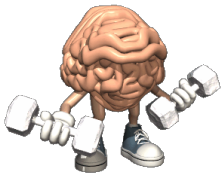
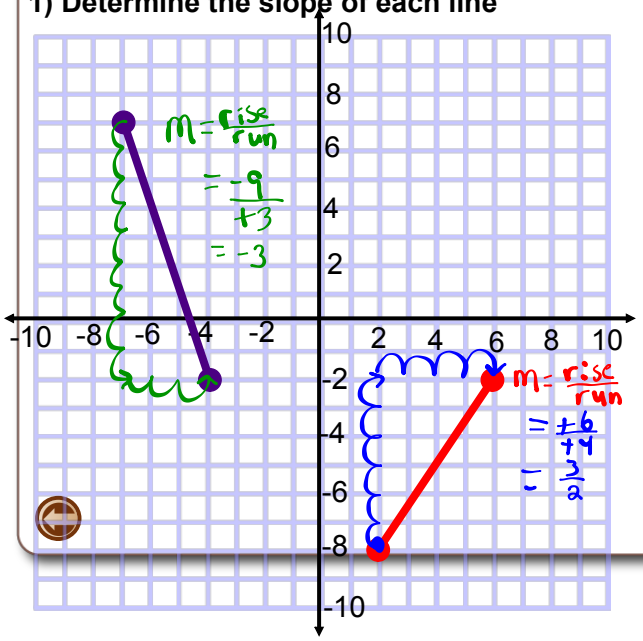
Quiz Wednesday similar to below

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

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

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

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

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

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

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

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

Now solve for "y"

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

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

$$-6 = y - 4$$

$$-6 \overset{+4}{=} y - 4 + 4$$

$$-2 = y$$

Warm Up

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

Warm Up

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

Warm Up

$x_1\ y_1 \qquad x_2\ y_2$

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

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

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

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

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

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

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

$$-\frac{x}{2} = \frac{12}{2} - \frac{5}{2}$$

$$2\left(-\frac{x}{2}\right) = \frac{7}{2}(2)$$

$$-x = 7$$

$$x = -7$$

$\Rightarrow$

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

$$5 - 5 - x = 12 - 5$$

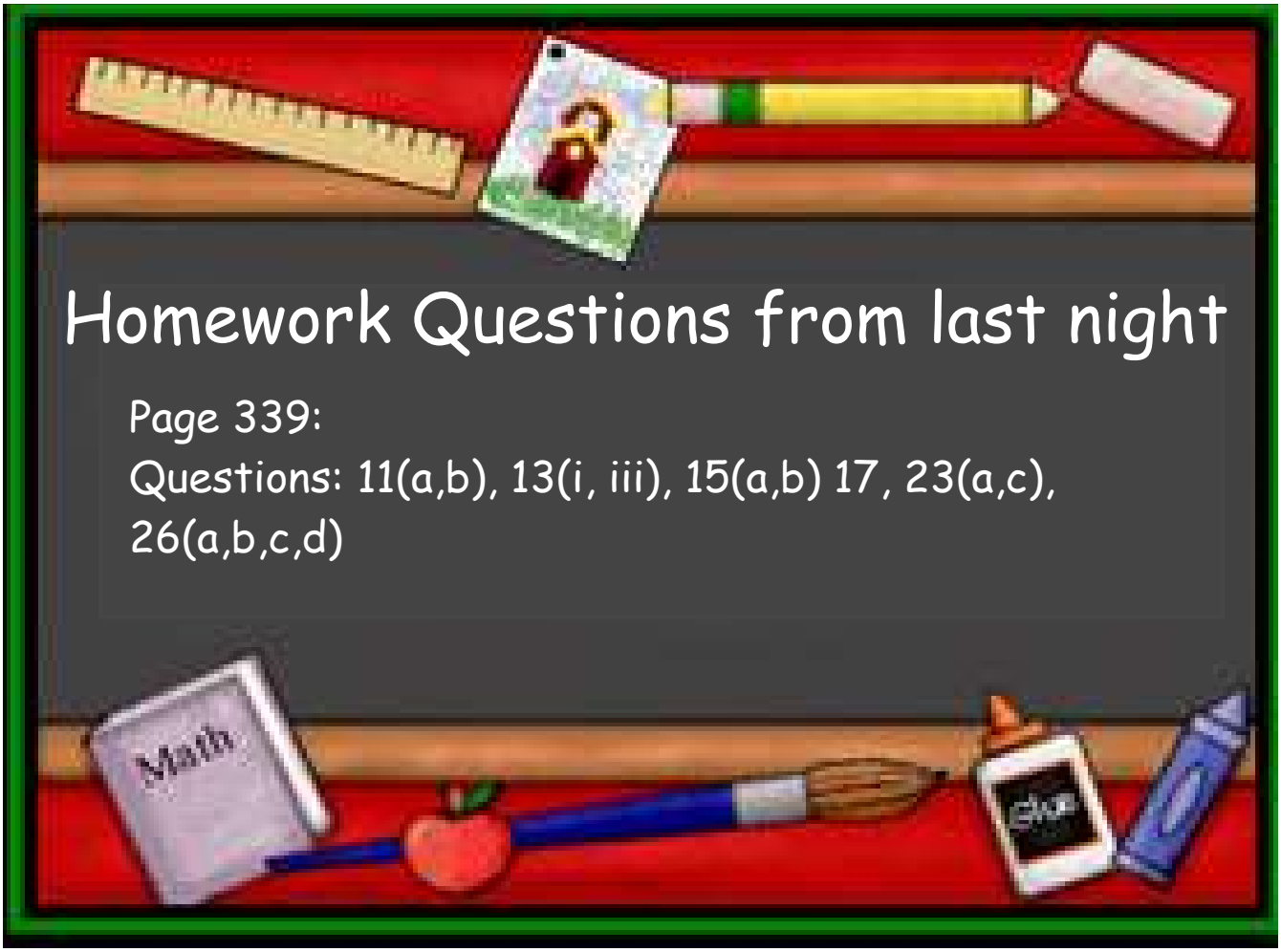
$$-x = 7$$

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

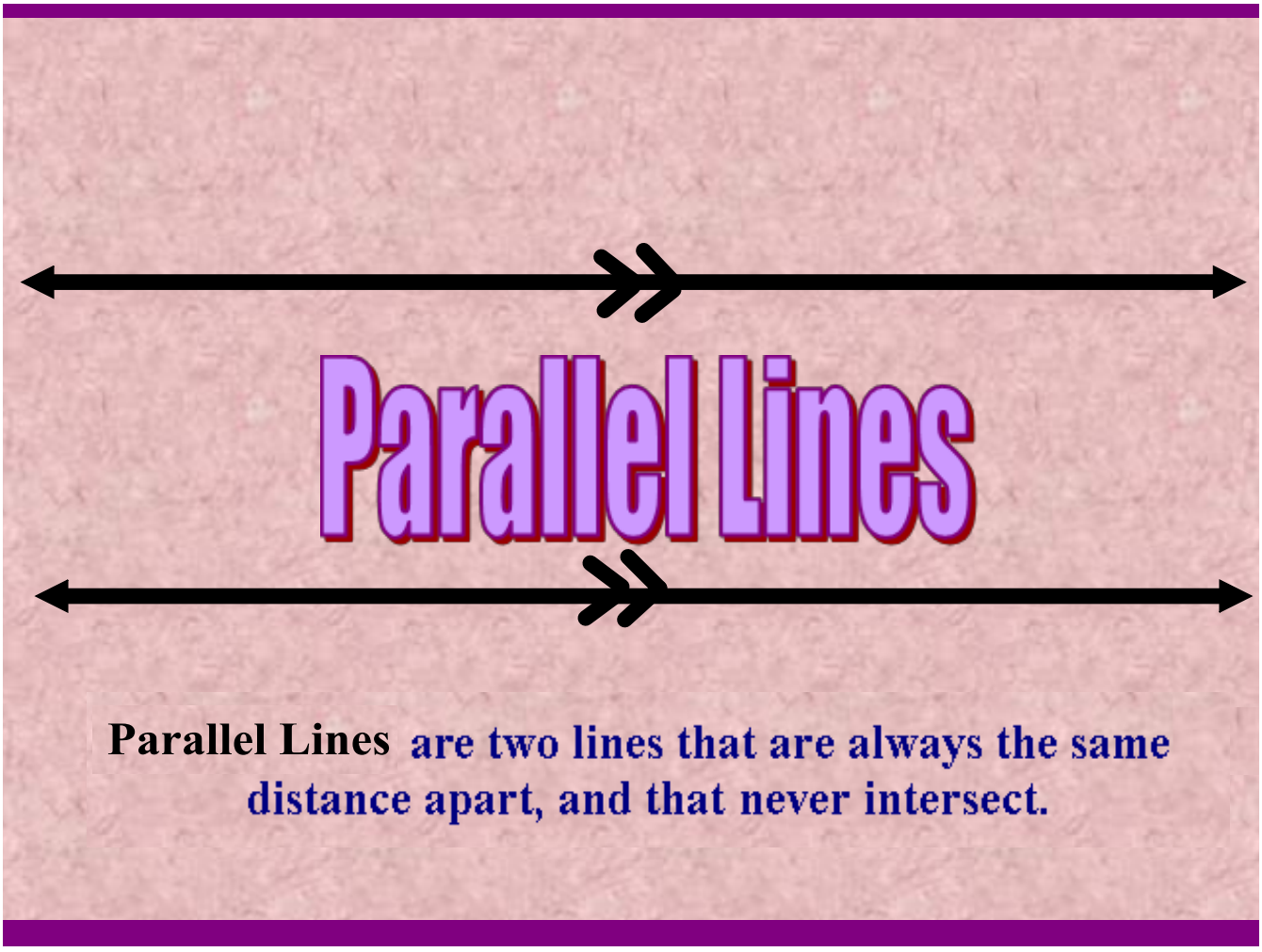
$x \cdot 17 = \frac{12}{x} \cdot x$

$\frac{17x}{17} = \frac{12}{17}$

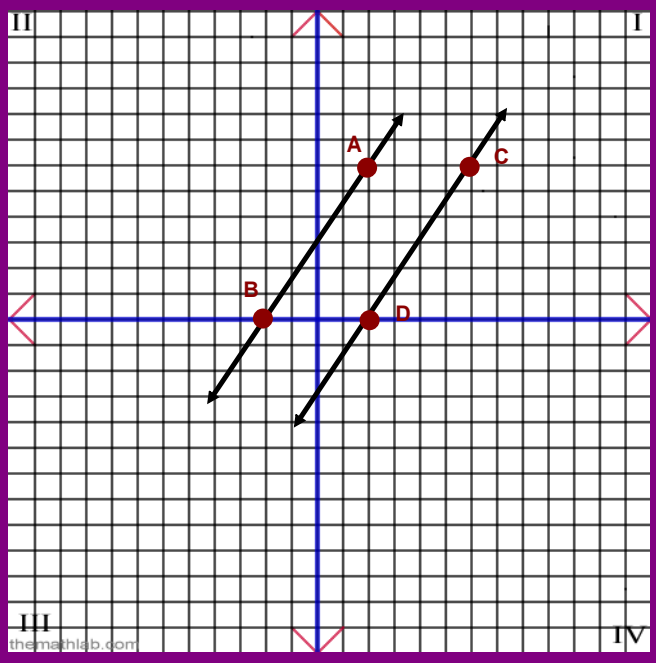
$x = \frac{12}{17}$


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)
Math

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



Calculate the slope of AB & DC

1st (x_1, y_1) 2nd (x_2, y_2)

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

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

Do on next page

What Do You Notice?

What Do You Notice?

1st (x_1, y_1) 2nd (x_2, y_2)

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

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

$$= \frac{(6) - (0)}{(2) - (-2)}$$

$$= \frac{6}{4}$$

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

1st (x_1, y_1) 2nd (x_2, y_2)

$(2, 0)$ $(6, 6)$

$$m_{DC} = \frac{(y_2) - (y_1)}{(x_2) - (x_1)}$$

$$= \frac{(6) - (0)}{(6) - (2)}$$

$$= \frac{6}{4}$$

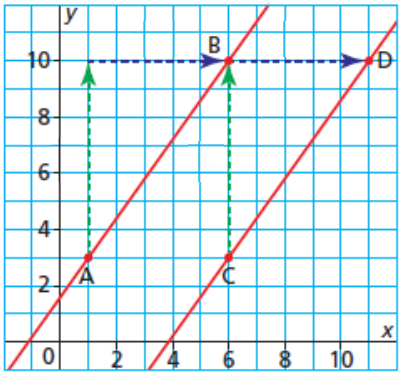
$$= \frac{3}{2}$$

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 some slope are parallel.

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

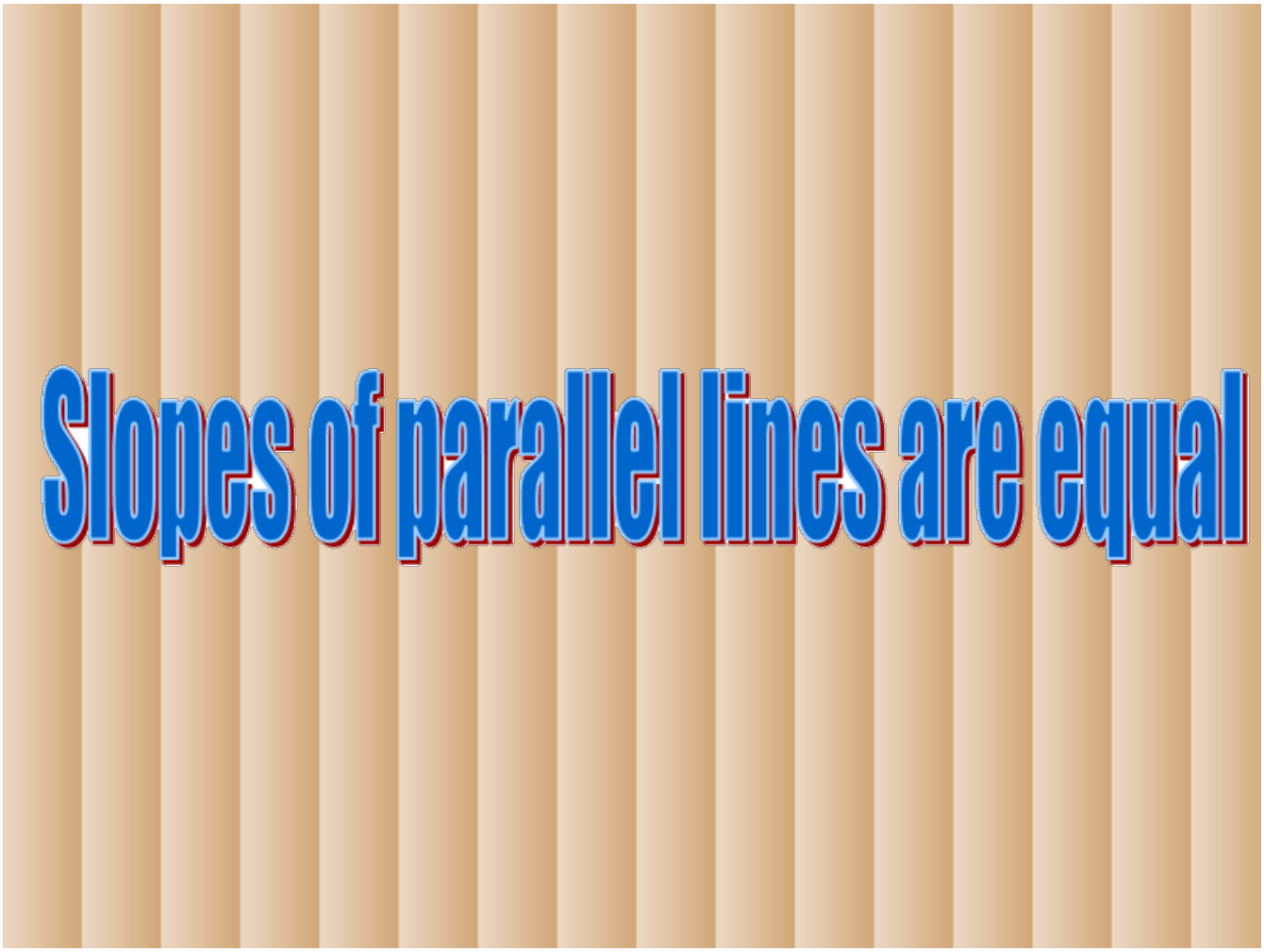
Slope of CD $= \frac{7}{5}$



Recall:

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

?

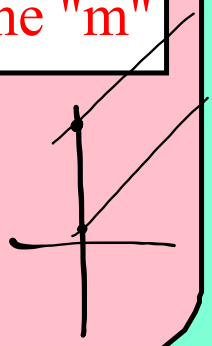

Slopes of parallel lines are equal

When given an equation y= mx + b

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

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

mx + b mx + b



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

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

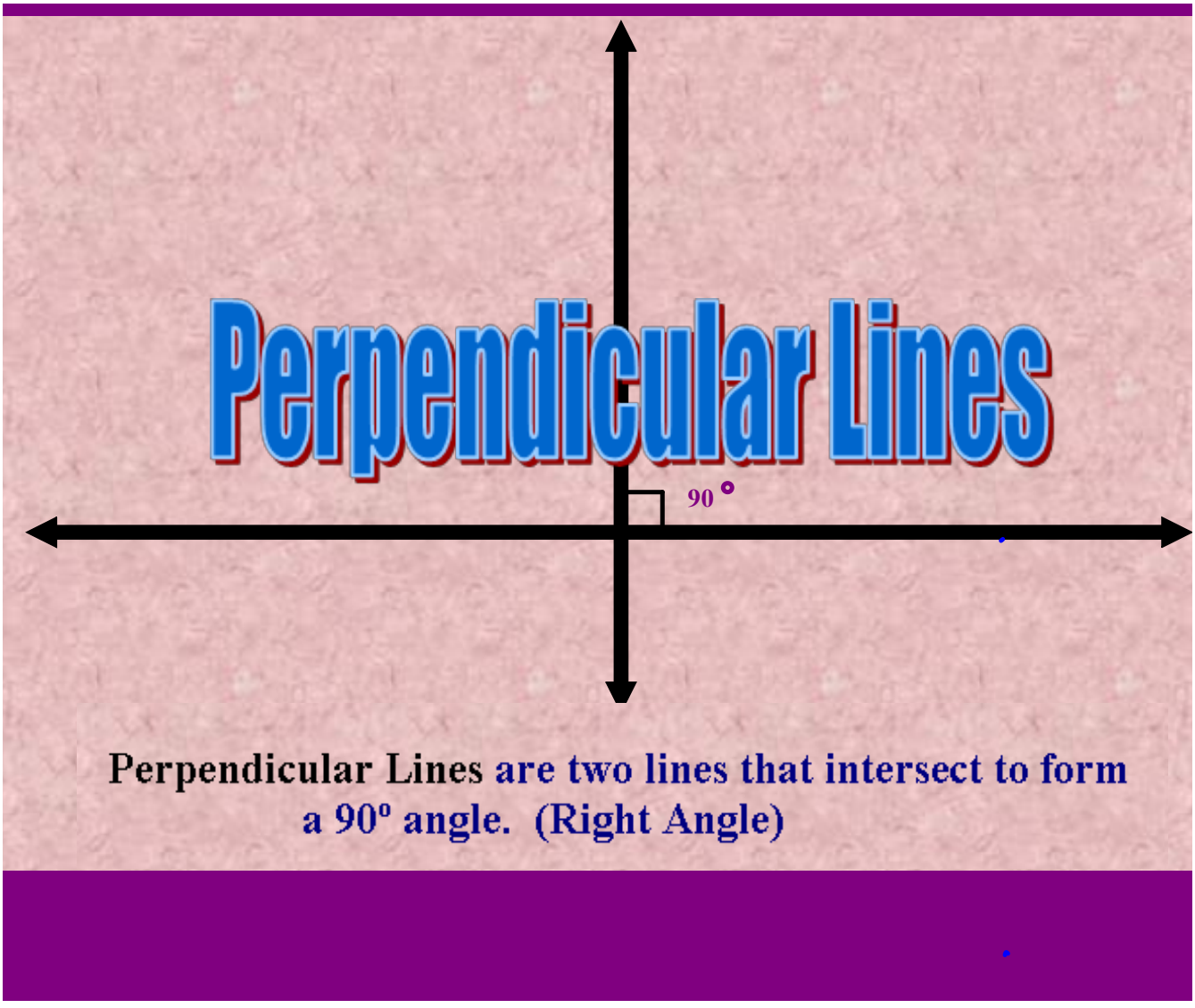
1 What is the slope of a line parallel to AB?

-2

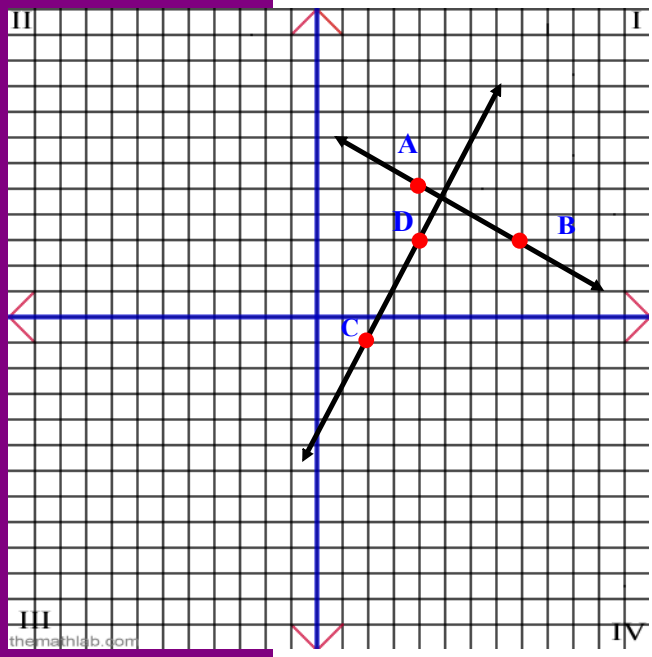
B $\frac{1}{2}$

2

Slope of AB = 2


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

Parallel & Perpendicular Lines



Calculate the slope of AB & DC

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

$x_1\ y_1 \qquad x_2\ y_2$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{(3) - (5)}{(8) - (4)} = \frac{-2}{4} = -\frac{1}{2}$$

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

$x_1\ y_1 \qquad x_2\ y_2$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{(3) - (-1)}{(4) - (2)} = \frac{4}{2} = +2 = \frac{2}{1}$$

What Do You Notice?

Perpendicular Lines

Calculate the slope of AB & DC

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

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

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

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

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

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

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

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

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

$m_{CD} = 2$

What Do You Notice?

Therefore if the slopes of two lines are

OPPOSITE RECIPROCALS

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 $\frac{3}{4}$

B $\frac{4}{3}$

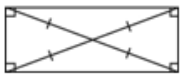
C $-\frac{3}{4}$

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

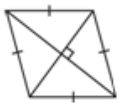
$\perp AB = +\frac{4}{3}$

Activate Prior Learning:
Properties of Quadrilaterals

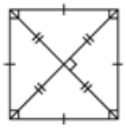
A **rectangle** is a parallelogram with 4 right angles.
It has all the properties of a parallelogram and its diagonals are equal.



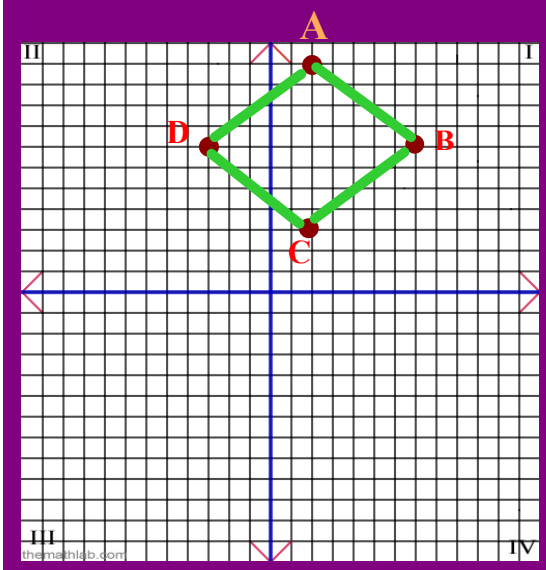
A **rhombus** is a parallelogram with 4 equal sides.
It has all the properties of a parallelogram and its diagonals are perpendicular.



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

$m = 3$ ← opp rec → $m = -\frac{1}{3}$ so perpendicular

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

$y = mx + b$ $m = 5$ $m_{\perp} = -\frac{1}{5}$

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

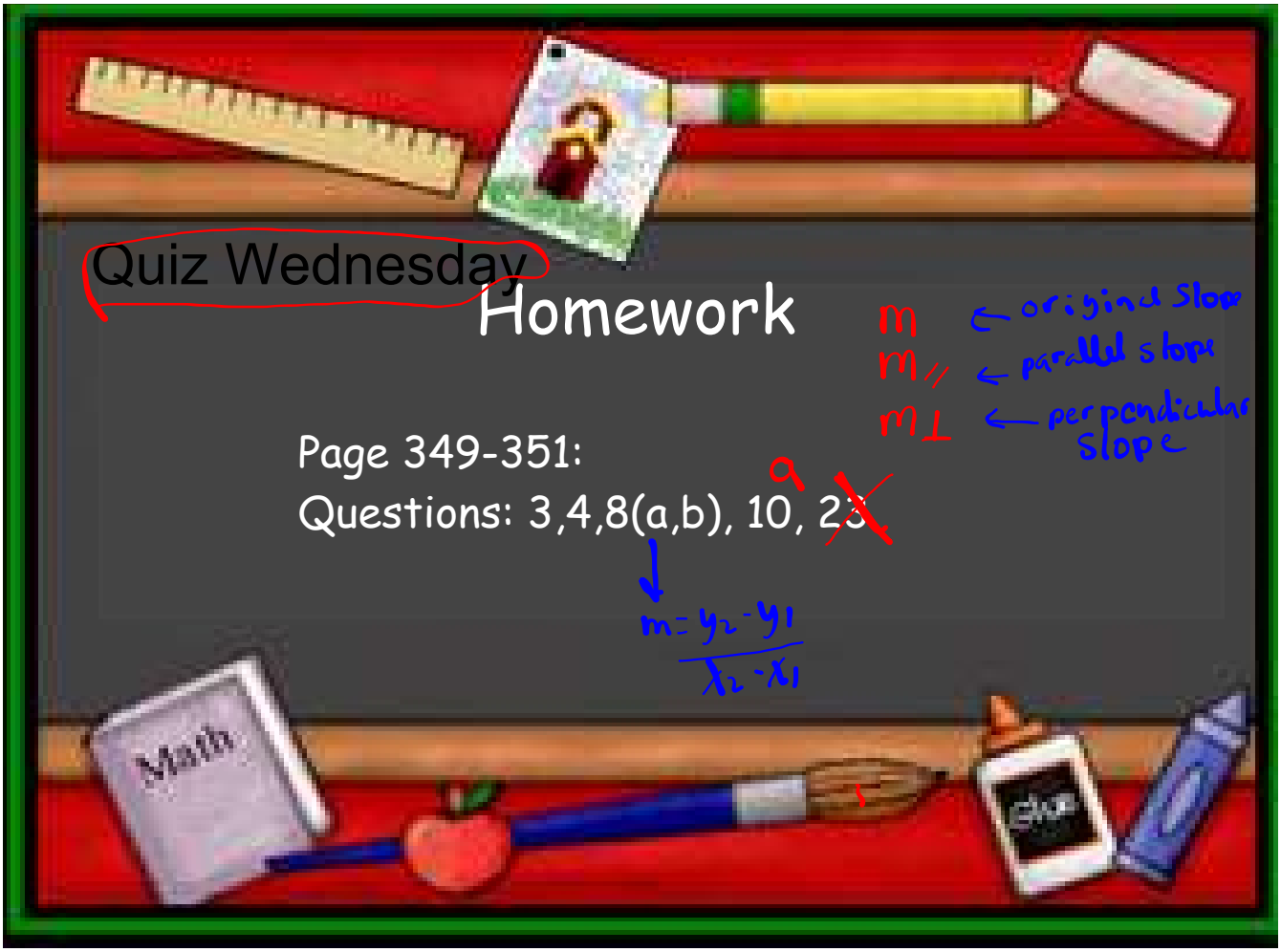
$y = mx + b$

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

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

Perpendicular 

Parallel //


Quiz Wednesday
Homework
Page 349-351:
Questions: 3,4,8(a,b), 10, 23
m ← original slope
m// ← parallel slope
m⊥ ← perpendicular slope
a
m = y2 - y1 / x2 - x1
Math

Attachments

Parallel.doc

Perpendicular and Parallel lines.docx