

Algebra 2
Introduction to Quadratics Notes



Obesity is a growing problem in the United States. According to the Center for Disease Control and Prevention, more than one-third of the population is obese. The annual medical cost for obesity in 2008 was \$147 million (www.cdc.gov). Obesity can cause medical conditions such as heart disease, diabetes, and stroke. Below is the percentage of U.S. adults categorized as obese based on the self-reported height and weight of people responding to a Gallop Poll in 2008. As you can see, the percent of obese people varies with the age group.

Age of Person (years)	Obesity Rate (percent)
18	11
19	14
30	25
37	28
48	30
58	30
79	27
80	19
90	8

1. Identify the independent and dependent variables in this situation. State the units associated with each variable.

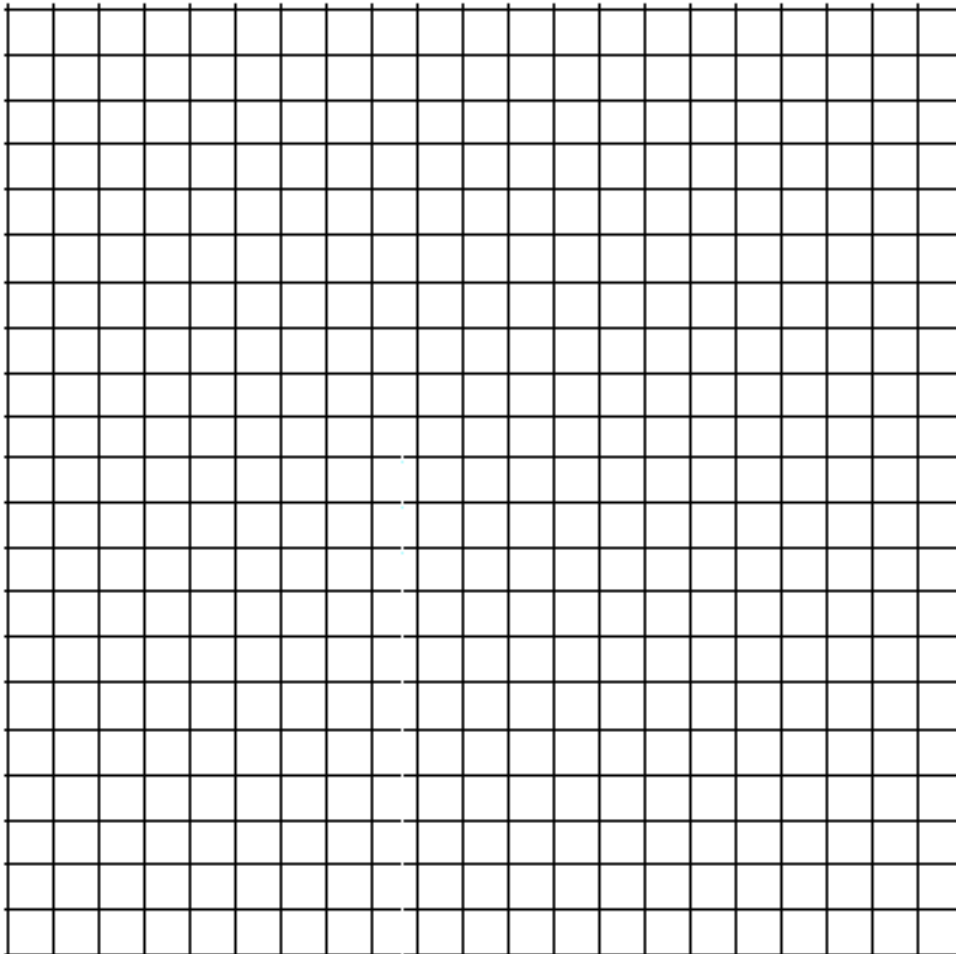
2. What would you use to represent the independent variable? Why did you make this choice?

3. What would you use to represent the dependent variable? Why did you make this choice?

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4. On the scatter plot given below, label the axes with the quantities they represent and indicate the axis scales by showing numbers for select grid lines. Then plot the ordered pairs of data from the table.



5. Sketch a parabola that you think best fits the plotted points. (You will not be able to make the parabola pass through all the points. Instead, you should try to draw the parabola so that some points fall above it and some below it.) Why is a parabola a reasonable curve to fit to the data?

6. Does your parabola open up or down? What are the coordinates of your parabola's vertex? What does the vertex represent in the context of this situation?



7. Describe the general characteristics of the plotted points. In particular, describe the following:
A. The ages for which the obesity rate is increasing

B. The ages for which the obesity rate is decreasing

C. The ages at which the obesity rate has its maximum value

8. Use your model to complete the third column of the table. How do the predicted obesity rates compare to the actual ones?

Age of Person (years)	Obesity Rate (percent)	Predicted Obesity Rate (percent)
18	11	
19	14	
30	25	
37	28	
48	30	
58	30	
79	27	
80	19	
90	8	

9. Using your model, predict what the obesity rate for a person who is 65 years old. Explain your reasoning.

10. Identify the roots (x-intercepts) of your parabola. What do the roots represent in the context of this situation? Do the roots make sense in the context of this situation? Explain.

11. At what age is the obesity rate 20%? Describe how you can use your model to find the person's age. Is only one age or more than one age possible? Explain and then find the age(s).