Chapter 6: Linear Functions

http://www.youtube.com/watch?v=tMhF-1ew_bM&feature=related

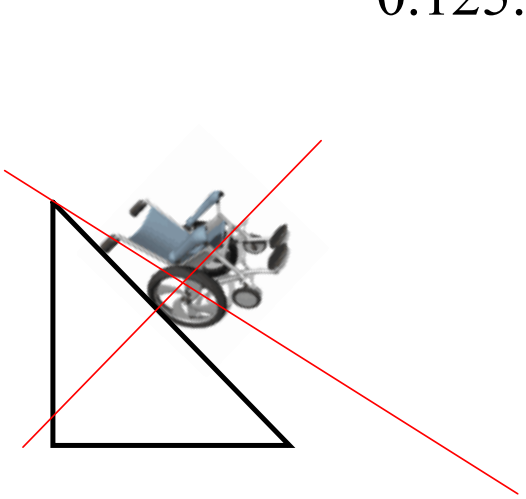
1

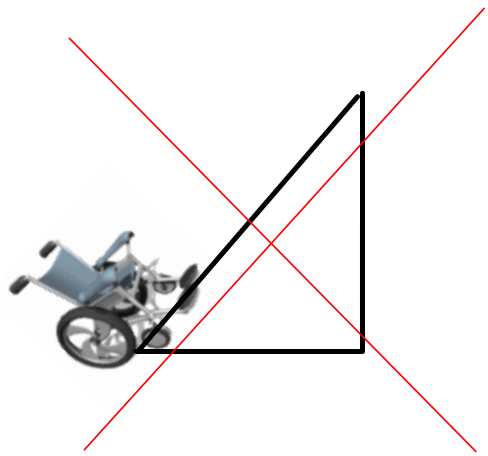
2


3
SLOPE

7

A wheelchair ramp should not exceed a slope of 0.125.





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Building stairs should not exceed a slope of 0.83

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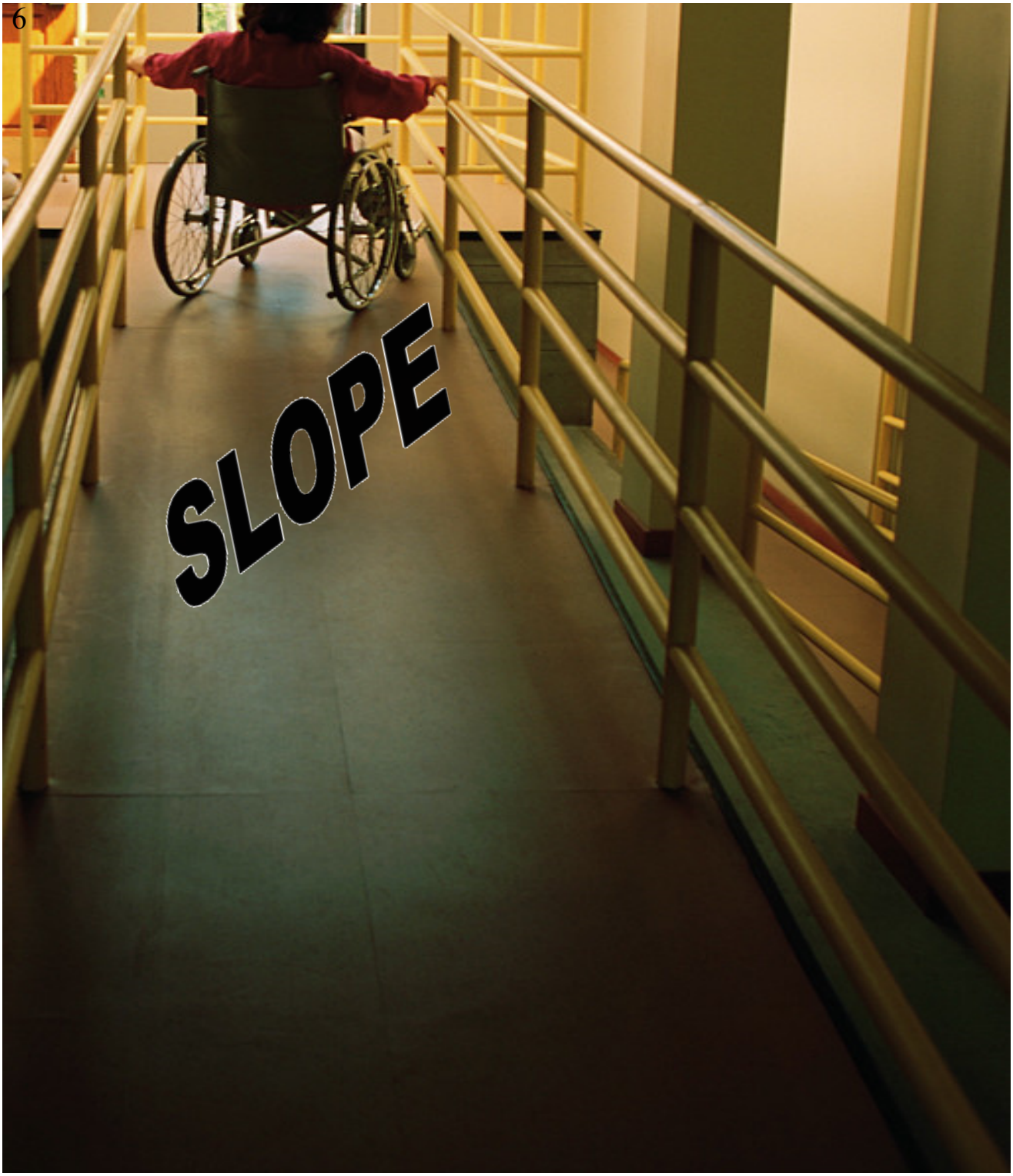

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Calculating slope!

Same as rate of change

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

Some roofs are steeper than others. Steeper roofs are more expensive to shingle.
The steepness of a roof is measured by calculating its **slope.**

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

The **rise** is the vertical distance from the bottom of the edge of the roof to the top.
The **run** is the corresponding horizontal distance.
For each roof, we count units to determine the rise and the run.

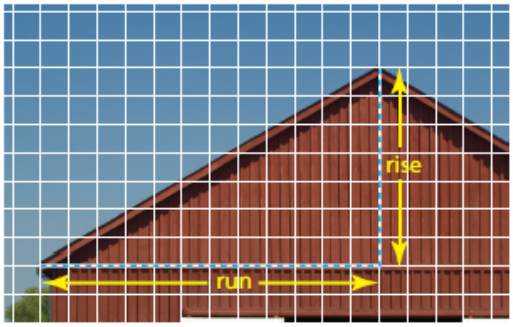
Roof A

For Roof A

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

$$\text{Slope} = ?$$

Roof B

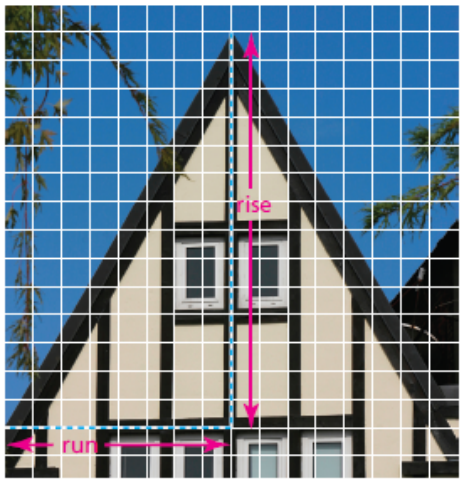


For Roof B

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

Slope = ?

Roof C



For Roof C

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

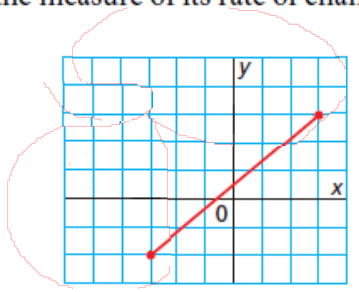
Slope = ?

6.1 Slope of a Line

The slope of a line segment on a coordinate grid is the measure of its rate of change.
From Chapter 5, recall that:

$$\text{Rate of change} = \frac{\text{change in dependent variable}}{\text{change in independent variable}}$$

$$\text{Rate of change} = \frac{\text{change in } y}{\text{change in } x}$$



The change in y is ?
The change in x is ?

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

6.1 Slope of a Line

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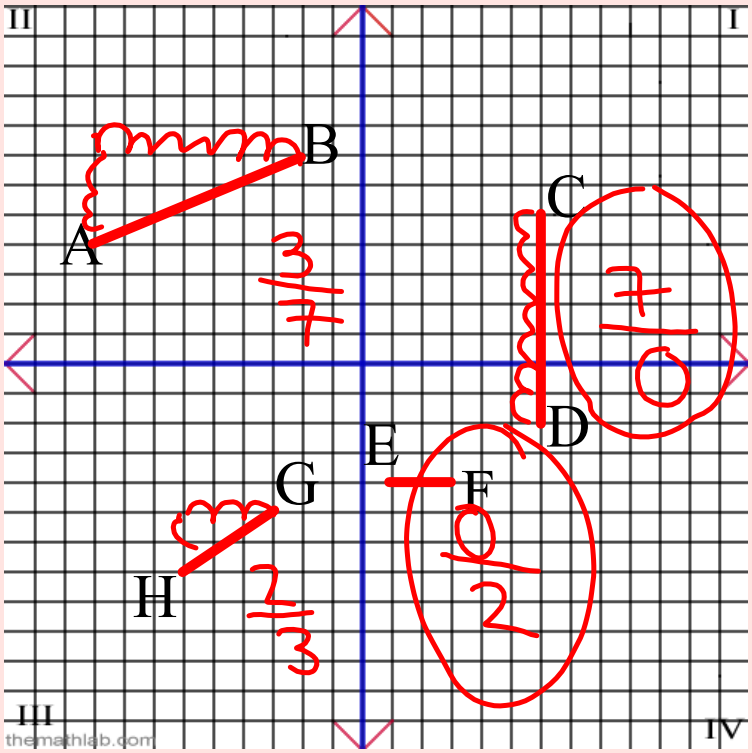

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$

This is used when you can see the graph!

$\frac{0}{2} = 0$

$\frac{7}{0}$ = Error! Undefined

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Calculating slope!

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

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Calculating slope!

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

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Find the slope of a line passing through the points (2,-3) and (-5,8).

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

This is used when you are given co-ordinates.

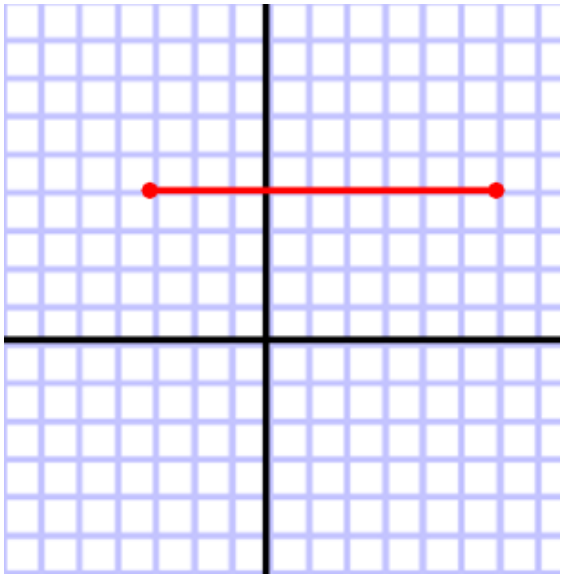
x_1, y_1

x_2, y_2

(x, y)

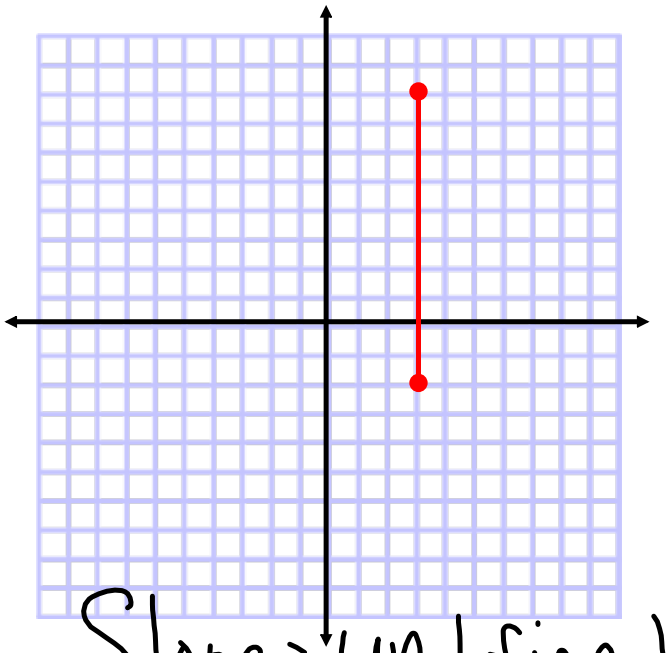
$$\frac{8-(-3)}{-5-2} = \frac{11}{-7}$$

Horizontal Line



Slope = 0

Vertical Line



Slope = Undefined

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Calculate the slope.

x_1, y_1 x_2, y_2

1. (3,5) (2,8)

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

$$m = \frac{8-5}{2-3}$$

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

$$m = \frac{-3}{1_1}$$

2. (-9,-2) (7,3)

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

$$m = \frac{3-(-2)}{7-(-9)}$$

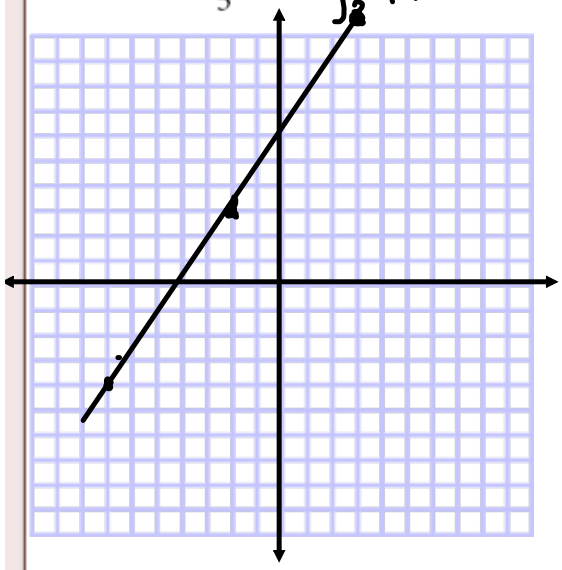
$$m = \frac{3+2}{7+9}$$

$$m = \frac{5}{16}$$

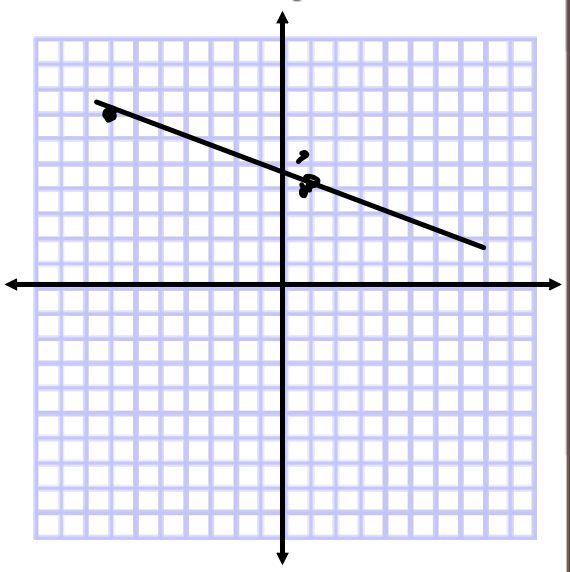
Example 2 Drawing a Line Segment with a Given Slope

Draw a line segment with each given slope.

a) $\frac{7}{5}$ up 7 right 5



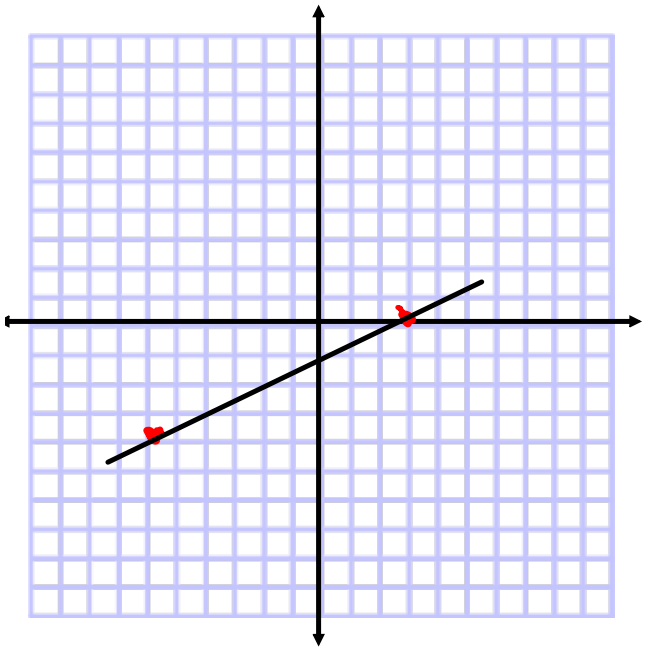
b) $-\frac{3}{8}$ $\frac{-3}{8}$ down 3 right 8

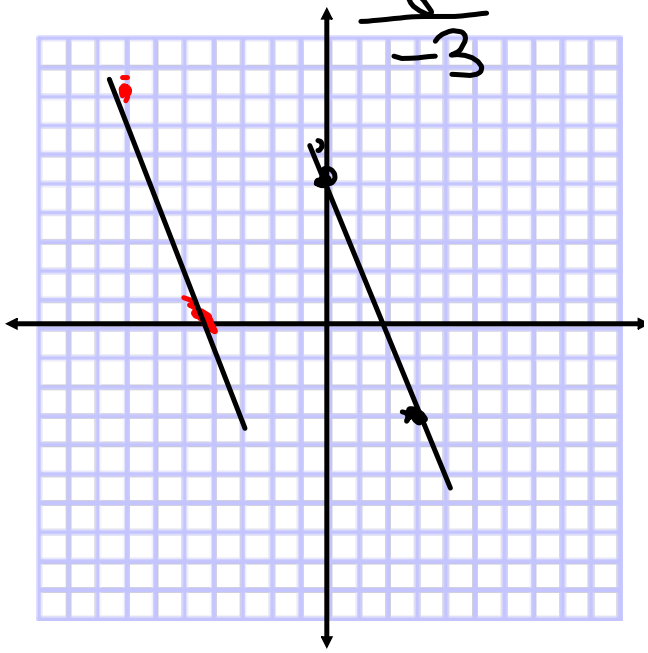


2. Draw a line segment with each slope.

a) $\frac{4}{9}$ **b)** $-\frac{8}{3}$

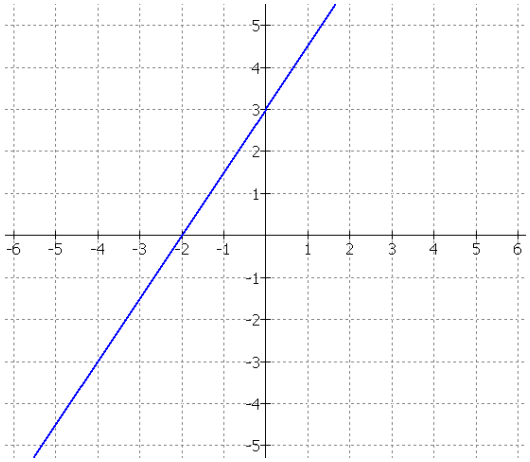
$\frac{-8}{3}$ $\frac{8}{-3}$



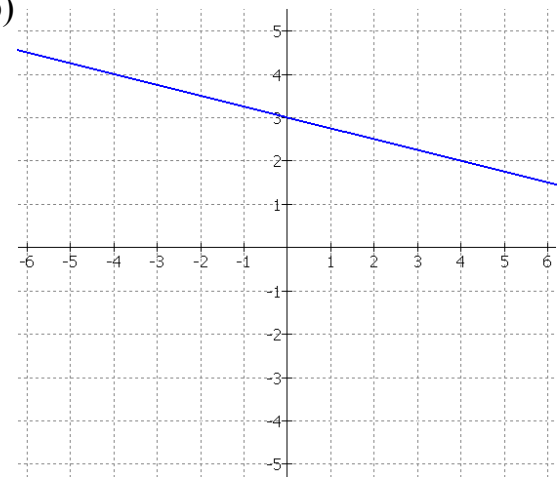


Determine the slope of each of the following lines:

(a)



(b)



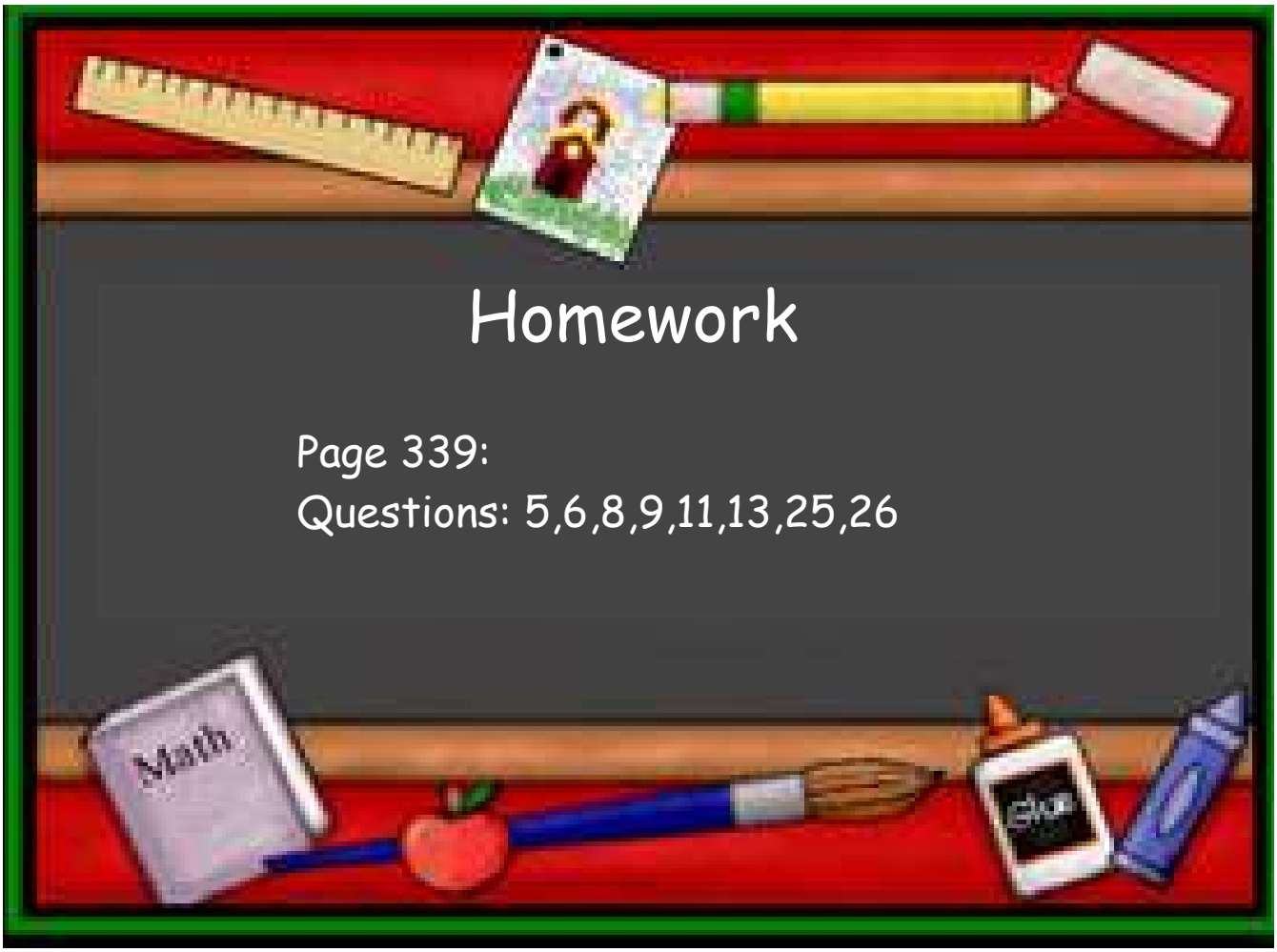
Which ordered pairs should we use to make our calculation?

$$slope = \frac{\Delta y}{\Delta x}$$

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

$$slope = \frac{\Delta y}{\Delta x}$$

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


Homework
Page 339:
Questions: 5,6,8,9,11,13,25,26
Math
Glue