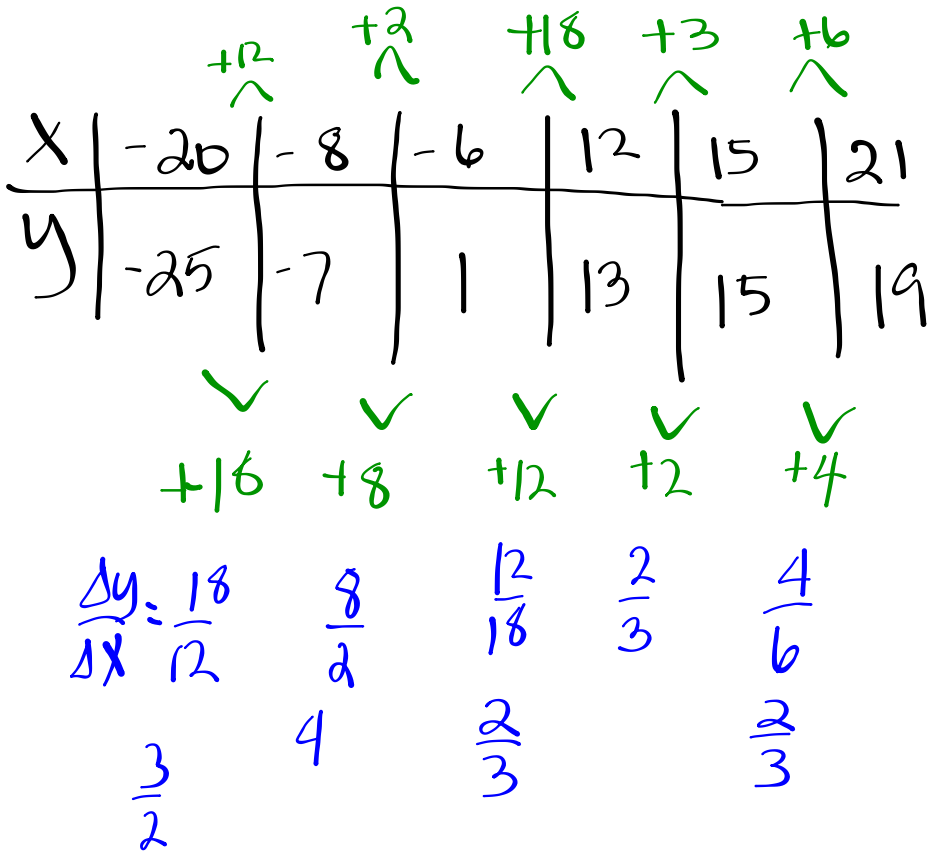
Warm Up

9/25

1. Calculate the slope of the line that goes through the 2 points on your card.

2. Find other people who have calculated the same slope and sit with them.

3. Once together figure out if all your points are on the same line.


+12
+2
+18
+3
+6
x | -20 | -8 | -6 | 12 | 15 | 21
y | -25 | -7 | 1 | 13 | 15 | 19
+16
+8
+12
+2
+4
Δy/Δx = 18/12
8/2
12/18
2/3
4/6
3/2
4
2/3
2/3

$(5,5)\ (-4,-22)\quad \frac{\Delta y}{\Delta x} = 3$

$(3,11)\ (-5,-13)\quad \frac{\Delta y}{\Delta x} = 3$

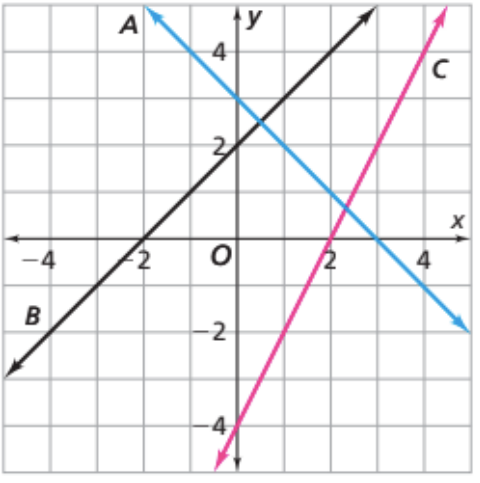
$-2 < \begin{matrix} 5,5 \\ 3,11 \end{matrix} > +6\quad \frac{\Delta y}{\Delta x} = \frac{6}{-2} = -3$

All on the same line!

Homework Questions?

Page 47, #'s 6 and 7

6. Here is a graph of three lines.



a. Complete the table.

Line	Constant Rate of Change	*y*-intercept	*x*-intercept
A			
B			
C			

b. Here are the equations of the three lines. Match each line with its equation.

equation D: $y = 2 + x$

equation E: $y = -4 + 2x$

equation F: $y = 3 - x$

line A

line B

line C

7. Two points determine a line.

a. Which of these points are on the line that passes through $(0, 3)$ and $(2, 5)$?

$(4, 7)$ $(4, 8)$ $(4, 10)$

b. Which of these points are on the line that passes through $(-2, 10)$ and $(1, 4)$?

$(2, 0)$ $(2, 2)$ $(2, 10)$

$+3 < -2, 10 > -6$

$+1 < 1, 4 > -2$

$2, 2$

$\frac{\Delta y}{\Delta x} = \frac{-6}{3} = \frac{-2}{1}$

Complete A-B

2.3 Tree Top Fun
Equations for Linear Functions

Tree Top Fun (TTF, for short) runs adventure sites with zip lines, swings, rope ladders, bridges, and trapezes. The company uses mathematical models to relate the number of customers, prices, costs, income, and profit at its many locations.

$P = I - E$

Profit
$ they make that they keep

Income
money that comes in

Expense
Equipment
Land costs
Salaries for employees
Building/upkeep
Insurance

Complete A-B

Problem 2.3

When finding an equation, it may help to calculate values of the dependent variable for some specific values of the independent variable. Then you can look for a pattern in those calculations. You can use the information given in words, tables of data, and graphs.

A Use what you know about linear equations to work out models for the Tree Top Fun business. Find an equation for each of the linear functions described below.

1. The standard charge per customer at TTF is \$25. Write an equation that relates the daily income I to the number n of customers.
2. Each TTF site has operating costs of \$500 per day. Write an equation that relates daily profit P to the number n of customers.
3. One TTF site bought a new rope bridge for \$4,500. TTF will make monthly payments of \$350 until the bill is paid. Write an equation for the unpaid balance B after m monthly payments.

continued on the next page >

Complete A-B

Problem 2.3 continued

B One operator of a Tree Top Fun franchise suggested the group admission fees in the table below.

Number in Group	1	2	3	4	5	10	15	20
Admission (dollars)	75	90	105	120	135	210	285	360

1. Explain how you know the relationship between the admission fee for a group and the number of people in the group is linear.
2. What are the slope and y-intercept of the graph of the data?
3. What equation relates admission fee A to the number n in the group?

Homework

Finish Problem 2.3 A-C