Topic 2 L.1: Understanding Squared and Cubed

Warm-Up

**Example 1**

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What is the length of one side of this square?

What is the formula for the area of a square?

What is the square’s area as a multiplication expression?

What is the square’s area?

We can count the units. However, look at this other square. Its side length is . That is just too many tiny units to draw. What expression can we build to find this square’s area?

What is the area of the square? Use a calculator if you need to.

Guided Practice

1. Complete the table below for both squares. Note: These drawings are not to scale.

|  |  |  |  |
| --- | --- | --- | --- |
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|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| Length of One Side of the Square | Square’s Area Written as an Expression | Square’s Area Written as a Number |
|  |  |  |
|  |  |  |

What does the letter represent in this blue rectangle?

With a partner, answer the following question: Given that the second rectangle is divided into four equal parts, what number does the represent? How do you know?

What is the total length of the second rectangle? How do you know?

If the two large rectangles are congruent (same shape & size) find the area of the rectangles.

1. Complete the table below for both rectangles. Note: These drawings are not to scale.

Using a calculator is appropriate.

|  |  |  |  |
| --- | --- | --- | --- |
| Length of Rectangle | Width of Rectangle | Rectangle’s Area Written as an Expression | Rectangle’s Area Written as a Number |
|  |  |  |  |
|  |  |  |  |

1. Note that both rectangular prisms are congruent.

What does the represent in the first diagram?

What does the represent in the first diagram?

What does the represent in the first diagram?

Since we know the formula to find the volume is , what number can we substitute for the , *w,* and *h* in the formula?

Determine the volume of the right rectangular prism.

1. Complete the table for both figures. Using a calculator is appropriate.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Length of Rectangular Prism | Width of Rectangular Prism | Height of Rectangular Prism | Rectangular Prism’s Volume Written as an Expression | Rectangular Prism’s Volume Written as a Number |
|  |  |  |  |  |
|  |  |  |  |  |

Lesson Summary

**Expression:** An *expression* is a numerical expression, or it is the result of replacing some (or all) of the numbers in a numerical expression with variables.

There are two ways to build expressions:

1. We can start out with a numerical expression, like , and replace some of the numbers with letters to get .
2. We can build such expressions from scratch, as in , and note that if numbers were placed in the expression for the variables , , and , the result would be a numerical expression.

Homework

1. Replace the side length of this square with and find the area.
2. Complete the table for each of the given figures.

|  |  |  |  |
| --- | --- | --- | --- |
| Length of Rectangle | Width of Rectangle | Rectangle’s Area Written as an Expression | Rectangle’s Area as a Number |
|  |  |  |  |
|  |  |  |  |

1. Using the formula , find the volume of a right rectangular prism when the length of the prism is , the width is , and the height is .