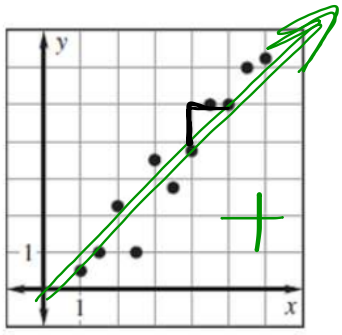
# Unit 11: Comparing Linear, Quadratic, & Exponential Functions

## Day 1 – Scatterplots

A **scatterplot** is a graph of data pairs (x, y). Scatterplots are typically used to describe relationships, called **correlations**, between two variables (bi-variate). The **correlation coefficient** describes how well a line fits the data. A **trend line** can be drawn to help determine correlation.

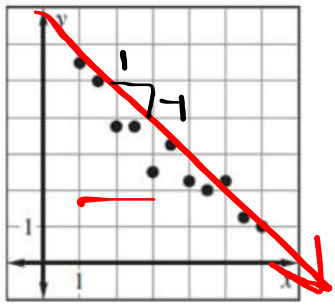


**Positive Correlation**

As x values increase, y values increase

Correlation Coefficient is close to 1

Positive Slope

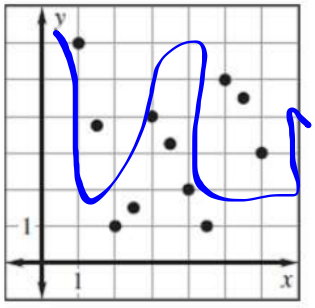


**Negative Correlation**

As x values increase, y values decrease

Correlation Coefficient is close to -1

Negative Slope



**No Correlation**

No relationship between x and y

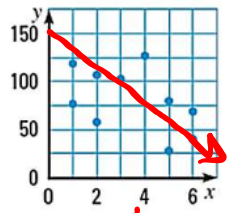
Correlation Coefficient is close to 0

No line

| Correlation Coefficients | | | |
|---|---|---|---|
| 0.70 to 1.00 | Strong Positive | 0.70 to 1.00 | Strong Negative |
| 0.30 to 0.69 | Moderate Positive | 0.30 to 0.69 | Moderate Negative |
| 0.00 to 0.29 | None to Weak Positive | 0.00 to 0.29 | None to Weak Negative |

**Example:** Determine if the following graphs have positive, negative, or no correlations. Then tell if the correlation coefficient is strong, moderate, or weak positive or negative.

a.



weak

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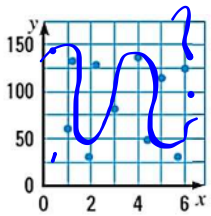
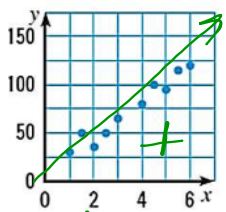
b.



No

c.

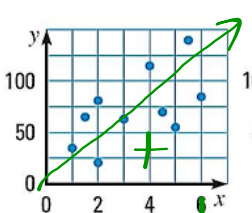
c.



strong

+

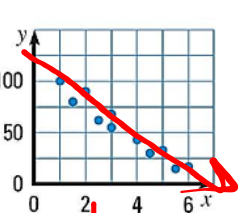
d.



weak

+

e.



strong

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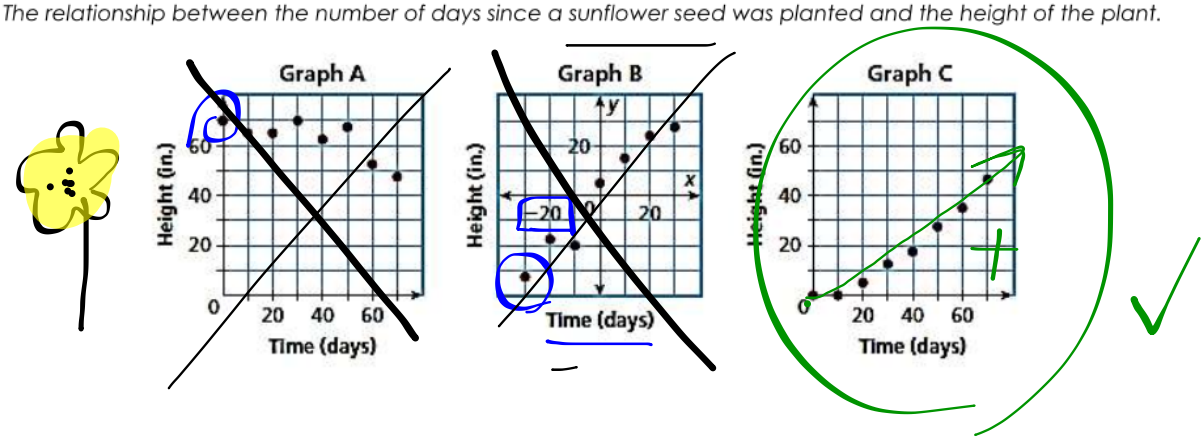
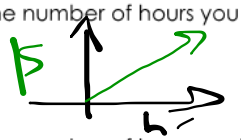
Algebra 1 Unit 11: Comparing Linear, Quadratic, and Exponential Functions Notes

**Example:** Describe the scatterplot that best describes the scenario below and explain why:
*The relationship between the number of days since a sunflower seed was planted and the height of the plant.*



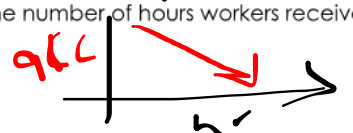

**Example:** Describe the correlation you would expect to see between each pair of data sets. Explain your choice:

a. The number of hours you work vs the amount of money in your bank account:



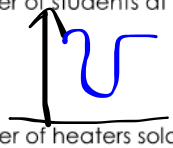
positive

b. The number of hours workers receive safety training vs the number of accidents on the job:



neg

c. The number of students at Allatoona vs the number of dogs in Atlanta:



? no corr

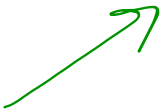
d. The number of heaters sold versus the months in order from April to September:

neg

e. The number of rice dishes eaten vs the number of cars on I-75 throughout the day:

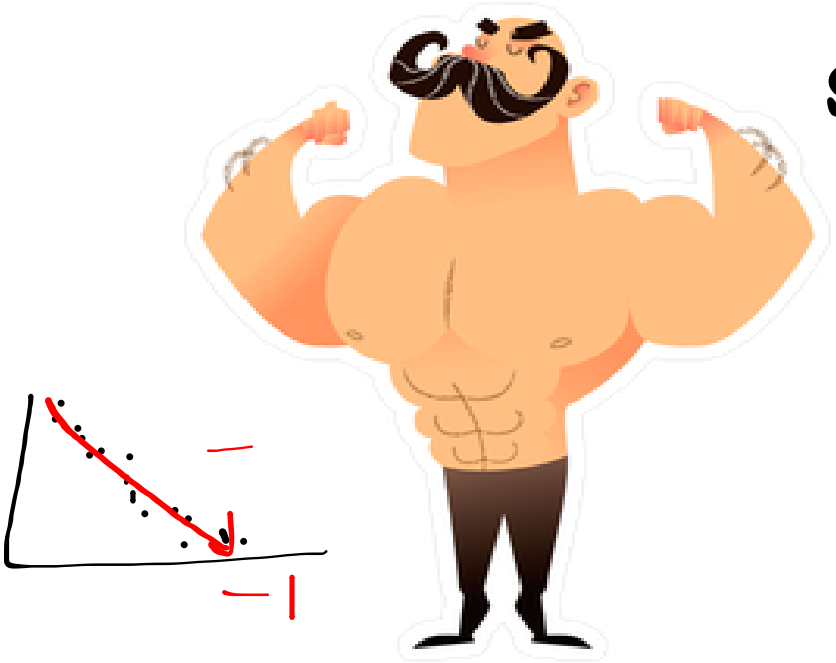
? no corr

f. The number of calories burned/lost vs the amount of hours you worked out:



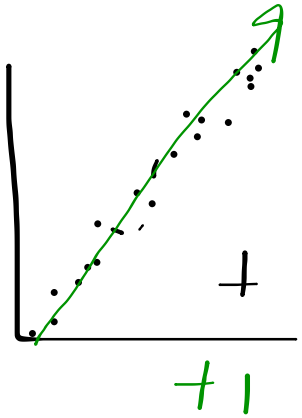
pos

2



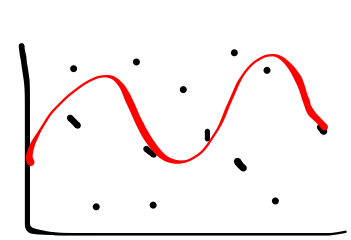
STRONG




WEAK

- close to 0



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