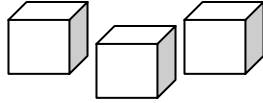


Using 3 As Factor Or As An Exponent?

Name _____



Use Linker Cubes to build models for the expressions as directed. Fill in all blanks. Work in pairs taking turns building models so that one person is the builder and the other is the coach. Each person should sketch and label the diagrams, and fill in all blanks on their own recording paper.

- 1.** Form a group of two cubes. Now, replicate that to make three groups of two cubes.

This can be represented by the expression 3×2 . The total number of cubes is _____.

- 2.** Form a group of three cubes. Now, make three groups of three cubes.

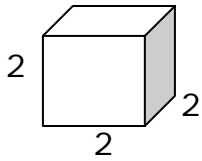
This can be represented by the expression 3×3 . The total number of cubes is _____.

- 3.** Form a group of four cubes. Now, make three groups of four cubes.

This can be represented by the expression 3×4 . The total number of cubes is _____.

- 4.** Now, form a group of five cubes. Now make three groups of five cubes.

This can be represented by the expression 3×5 . The total number of cubes is _____.



- 5.** Looking at the cube on the left, what do you know about the relationship between the length, width, and height of a cube?

- 6.** Use the Linker Cubes to build a cube with side length of 2. Sketch the large cube, label the dimensions, and find the total number of Linker Cubes you used. The total number of Linker Cubes is the volume of the large cube.

The volume can be represented by this expression: $2 \times 2 \times 2 = 2^3 = \underline{\hspace{2cm}}$

Two units is the measure of the length, the width and the height. The exponent, 3, represents the fact that this model is three dimensional and is a cube.

- 7.** Build a cube with length of side being 3. Sketch the large cube, label the dimensions, and find the total number of Linker Cubes you used.

The volume can be represented by this expression: $3 \times 3 \times 3 = 3^3 = \underline{\hspace{2cm}}$

- 8.** Build a cube with length of side being 4. Sketch the large cube, label the dimensions, and find the total number of Linker Cubes you used.

The volume can be represented by this expression: $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}^3 = \underline{\hspace{2cm}}$

- 9.** Build a cube with length of side being 5. Sketch the large cube, label the dimensions, and find the total number of Linker Cubes you used.

The volume can be represented by this expression: $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}^3 = \underline{\hspace{2cm}}$

- 10.** Explain why multiplying by three (as you did on the other side of this page), and using a power of three (as you did on this side) are not the same operation.

- 11.** Is there ever a time when multiplying a number by three will have the same result as using a power of three? Explain.