**Population Project Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Using data from the U.S. Census Bureau, you will analyze U.S. population trends from 1990 through 2010. The data has been broken down by demographic, so you can see how the population trends different groups compare.

**Part I**

Choose one demographic and analyze its population growth since 1990.

*Before you make your scatter plot, answer the following questions.*

1. Which demographic did you choose?
2. What correlation do you expect to see between time and population? (Positive or negative? Strong or weak?)

*Now make your scatter plot, add a trendline, and display the equation and r-squared value of your trendline.*

1. What is the coefficient of determination (R-squared value) for the linear trendline?
2. What is the R-squared value for the exponential trendline?
3. What model fits your data best—linear or exponential? How do you know?
4. Why do you think that model worked best?
5. What is the equation for your trendline?
6. Using the equation, predict how big the population will be in 2020 (120 years after 1900). Show your work.
7. Using the equation, predict how big the population will be in 2050. Show your work.

Bonus: According to your equation, in what year would (or did) the population reach 75,000,000?

**Part II**

Compare the population trends of two demographics since 1900. Instead of making just one trendline, this time you’ll make two—one for each demographic.

*Highlight the Year, White (non-hispanic), and Non-white columns to make your scatter plot. Once that’s done, add a trendline to each set of data and display the equation and r-squared value of your trendline.*

1. What is the coefficient of determination (R-squared value) for the “White (non-hispanic)” linear trendline? For the exponential trendline? Circle the one that fits the data best—linear or exponential.

Linear: Exponential:

1. What is the equation for the trendline for the “White (non-hispanic)” data?
2. What is the R-squared value for the “Non-white” linear trendline? For the exponential trendline? Circle the one that fits the data best—linear or exponential.

Linear: Exponential:

1. What is the equation for the trendline for the “Non-white” data?
2. The best model was different for the two demographics. Why do you think linear worked best for one and exponential worked best for the other?

*Complete the table and use it to answer the questions below.*

1. Using your trendline equations, complete the table below.

|  |  |  |
| --- | --- | --- |
| **Year** | **White (non-hispanic)** | **Non-white** |
| 2020 (120) |  |  |
| 2030 (130) |  |  |
| 2040 (140) |  |  |
| 2050 (150) |  |  |
| 2060 (160) |  |  |
| 2070 (170) |  |  |

1. According to your calculations, when will non-whites outnumber whites (non-hispanic)?
2. Do you think your prediction is accurate? Or do you think it will take longer or shorter for non-whites to outnumber whites? Why do you think that? If you’re not sure, look back at your scatter plot.

Bonus: Do you think things will change when non-whites outnumber whites? How? Why?