Unit 5, Lesson 15

Making and Measuring Boxes

Let's use what we know about decimals to make and measure boxes.

15.1 Folding Paper Boxes

Your group will receive 3 or more sheets of square paper. Each person in your group will make 1 open-top box by folding a sheet of paper. Before you begin folding:

1. Measure the side length of each sheet of paper to the nearest tenth of a centimeter. Then record the lengths, from the smallest to the largest.

	side length of paper (cm)
Box 1	
Box 2	
Box 3	

2. Compare the side lengths of the square sheets of paper. Be prepared to explain how you know.
   a. The side length of the paper for Box 2 is _____ times the side length of the paper for Box 1.
   b. The side length of the paper for Box 3 is _____ times the side length of the paper for Box 1.

3. Make some predictions about the measurements of the three boxes your group will make:
   a. The surface area of Box 3 will be _____ times as large as that of Box 1.
   b. Box 2 will be _____ times as tall as Box 1.
   c. Box 3 will be _____ times as tall as Box 1.

Now you are ready to fold your paper into a box!

15.2 Sizing up Paper Boxes

Work with your group to complete the tables and answer the questions.

1. Measure the length and height of each box to the nearest tenth of a centimeter. Record the measurements in the table.

	side length of paper (cm)	length of box (cm)	height of box (cm)	surface area (sq cm)
Box 1				
Box 2				
Box 3				

2. Calculate the surface area of each box, and record it in the table. Show your reasoning.

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15.3 Comparing Paper Boxes

Look at the measurements for Box 1, Box 2, and Box 3 in the table you completed earlier.

1. Divide each measurement of Box 2 by the corresponding measurement of Box 1 to find out how many times as large the former is compared to the latter. Complete each statement.
   a. The length of Box 2 is _____ times the length of Box 1.
   b. The height of Box 2 is _____ times the height of Box 1.
   c. The surface area of Box 2 is _____ times the surface area of Box 1.

2. Divide each measurement of Box 3 by the corresponding measurement of Box 1 to compare them. Complete each statement.
   a. The length of Box 3 is _____ times the length of Box 1.
   b. The height of Box 3 is _____ times the height of Box 1.
   c. The surface area of Box 3 is _____ times the surface area of Box 1.

3. Record your results in the table.

	side length of paper	length of box	height of box	surface area
Box 2 compared to Box 1				
Box 3 compared to Box 1				

4. Discuss with your group: How accurate were the predictions you made earlier? Were they close to the results you found by performing calculations?

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