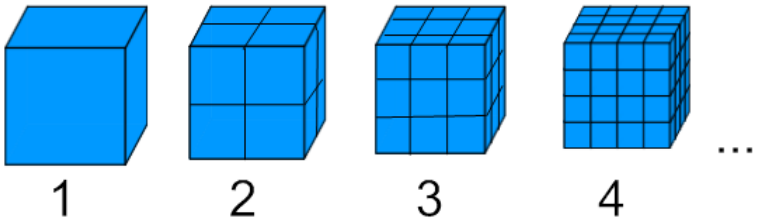
Example 1: The Surface Area of a Cube



1. Complete the table for cubes with side lengths from 1 cm to 6 cm.

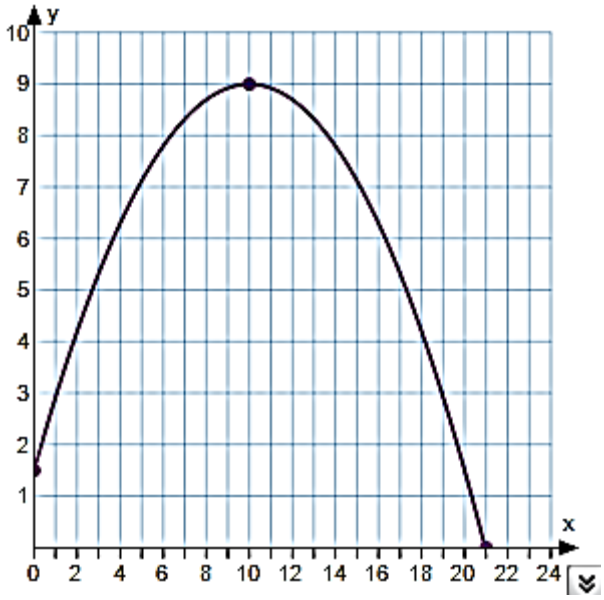
Side Length (cm)	**Surface Area (cm_2)**
1	6
2	
3	
4	
5	
6	

2. Use Desmos to determine a quadratic equation for the surface area with respect to side length.

3. Use the equation from #2 to calculate the surface area for a cube of length 22 cm.

Example 2: Interpret the graph of a Quadratic Equation

The path of a ball that was thrown in the air is modelled by the graph below. The y-values represent the height of the ball in metres and the x-values represent the horizontal distance in metres that the ball has travelled.



(a) What was the maximum height that the ball reached?

(b) How far had the ball travelled horizontally to reach this maximum height?

(c) What horizontal distance did the ball travel before it hit the ground?

Example 3: Find the height of a support post

The arched support of a bridge can be modelled by the quadratic relation $y = -0.024x^2 + 2.4x$, where y represents the height in feet, and x represents the horizontal distance in feet. A vertical support post is to be installed 40 feet from the base of the arch. How tall should the support post be?

Method 1: Use the Equation

Method 2: Use the Graph.

Enter the equation into Desmos.....

Homework: Section 8.1 Handout