**The Fortune Teller Assignment: Foundations of Math 12**

*Regression analysis* can be used to explore the relationship between two numerical variables. Numerical variables are measurements or counting numbers where the variable has a numerical meaning.

**Your task is to identify a question that involves changes in a numerical variable over time (days, months, or years).** After finding relevant data to an answer your question, you will need to predict (extrapolate) the future result for the year 2050. The *Stats Can* database holds a significant amount of data for you to access.

The following questions will help guide your work. Please play close attention to check in points so you keep on-task. Also, pay attention to timelines to help keep you on task. Good luck!

|  |  |
| --- | --- |
| **STEP 1:** What question are you interested in exploring?  *VARIABLE 1: TIME (plot this variable on the x-axis)*  *VARIABLE 2:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* | MS. WILSON’S APPROVAL  Feb. 24 |
| **STEP 2**: Find at least 30 data points and create a scatterplot. Be sure to include labels on each axis. Identify your domain and range. YOU WILL NEED TO PRESENT THIS GRAPH TO THE CLASS. | MS. WILSON’S APPROVAL  Feb. 24 |
| **STEP 3:** Use regression analysis to determine the polynomial function, exponential, logarithmic or sinusoidal function that approximates the data. Defend why you selected this function! YOU WILL NEED TO PRESENT THIS FUNCTION TO THE CLASS. | MS. WILSON’s APPROVAL  Feb. 24 |
| **STEP 4:** Discuss the end behavior, intercepts, and turning points in the function. | Feb. 25 |
| **STEP 5:** Use the relationship you found to  **Extrapolate** the future results for 2050.  DISCUSS: does this prediction make sense? Why or why not? | Feb. 25 |
| **STEP 6:** Present your findings to the class highlighting why you selected this data, your graph, regression equation and extrapolation. | Feb. 28 |

**Outcomes**

|  |  |
| --- | --- |
| Outcome | Score |
| -Describe the characteristics of functions by analyzing their graphs, highlighting patterns in end behavior, intercepts and turning points, domain and range |  |
| -Graph data and determine the function that best approximates the data using technology. Be sure to include labels and proper formatting. Defend your selection! |  |
| -Solve a relevant and interesting contextual problem that involves functions by extrapolating |  |
| -Communicate your findings clearly and confidently to the class and/or teacher |  |

**Self-Assessment Rubric**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Novice (1)  0-49% | Novice + (2)  50-59% | Apprentice (3)  60-69% | Apprentice + (4)  70%-79% | Expert- (5)  80-94% | Expert+ (6)  95-100% |
| I am only beginning to do this and most always need help, intervention from my teacher or my peers. Time for extra help. | I occasionally do this, but am still in learning stages. I usually need intervention or guidance from teacher or my peers. | I do this some of the time, but often need teacher assistance and/or guidance. Extra help is needed. | I do this appropriately MOST of the time, but sometimes I need assistance and/or guidance. | I do this satisfactorily MOST of the time, and I am very close to being a role model who could teach others. | I do this exceptionally well ALL the time. I am a role model to my peers and could effectively teach others. |

Ready to roll data sets – if you are interested! FIRST COME, FIRST SERVE!

AVERAGE AGE OF CANADIANS

|  |  |
| --- | --- |
| Age group3 5 | Median age |
| 1990 | 32.9 |
| 1991 | 33.3 |
| 1992 | 33.6 |
| 1993 | 34 |
| 1994 | 34.4 |
| 1995 | 34.8 |
| 1996 | 35.2 |
| 1997 | 35.6 |
| 1998 | 36 |
| 1999 | 36.4 |
| 2000 | 36.8 |
| 2001 | 37.2 |
| 2002 | 37.6 |
| 2003 | 38 |
| 2004 | 38.3 |
| 2005 | 38.6 |
| 2006 | 38.9 |
| 2007 | 39.2 |
| 2008 | 39.4 |
| 2009 | 39.6 |
| 2010 | 39.8 |
| 2011 | 40 |
| 2012 | 40.1 |
| 2013 | 40.3 |
| 2014 | 40.5 |
| 2015 | 40.7 |
| 2016 | 40.7 |
| 2017 | 40.8 |
| 2018 | 40.8 |
| 2019 | 40.8 |