**Scatter Plots, Correlation, and Best-Fitting**

1. In your own words, what is a best fit line (or line of best fit)?

**Using a ruler, draw in the best fit line.**

1. 3. 4.

![[image]]() ![[image]]() ![[image]]()

1. 6. 7.

![[image]]() ![[image]]() ![[image]]()

1. In In your own words, what is correlation?

**Positive, Negative, or No Correlation:**

1. The number of hours you work vs The amount of money in your bank account
2. The number of hours workers receive safety training vs The number of accidents on the job.
3. The number of students at North Cobb vs The number of dogs in Atlanta
4. The number of heaters sold vs The months in order from February to July
5. The number of rice dishes eaten vs The number of cars on I-75 throughout the day
6. The number of calories burned/lost vs The amount of hours walked
7. Put the correlations in order from strongest to weakest:

 **a.** 0.9, 0.75, 0.6, 0.25 **b.** -0.87, 0.5, -0.2, 0.77

1. Given the correlation coefficient (r), draw a graph that represents the strength and describe the shape and direction that you drew.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Correlation Coefficient** | **Graph** | **Description** | **Correlation Coefficient** | **Graph** | **Description** |
| 1 | [image] |  | -0.25 | [image] |  |
| 0.75 | [image] |  | -0.50 | [image] |  |
| 0.5 | [image] |  | -0.75 | [image] |  |
| 0.25 | [image] |  | -1 | [image] |  |
|  | 0 | [image] |  |  |

**ROTTEN TOMATOES: Correlation Activity 1**

Neighbor’s Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Rate the following movies from 1 to 5 (1 being the worst and 5 being the best. If you have not watched the movie, then you must rely on your neighbors opinion and score it the same as them.

|  |  |  |  |
| --- | --- | --- | --- |
| MOVIE | Your Rankings🡪 x | Neighbor’s🡪 y | (x, y) |
| Toy Story  |  |  |  |
| Ironman |  |  |  |
| X-men |  |  |  |
| High School Musical |  |  |  |
| Princess Diaries |  |  |  |
| Lord of the Rings |  |  |  |
| Harry Potter |  |  |  |
| Shrek |  |  |  |
| Pirates of the Caribbean |  |  |  |
| Star Wars |  |  |  |

Now plot your data:

Draw a line of best fit:

Position your ruler on the graph to follow the general trend of the data, then move the ruler and mark a line so that approximately half of data points are above the line, and approximately half of data points and below the line.

Choose two sets of ordered pairs [(x1, y1) and (x2, y2)] to find out the linear equation of the line, in the form of $y=a+bx$.

Show all work.

Characteristics:

Correlation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Direction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Shape: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**GUESS MY AGE: Correlation Activity 2**

Look at the pictures of various people to estimate their ages. Use their physical appearance and personal prior knowledge to make educated guesses. (Begin each axis at 0 and use scale of 5)

|  |  |  |
| --- | --- | --- |
| Name | Age Guess (x) | Actual Age (y) |
| Barak Obama |  |  |
| Muhammad Ali |  |  |
| Oprah Winfrey |  |  |
| Jennifer Lopez |  |  |
| Colin Powell |  |  |
| Tiger Woods |  |  |
| Miranda Cosgrove |  |  |
| Matthew McConaughey |  |  |
| Ryan Seacrest |  |  |
| Michael Jordan |  |  |
| Zayn Malik |  |  |
|  |  |  |

Upon learning the people’s actual ages make a scatterplot of the data.

Draw a line of best fit:

Position your ruler on the graph to follow the general trend of the data, then move the ruler and mark a line so that approximately half of data points are above the line, and approximately half of data points and below the line.

Choose two sets of ordered pairs [(x1, y1) and (x2, y2)] to find out the linear equation of the line, in the form of $y=a+bx$.

Show all work.

Characteristics:

Correlation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Direction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Shape: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_