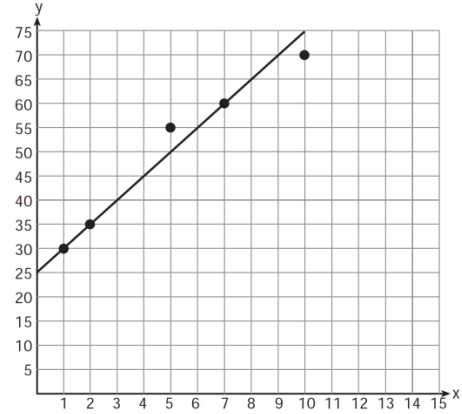


**UNIT 4**

**LESSON 7**

**Do Now:** A scatter plot was constructed on the graph below and a line of best fit was drawn. What is the equation of this line of best fit?

- 1)  $y = x + 5$
- 2)  $y = x + 25$
- 3)  $y = 5x + 5$
- 4)  $y = 5x + 25$

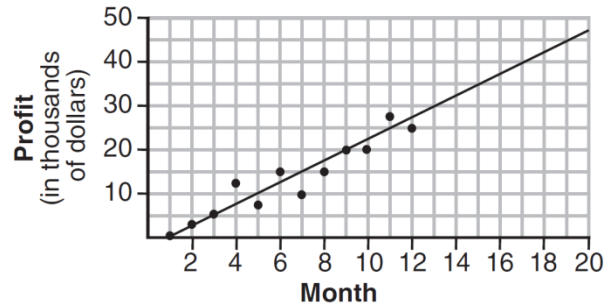


**AIM: Calculating the Line of Best Fit**

**Line of Best Fit:** \_\_\_\_\_

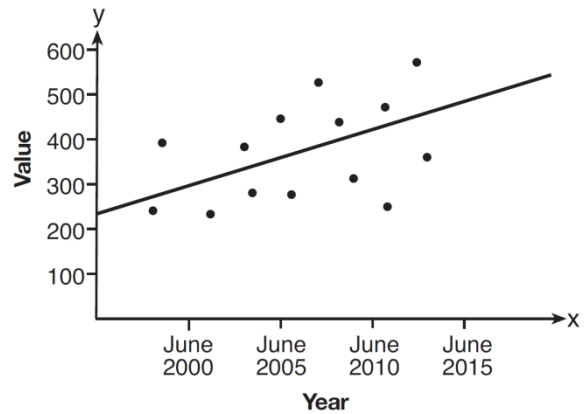
1. The scatter plot below shows the profit, by month, for a new company for the first year of operation. Kate drew a line of best fit, as shown in the diagram. Using this line, what is the best estimate for profit in the 18th month?

- 1) \$35,000
- 2) \$37,750
- 3) \$42,500
- 4) \$45,000



2. Based on the line of best fit drawn below, which value could be expected for the data in June 2015?

- 1) 230
- 2) 310
- 3) 480
- 4) 540



**Correlation Coefficient:** \_\_\_\_\_

3. The following data is from a survey of eight female high school juniors comparing right foot size and height to answer the following questions.

a) What is the linear regression equation for these data, to the nearest hundredth?

Right foot (cm)	Height (cm)
22.1	157.1
22.9	160.8
23.1	161.4
23.4	161
24.1	162.8
24.6	164
25.4	164.7
26.1	164

b) Find the correlation coefficient to the nearest thousandth. Explain its meaning.

4. During the months of February and March, the weekly number of jars of strawberry jam sold at a local market in New York was recorded. For the same time frame, the number of copies of a popular classical music CD sold in Florida was recorded.

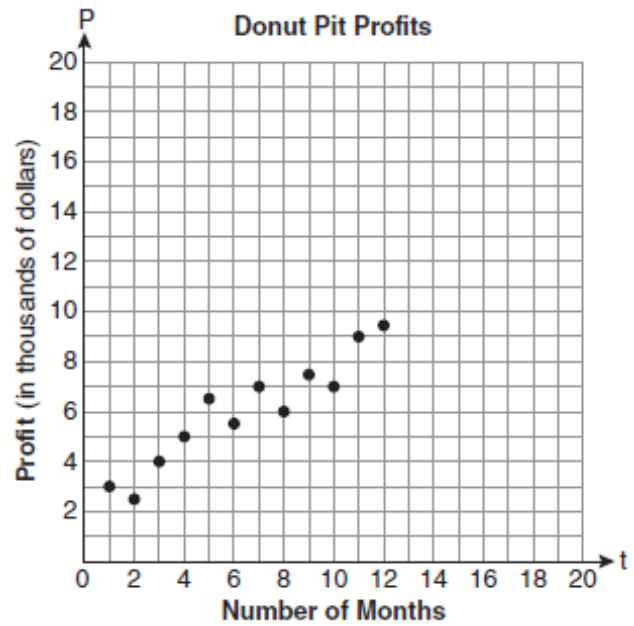
a) Find the equation of the line of best fit. Round values to the nearest hundredth.

Weekly Data Collection	
The jars of jam	The number of CDs
5 jars	25 CDs
7	30
9	35
10	42
11	48
11	52
12	56

b) Find the value of the correlation coefficient to the nearest thousandth. Explain its meaning.

5. Morgan and Dylan opened a new store called the Donut Pit. Their goal is to reach a profit of \$20,000 in their 18th month of business. The table and scatter plot below represent the profit,  $P$ , in thousands of dollars, that they made during the first 12 months.

t (months)	P (profit, in thousands of dollars)
1	3.0
2	2.5
3	4.0
4	5.0
5	6.5
6	5.5
7	7.0
8	6.0
9	7.5
10	7.0
11	9.0
12	9.5



- Find the equation of the line of best fit. Round values to the nearest hundredth.
- Find the value of the correlation coefficient to the nearest thousandth. Explain its meaning.
- Using the line of best fit; predict whether Morgan and Dylan will reach their goal in the 18th month of their business.

Name: \_\_\_\_\_

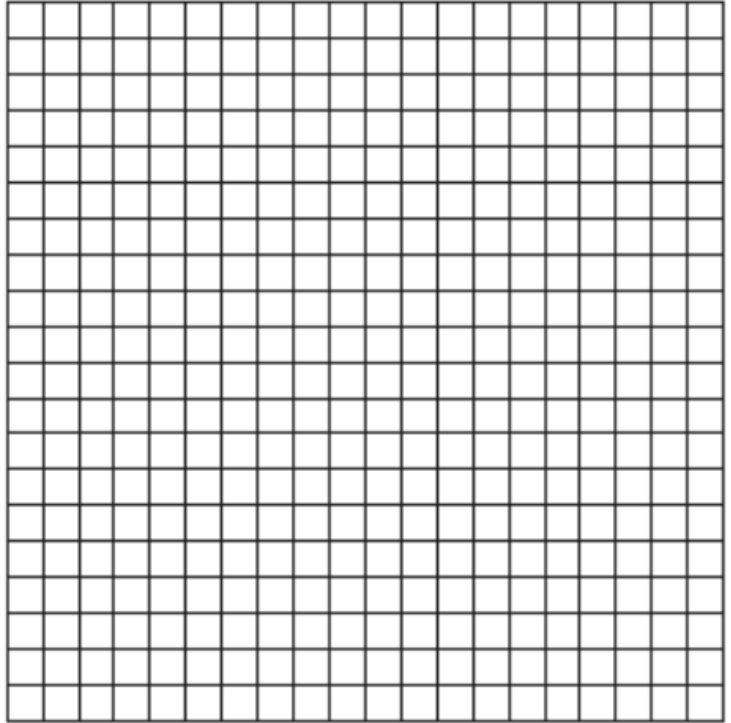
Date: \_\_\_\_\_

HW# \_\_\_\_\_

1. The average life expectancy (in years) of a person based on various years of birth is listed in the following table.

Year of birth	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990
Life expectancy	44.3	47	51.1	56.7	59.9	71.2	72.7	74	76	80

- a) Graph the data and sketch the line best fit.
- b) Find the line of best for this data, rounded to the nearest hundredth.
- c) What is the correlation coefficient for these data to the nearest thousandth?  
Explain it's meaning.
- d) Predict the life expectancy of someone born in the year 1978. Round value to the nearest whole number.



- e) Predict the year someone was born if they lived 90 years old. Round to the nearest year.

- f) Predict your life expectancy, rounded to the nearest year!!

2. Albert says that the two systems of equations shown below have the same solutions.

<b>First System</b>	<b>Second System</b>
$8x + 9y = 48$	$8x + 9y = 48$
$12x + 5y = 21$	$-8.5y = -51$

Determine and state whether you agree with Albert. Justify your answer.