Algebra 1A

Lesson 5.6

Fit a Line to Data

Warm-Up

Write an equation in **slope-intercept form** that passes through the given points.

(a) (-4, 1) and (6, -4)

Slope: $\frac{-4-1}{6-(-4)} = \frac{-5}{10} = -\frac{1}{2}$

POINT: $(-4, 1)$

$y - 1 = -\frac{1}{2}(x+4)$

$y - 1 = -\frac{1}{2}x - 2$

$+1 \quad +1$

$y = -\frac{1}{2}x - 1$

(b) (2, -3) and (-1, 6)

Slope: $\frac{6-(-3)}{-1-2} = \frac{9}{-3} = -3$

POINT: $(2, -3)$

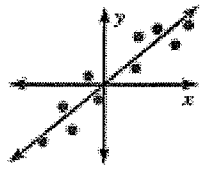
$y + 3 = -3(x-2)$

$y + 3 = -3x + 6$

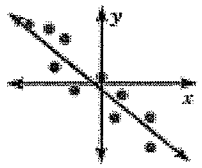
$-3 \quad -3$

$y = -3x + 3$

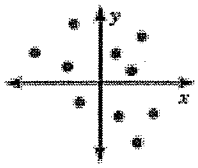
Scatter Plot – a graph used to determine whether there is a relationship between paired data



Positive Correlation



Negative Correlation

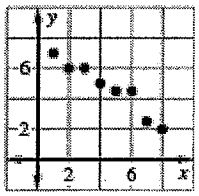


No Correlation

Example 1. Describe the Correlation of Data

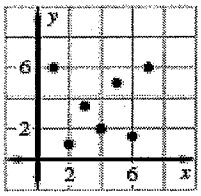
Describe the correlation of the data shown in each scatter plot.

(a)



Negative Correlation

(b)



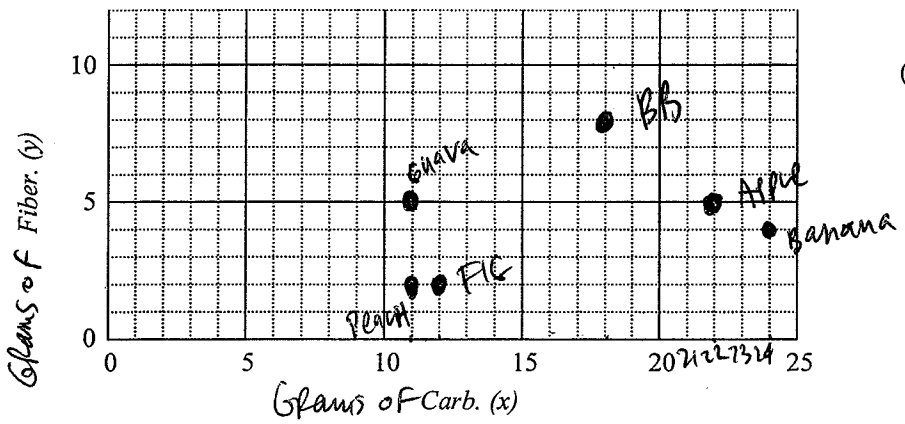
No Correlation

Example 2. Make a Scatter Plot

The table shows the carbohydrates (in grams) and the fiber (in grams) in six types of fruit.

Fruit	Apple	Banana	Blackberry	Fig	Guava	Peach
Carb.	22	24	18	12	11	11
Fiber	5	4	8	2	5	2

(a) Make a scatter plot of the data.



(b) Describe the correlation of the data.

No correlation

*If we had more fruits, we could make a better conclusion

Example 3. Write an Equation to Model Data
The table shows the average attendance at Varsity basketball games for a number of years since 2000.

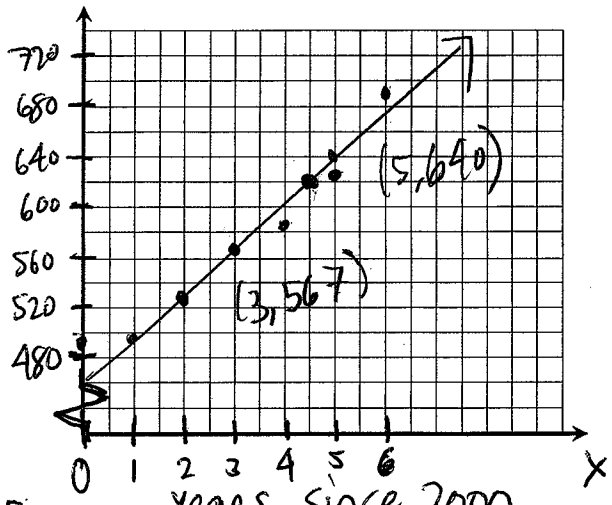
Year	2000	2001	2002	2003	2004	2005	2006
Attendance	488	497	525	567	583	621	688

Step 1 – Make a scatter plot of the data

Step 2 – Decide if the data can be modeled by a line
positive correlation

Step 3 – Draw a line that fits the data closely ✓

Step 4 – Write an equation using two points on the line



(5,640) (3,567)

Slope: $\frac{640-567}{5-3} = \frac{73}{2} = 36.5$

POINT: (5,640)

$y - 640 = 36.5(x-5)$ (attendance)

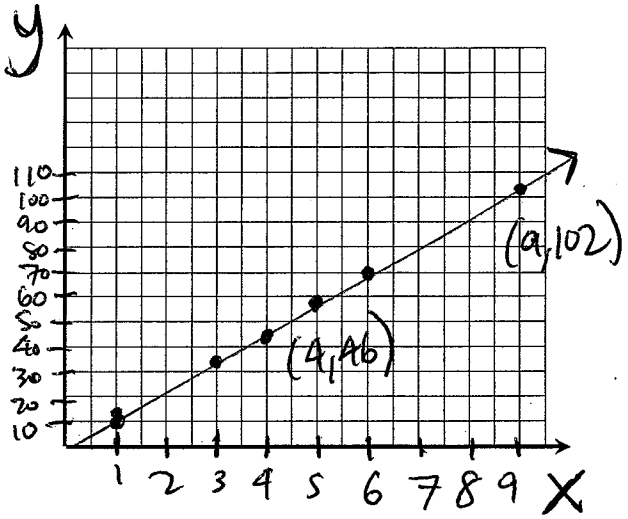
$y - 640 = 36.5x - 182.5$

$+640 \quad +640$

$y = 36.5x + 457.5$

Try It!
Make a scatter plot of the data in the table. Draw a line of fit. Write an equation of the line.

x	1	1	3	4	5	6	9
y	10	12	33	46	59	70	102



Slope: $\frac{102-46}{9-4} = \frac{56}{5} = 11.2$

POINT: (4,46)

$y - 46 = 11.2(x-4)$

$y - 46 = 11.2x - 44.8$

$+46 \quad +46$

$y = 11.2x + 1.2$

Assignment
New: Pg. 328 #3-5, 7-10, 13, 14
Review:
Use the following information to write the equation in:
a) Point – Slope Form
b) Slope – Intercept Form
c) Standard Form

1. (3,4) $m = 2$
2. (-2, 1) $m = \frac{1}{2}$
3. (8, 6) (4, 2)