

PAPER FOLDING

Mathematical Goals

- Write and graph an equation to represent an exponential relationship.
- Model a data set using an equation.
- Choose the best form of an equation to model exponential functions.
- Use properties of exponents to solve and interpret the solution to exponential equations in context.
- Graph equations on coordinate axes with labels and scales.

Common Core State Standards

MCC9-12.A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and exponential functions.

MCC9-12.A.CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

MCC9-12.A.CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.

MCC9-12.N.Q.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

MCC9-12.N.Q.2 Define appropriate quantities for the purpose of descriptive modeling.

MCC9-12.N.Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

MCC9-12.A.SSE.1 Interpret expressions that represent a quantity in terms of its context.

MCC9-12.A.SSE.1a Interpret parts of an expression, such as terms, factors, and coefficients.

MCC9-12.A.SSE.1b Interpret complicated expressions by viewing one or more of their parts as a single entity.

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

The Paper Folding Activity

Part 1: Number of Sections

Number of Folds	Number of Sections
0	
1	
2	
3	
4	
5	
6	

1. Fold an 8.5 x 11” sheet of paper in half and determine the number of sections the paper has after you have made the fold.
2. Record this data in the table and continue in the same manner until it becomes too hard to fold the paper.

3. Make a scatter plot of your data on a separate sheet of graph paper.
4. Determine a mathematical model that represents this data by examining the patterns in the table.
5. What might be different if you tried this experiment with an 8.5 x 11" sheet of wax paper or tissue paper? Answer using complete sentences.