**Scatter Plots and Trend Lines**

The table and graph give the height (in inches) and weight (in pounds) of some of the NBA’s greatest players.

|  |  |  |  |
| --- | --- | --- | --- |
| Sample of Top 50 All-Time NBA Players | | | |
| Player | | Height | Weight |
| Kareem Abdul-Jabbar | | 86 | 266 |
| Larry Bird | | 80 | 220 |
| Wilt Chamberlain | | 85 | 275 |
| Patrick Ewing | | 84 | 255 |
| Magic Johnson | | 83 | 255 |
| Michael Jordan | | 78 | 215 |
| Scottie Pippen | | 79 | 228 |
| Isiah Thomas | | 73 | 182 |

*(Source: www.nba.com/history/players/50greatest)*

Several students drew trend lines to fit the data.

1. Student 1 connected the points for Isiah Thomas and Kareem Abdul-Jabbar. Student 2 connected the points for Isiah Thomas and Wilt Chamberlin. Explain why neither of these lines fit the data well.

Trend Line from Student 1 Trend Line from Student 2

 

1. Student 3 and Student 4 drew lines that do not pass through any of the data points. Which line is a better fit for the data? Explain.

Trend Line from Student 3 Trend Line from Student 4

 

1. Find the coordinates of two points on the trend line you chose in question (2) and use them to find the slope of that line.
2. What does the slope represent in this situation?
3. Find the equation of the line you chose in question (2).
4. Use your equation from part (b) to predict the weight of an NBA player whose height is 71 inches.
5. Use your equation from part (b) to predict the weight of an NBA player whose height is 82 inches.

**City and Highway Fuel Efficiency**

1. The table below gives the miles per gallon (MPG) used by some of 2010’s most fuel-efficient cars in the city and on the highway.
2. Graph the data, using city MPG for *x* and highway MPG for *y*.

|  |  |  |
| --- | --- | --- |
| **Car** | **City MPG** | **Highway MPG** |
| Toyota Prius | 51 | 48 |
| Honda Civic Hybrid | 40 | 45 |
| Honda Insight | 40 | 43 |
| SmartCar | 33 | 41 |
| Volkswagon Jetta | 30 | 41 |
| Toyota Yaris | 29 | 36 |
| MINI Cooper | 28 | 37 |
| Kia Rio | 28 | 34 |
| Hyundai Elantra | 26 | 35 |
| Honda Accord | 22 | 31 |



1. Draw a trend line through the points. Use two points on the trend line to find the equation of the line.
2. What does the slope represent in this graph?
3. Use your equation from part (b) to predict the highway MPG for a car that gets 38 MPG in the city.
4. Use your equation from part (b) to predict the city MPG for a car that gets 38 MPG on the highway.

**Temperature and Ice Cream Sales**

The scatter plots below show the relationship between temperature and ice cream sales.The same scatter plot is shown below with four different trend lines.

A B

 

C D

 

1. Which of the four lines (A, B, C, or D) do you think is the best fit for these data? Justify your choice.
2. What does the slope of the trend line tell us about the relationship between the two variables?
3. Does this relationship make sense in the real world context?
4. What was the approximate Fahrenheit temperature on the day ice cream sales were greatest? (A formula relating Fahrenheit and Celsius temperatures was introduced in Unit 2. Or, if you have forgotten the formula, find it in a reference book or on line.)