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Unit 5, Lesson 15

# Making and Measuring Boxes

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

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## 15.1Folding 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 |  |

1. Compare the side lengths of the square sheets of paper. Be prepared to explain how you know.
   1. The side length of the paper for Box 2 is times the side length of the paper for Box 1.
   2. The side length of the paper for Box 3 is times the side length of the paper for Box 1.
2. Make some predictions about the measurements of the three boxes your group will make:
   1. The surface area of Box 3 will be  times as large as that of Box 1.
   2. Box 2 will be times as tall as Box 1.
   3. Box 3 will be times as tall as Box 1.

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

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## 15.2Sizing 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** |  |  |  |  |

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

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## 15.3Comparing 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.
   1. The length of Box 2 is times the length of Box 1.
   2. The height of Box 2 is times the height of Box 1.
   3. 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.
   1. The length of Box 3 is times the length of Box 1.
   2. The height of Box 3 is times the height of Box 1.
   3. 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 |  |  |  |  |

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