Name_____

Mold Investigation

Portfolio Piece

Objectives: To model the growth of mold using an algebraic function.

Requirements: (all in paragraph form except graphs and diagrams)

- Title
- Introduction in paragraph form including:
  - Brief summary of experiment
  - Define all variables (independent and dependent)
- Materials List
- Procedure
  - Detailed step-by-step instructions for experiment
  - Instructions for how to take daily data
- Hypothesis
  - Graph (sketch)
  - Paragraph explaining graph
- Data Table with columns for
  - Date
  - Numbers of days elapsed
  - Number of squares completely covered
  - Mold Area in square inches
  - Percent difference of mold area from previous day
  - Observations
- Equation that best fits your data
  - Title for equation (ex: Grymonpré's Law of Mold)
- Hand-made graph
  - Data is plotted and connected with straight lines
  - Equation is graphed as a smooth curve (or line if appropriate) with an arrowhead
  - Legend
  - Follow graph checklist on rubric
- Results and Discussion
  - How you determined the form of the equation (linear, quadratic, exponential, etc.). Give your reasoning.
  - How you determined the value of each parameter in your equation:
    - What were your initial guesses for each parameter, and how did you get them?
    - Which parameters did you change and why?
    - For each parameter, describe how changing it affected your graph.
  - Why does mold growth follow your equation?
    - Describe in detail how mold grows and why this form of equation works (you will have to research this).
- Labeled diagram showing several generations of mold growth (start off with just one mold spore) and explaining why it follows your equation
- Conclusion
  - What have you learned, about mold, Algebra, and graphing calculators
  - Importance & applications for your equation

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Mold Investigation Rubric

Category	Beginning	Approaching	Meeting	Exceeding
Completeness	Several days late. Several sections from assignment are missing.	One day late. One or two sections from assignment are missing.	On-time. Includes every section from assignment.	On-time. Includes every section and additional discussion or information
Equations & Graphing	Equation is missing, not in correct form, or does not fit data. Graph is missing several items from checklist. Graph is missing, incorrect, or incomplete.	Equation is in correct form but does not fit data well. Graph is missing one or two items from checklist.	Equation is in correct form and fits data well. Graph is correct and includes everything from checklist.	Equation fits data nearly perfectly. All steps for deriving equation are shown. Graph is visually appealing.
Connections	Few or no connections are made between the data, equation, graph, and situation. Analysis of data is incorrect.	Some connections are made between the data, equation, graph, and situation, but there are some missed connections. Analysis of data is unclear or slightly incorrect.	Several appropriate connections are made between the data, equation, graph, and situation. Analysis of data is reasonable.	Extra connections are made, some showing deep thought. Analysis of data shows good critical thinking skills.
Communication	Writing is not in complete sentences or extremely unclear. Few or no mathematical terms are used appropriately.	Writing is slightly unclear or difficult to understand. Some mathematical terms are either missing or used inappropriately.	Writing is clear and concise in complete sentences. Mathematical terms are used appropriately.	Writing is easy to read and flows nicely. Mathematical terms are used appropriately and explained in great detail.

Graph checklist:

- All lines drawn with a straight edge
- Axes numbered evenly, with labels, units, and arrowheads
- Graph is in color, with a legend
- Graph has title
- Graph is spread out, taking up the whole page

Draft Number _____

Overall Grade _____