Learning Targets

Functions and Volume

Lesson 1: Inputs and Outputs

- I can write rules when I know input-output pairs.
- I know how an input-output diagram represents a rule.

Lesson 2: Introduction to Functions

- I know that a function is a rule with exactly one output for each allowable input.
- I know that if a rule has exactly one output for each allowable input, then the output depends on the input.

Lesson 3: Equations for Functions

- I can find the output of a function when I know the input.
- I can name the independent and dependent variables for a given function and represent the function with an equation.

Lesson 4: Tables, Equations, and Graphs of Functions

- I can identify graphs that do, and do not, represent functions.
- I can use a graph of a function to find the output for a given input and to find the input(s) for a given output.

Lesson 5: More Graphs of Functions

- I can explain the story told by the graph of a function.

Lesson 6: Even More Graphs of Functions

- I can draw the graph of a function that represents a real-world situation.

Lesson 7: Connecting Representations of Functions

- I can compare inputs and outputs of functions that are represented in different ways.

Lesson 8: Linear Functions

- I can determine whether a function is increasing or decreasing based on whether its rate of change is positive or negative.
- I can explain in my own words how the graph of a linear function relates to its rate of change and initial value.

Lesson 9: Linear Models

- I can decide when a linear function is a good model for data and when it is not.
- I can use data points to model a linear function.

Lesson 10: Piecewise Linear Functions

- I can create graphs of non-linear functions with pieces of linear functions.

Lesson 11: Filling containers

- I can collect data about a function and represent it as a graph.
- I can describe the graph of a function in words.

Lesson 12: How Much Will Fit?

- I know that volume is the amount of space contained inside a three-dimensional figure.
- I recognize the 3D shapes cylinder, cone, rectangular prism, and sphere.

Lesson 13: The Volume of a Cylinder

- I can find the volume of a cylinder in mathematical and real-world situations.
- I know the formula for volume of a cylinder.

Lesson 14: Finding Cylinder Dimensions

- I can find missing information about a cylinder if I know its volume and some other information.

Lesson 15: The Volume of a Cone

- I can find the volume of a cone in mathematical and real-world situations.
- I know the formula for the volume of a cone.

Lesson 16: Finding Cone Dimensions

- I can find missing information of about a cone if I know its volume and some other information.

Lesson 17: Scaling One Dimension

- I can create a graph the relationship between volume and height for all cylinders (or cones) with a fixed radius.
- I can explain in my own words why changing the height by a scale factor changes the volume by the same scale factor.

Lesson 18: Scaling Two Dimensions

- I can create a graph representing the relationship between volume and radius for all cylinders (or cones) with a fixed height.
- I can explain in my own words why changing the radius by a scale factor changes the volume by the scale factor squared.

Lesson 19: Estimating a Hemisphere

- I can estimate the volume of a hemisphere by calculating the volume of shape I know is larger and the volume of a shape I know is smaller.

Lesson 20: The Volume of a Sphere

- I can find the volume of a sphere when I know the radius.

Lesson 21: Cylinders, Cones, and Spheres

- I can find the radius of a sphere if I know its volume.
- I can solve mathematical and real-world problems about the volume of cylinders, cones, and spheres.

Lesson 22: Volume As a Function of . . .

- I can compare functions about volume represented in different ways.