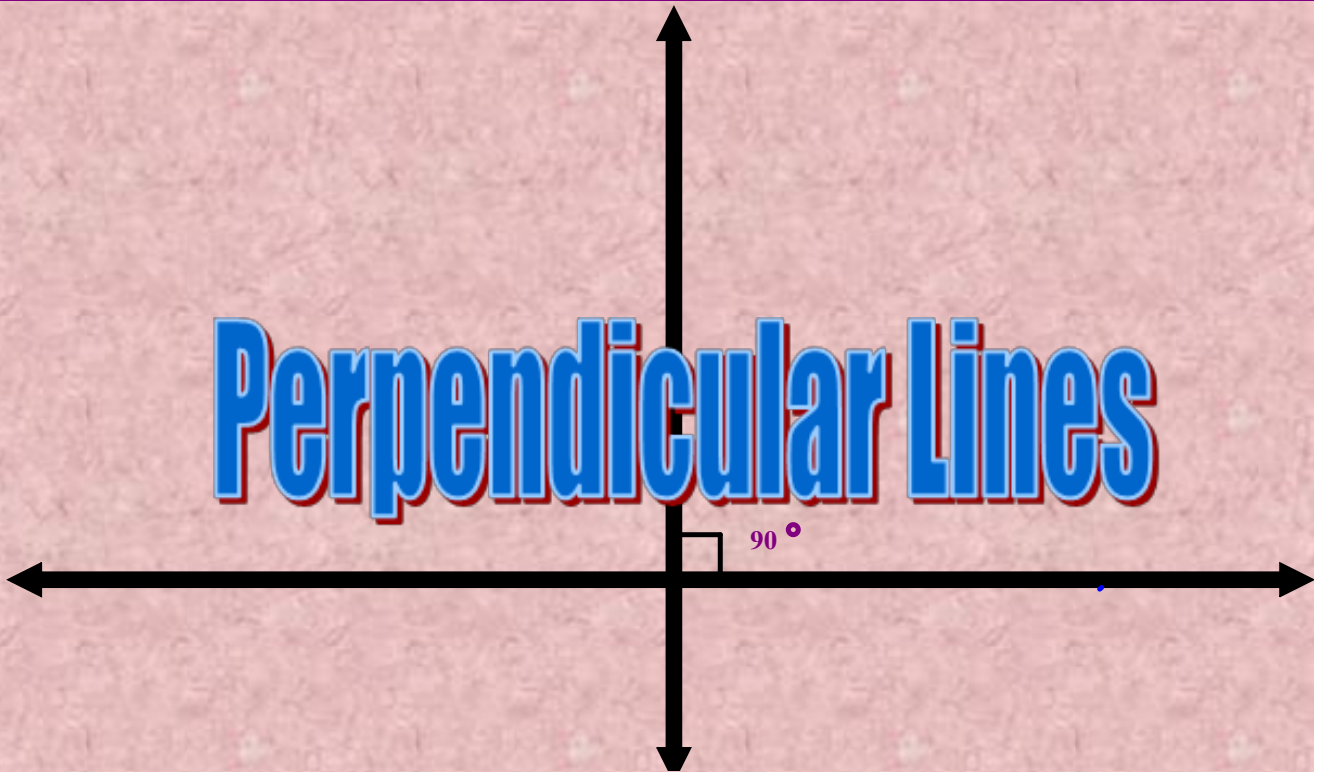
2

Slope of AB = 2

~~2~~



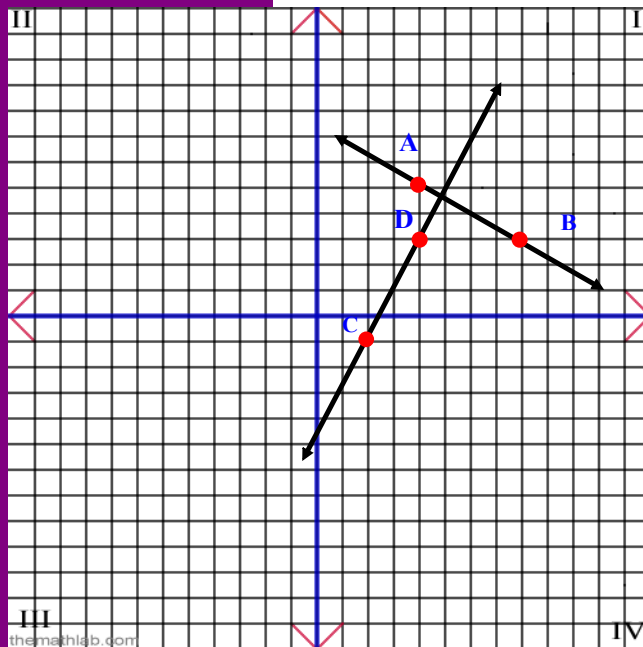
Perpendicular Lines



Perpendicular Lines are two lines that intersect to form a 90° angle. (Right Angle)

1
2
3
4
5
6
7
8
9
10
11
12

Lines



Calculate the slope of
AB & DC

AB 1st (4, 5) 2nd (8, 3)

CD 1st (2, -1) 2nd (4, 3)

What Do You Notice?

Calculate the slope of
AB & DC

AB 1st (4, 5) 2nd (8, 3)

$$m_{AB} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m_{AB} = \frac{3 - 5}{8 - 4}$$

$$m_{AB} = \frac{-2}{4} \text{ Reduce}$$

$$m_{AB} = \frac{-1}{2}$$

CD 1st (2, -1) 2nd (4, 3)

$$m_{CD} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m_{CD} = \frac{3 - (-1)}{4 - 2}$$

$$m_{CD} = \frac{4}{2}$$

$$m_{CD} = \frac{2}{1}$$

What Do You Notice?

Therefore if the slopes of two lines are

OPPOSITE RECIPROCAL

we can say the lines are perpendicular

Therefore AB is perpendicular to DC

$m = -3$ perpendicular to m

2 What is the slope of a line perpendicular to AB?



A $+\frac{3}{4}$

$+\frac{4}{3}$

C $-\frac{3}{4}$

Slope of AB = $-\frac{3}{4}$



Activate Prior Learning: Properties of Quadrilaterals



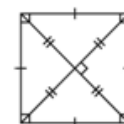
A **rectangle** is a parallelogram with 4 right angles. It has all the properties of a parallelogram and its diagonals are equal.



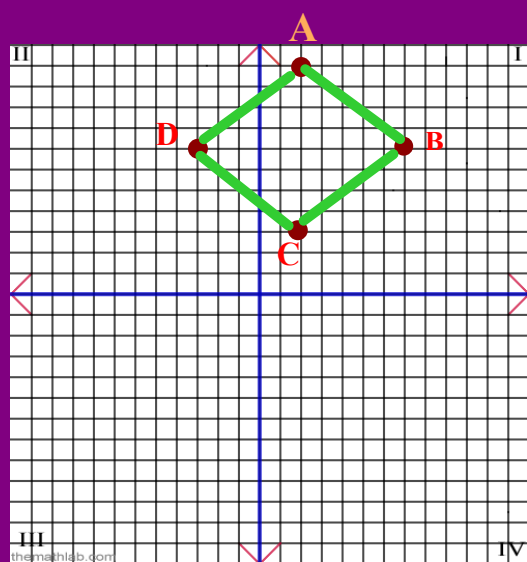
A **rhombus** is a parallelogram with 4 equal sides. It has all the properties of a parallelogram and its diagonals are perpendicular.



A **square** is a parallelogram with 4 equal sides and 4 right angles. A square has all the properties of a parallelogram, a rectangle, and a rhombus.



Determine whether or not the following figure is a rectangle.



A (2, 11) B (7, 7) C (2, 3) D (-3, 7)

When given an equation $y = mx + b$

Two lines that are perpendicular when their slope are negative reciprocals "m" and $(-1/m)$

Example: $y = 3x + 7$ & $y = \frac{-1}{3}x + 144$

\downarrow
 $m = \frac{3}{1}$

\downarrow
 $m = \frac{-1}{3}$

1) What is the slope of a line Perpendicular to $y = 5x - 6$?

$m = \frac{5}{1}$ $m_{\perp} = \frac{-1}{5}$

2) What is the slope of a line perpendicular to $y = \frac{-6}{7}x - 10$?

$m = \frac{-6}{7}$ $m_{\perp} = \frac{+7}{6}$

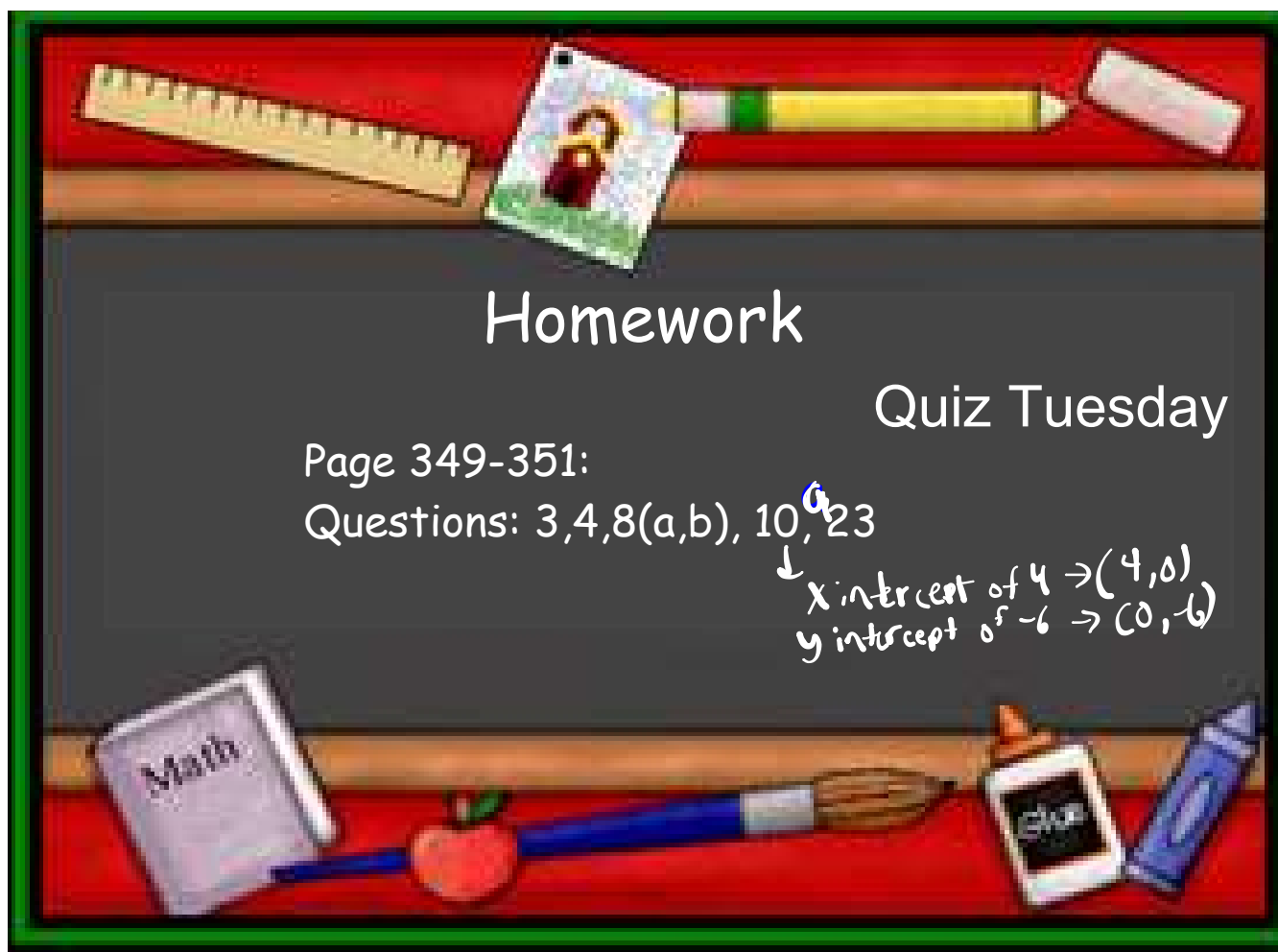
perpendicular = $\frac{1}{b}$

m_{\perp}

or

m_{\perp}

parallel m_{\parallel}
 m_{par}



$$\begin{array}{ll} \text{3a) } m = \frac{4}{5} & m_{\parallel} = \frac{4}{5} \\ \text{b) } m = -\frac{4}{3} & m_{\parallel} = -\frac{4}{3} \end{array}$$

Attachments

Parallel.doc

Perpendicular and Parallel lines.docx