

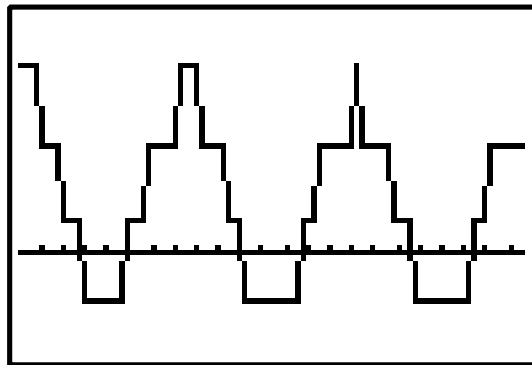
Algebra 1 Spring Final - Seniors

Do not write on this examination. Show all work and give units in your answers when appropriate.

1. Using the Data and Story Library linked on the Algebra web page, locate a set of data that appears to generate one of the three function models we have studied as part of the 7 Parts of Algebra.

- a) Document the source of this data and then migrate it to your TI calculator, Graphical Analysis or Excel.
- b) State the type of function model you think it is.
- c) Produce a Scatter Plot of this data set.
- d) Produce a Regression function, or do the “Bubble Boy” using your selected model.
- e) Produce a graph of the equation and the data.
- f) State your belief about the model type now. Explain.
- g) Attach an image of the graph from part e and send it to me by way of email.

2. How would you need to move in front of the CBR to produce a Distance vs. Time graph as shown below?



3. Give the minimum, or maximum value for $y = 3x^2 - 24x + 72$.

4. Give the rectangle formed by the expression by $3x^2 + 6x - 72$. State the factors.

5. Given the following data, demonstrating Hook’s Law, produce a model that best describes the pattern, and complete the table, using your equation.

Force Applied (N)	0	5	10	20	25	30
Length of Wire (mm)	500.00	500.50	501.00	*	*	*

6. From 1970 to 1990, the average annual per person consumption of Whole milk in the United States dropped from 103 liters to 43 liters. During the same period, the average annual consumption of Low-Fat milk rose from 25 liters to 60 liters. For which years did the consumption of Low-Fat milk by Americans exceed the consumption of Whole milk?

7. What is the value of $||4x| - |5y||$ when $x=3$ and $y=-2$?

8. For the data in the table below, answer these questions:

- Make a Scatter Plot.
- Get the best fit line for this data.
- Name the model type, from the 7 Parts of Algebra.
- Use this model to predict the Population in 2010.

Year of Census	Population (in Thousands)
1860	960
1870	1000
1880	1600
1890	1700
1900	2100
1910	2000
1920	2600
1930	2550
1940	3100
1950	3400
1960	3550
1970	3700
1980	3800
1990	4100

9. Moke's Rentals rents cars at \$10 per day plus 7 cents per kilometer. Andwa needs a car for four days. If she doesn't wish to spend more than \$150, about how many kilometers will she be able to drive?

10. The class is assigned the task of rolling marbles down a ramp tilted at heights of 10 cm, 15 cm, 30 cm, and 50 cm. The marbles must be released from the edge of the ramp. Students measure the distance the marble rolls once it leaves the end of the ramp.

- Make a table of values for the distance the marble travels, in cm, when released from the various tilted heights.
- Graph the data.
- Find the Domain and Range for this situation.
- Predict the distance the marble will travel if released from a tilted height of 8 cm, 12 cm, and 20 cm.