Objective: Use scatter plots and lines of best fit to analyze the relationship between two sets of data
Scatter Plot:

## Types of Correlations:



## Line of Best Fit:

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$\qquad$
$\qquad$


## Example 1

A group of students each measured the growth of a group of plants at different ages. The results are shown in the scatterplot below.


Which conclusion about the growth rate of the group of plants is best supported by the data?
A The plants grew about 2 inches per month.
B The plants grew about 3 inches per month.
C The plants grew about 4 inches per month.
D The plants grew about 6 inches per month.
A food manufacturer compared the cooking times for different frozen foods in a microwave
oven $(x)$ to the cooking times in a conventional oven $(y)$. A line of best fit for the data
collected is $y=0.5 x+5$. Which scatterplot best represents this set of data?

## Example 2:

a) Which is the line of best fit?

b) What does the slope mean in this context?
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The scatterplot below shows the relationship between the test grades for 10 students and the numbers of hours they studied per week.

Based on the scatterplot, which is the best prediction of the test grade for a student who studied for 7 hours?

F $98 \%$
G $91 \%$
H 88\%
J $82 \%$


## Olympics Scatter Plot

The scatter plot will show the winning 100 meter dash times, in seconds, for each Olympic games since 1900.


1) Plot the times for each Olympic games. (Be careful: some years were skipped because of wars!)

| Year | 1900 | 1904 | 1908 | 1912 | 1920 | 1924 | 1928 | 1932 | 1936 | 1948 | 1952 | 1956 | 1960 | 1964 | 1968 | 1972 | 1976 | 1980 | 1984 | 1988 | 1992 | 1996 | 2000 | 2004 | 2008 |
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| Time $(\mathrm{s})$ | 11 | 11 | 10.8 | 10.8 | 10.8 | 10.6 | 10.8 | 10.3 | 10.3 | 10.3 | 10.4 | 10.5 | 10.2 | 10 | 9.95 | 10.14 | 10.06 | 10.25 | 9.99 | 9.92 | 9.96 | 9.84 | 9.87 | 9.85 | 9.69 |

2) Draw a line of best fit through the data.
3) Choose two points on your line and use them to approximate the slope.
4) Find the $y$-intercept, and write an equation in the form $y=m x+b$. (Pretend 1900 is year 0 )
5) Explain what the slope means in terms of the situation.
6) Predict the winning 100 meter dash time in 2020.
