Student Worksheet: Area and Volume

Introduction

In the FSI: Tranquility Base Mission you will have to calculate the area of several sides and the total volume of the storage facility in order to analyze the progression of the fire.

This activity should help you visualize the storage facility. By constructing a three-dimensional object, you will better understand the dimensions of the room and will master the calculations more quickly.

Vocabulary

area: the number of square units needed to cover a closed figure.

- Area of a rectangle = length x width
- Area is measured in square units

combined area: the sum found from adding the areas of specific sides of a shape.

total surface area: the sum of the area of each side or surface of an object.

- To find the surface area of an object, calculate the area of each side and add.

volume: the amount of space an object occupies.

- Volume of a rectangular object = length x width x height
- Volume is measured in cubic units.

Materials

- Math Practice 1 box pattern
- Ruler or measuring tape
- Scissors
- Tape
- Calculators (optional)
- Pencil

Procedure

1. Construct the box from the pattern provided on the second page of this activity. Cut along the lines, fold over the tabs, and tape the paper into a box shape.

2. Position section A1 on top and use a ruler or measuring tape to measure the length and width of each side of the box (in centimeters)

A1 = _____x_____ A4 = _____x_____
A2 = _____x_____ A5 = _____x_____
A3 = _____x_____ A6 = _____x_____

3. Find the area of section A1.

4. Find the combined area of sides A1, A3, and A4.

5. Find the total surface area of the box.

6. Find the volume of the box.

Box Pattern