**GRAPHICAL ANALYSIS UNIT ASSIGNMENT**

1. What type of relationship is demonstrated by each set of data?



1. Complete each table of values to determine the relationship that best describes each data set. Explain why for each one.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | y | 1st Differences | 2nd Differences | Percent Rate |
| 0 | 0 |  |  |  |
| 1 | 0.5 |  |  |  |
| 2 | 2 |  |  |  |
| 3 | 4.5 |  |  |  |
| 4 | 8 |  |  |  |
| 5 | 12.5 |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | y | 1st Differences | 2nd Differences | Percent Rate |
| 0 | 10 |  |  |  |
| 1 | 12.5 |  |  |  |
| 2 | 15 |  |  |  |
| 3 | 17.5 |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | y | 1st Differences | 2nd Differences | Percent Rate |
| 0 | 0.3 |  |  |  |
| 1 | 1.5 |  |  |  |
| 2 | 7.5 |  |  |  |
| 3 | 37.5 |  |  |  |

1. The formula for the number of contestants, *C*, in a competition that began with *B* contestants and eliminates *n* contestants in each round, *r*, is given by the equation: $C=B\left(\frac{1}{n}\right)^{r}$. Explain which variable(s) to set constant to generate a(n):
2. linear relationship
3. quadratic relationship

c) exponential relationship

1. The population of a region increases by 1.5% every year. If the initial population is 25 000:
2. Write the equation
3. Complete a table of values for 0 to 5 years
4. Graph the relationship
5. Graph the following information and determine the equation of the line of best fit.

|  |  |
| --- | --- |
| Time (h) | Distance Travelled (m) |
| 2 | 195 |
| 3 | 302 |
| 5 | 508 |
| 6 | 599 |

1. A juggler tosses balls from one hand to the other. The following equations represent the height of a ball, *B*, above its release point, after *t* seconds.

Right-Hand Toss: $B=8.4t-9.8t^{2}$

Left-Hand Toss: $B=3.4t-9.8t^{2}$

Graph the two equations on the same the graph, and determine the maximum height of a ball tossed by each hand in the air. (HINT: Use DESMOS!!!)