

Algebra Example

Consider the ordered pairs (2,5) and (6,15).

- Describe a situation in which these points could represent collected data.
- What is the rate of change? What does it represent in your situation? What units are being used?
- Plot these on graph paper and connect with a line. Does the point (3,8) lie on it? Check/Justify your answer by utilizing the equation of this line.
- Extrapolate a y-value for when $x = 112$. Would this make sense in your situation from part a)? Why or why not?

Geometry Example

Consider a spherical balloon with a current volume of 36π cubic inches.

- a) What is the current surface area of this balloon? Include the correct units.

- b) If the balloon's radius is doubled, how would this affect the surface area? How would this affect the volume?

- c) What is the rate of change of the surface area and volume with respect to the radius at the points in parts a) and b)? Are they equal?

- d) Graph the surface area equation for a sphere. Explain why we can't use the whole parabola when dealing with the balloon.