

Name: _____

Date: _____

Perfect Cubes Activity

Using your perfect square tiles and perfect cube cubes, create each of the following models:

Length of each side (Dimensions)	Sketch of your perfect square with dimensions labeled.	Number of Tiles used in Creating a Perfect Square	Sketch of your perfect cube with dimensions labeled.	Number of Cubes used in Creating a Perfect Cube
1				
2		Ex. 4	8	
3				
4				

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5				
6				
7				

1. Apply what you already know about perfect squares to answer the following questions.
 - a. What does it mean to cube a number? Explain using full sentences.

 - b. Which part of your model represents the value of cubing a number, ex. the value of 4^3 is represented where, how? Explain using full sentences.

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c. Which part of your model represents the cube root of a number, such as the cube root of 8 written as $\sqrt[3]{8}$? Explain using full sentences.

d. What does it mean for a number to be a Perfect Cube? Would you say that all numbers are perfect cubes, explain your answer?

e. Estimate the value of the following expressions without using a calculator.

$\sqrt[3]{21}$

$\sqrt[3]{900}$

$\sqrt[3]{100}$

$\sqrt[3]{12}$

$\sqrt[3]{320}$

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Extension Activity:

Squares and Square Roots, Cubes and Cube Roots are applied in geometry. Let's think about how squares and cubes relate to geometry.

1. Match the following geometry vocabulary to the correct part of your models created and sketched in the activity today.
 - a. Perimeter _____
 - b. Area _____
 - c. Volume _____
 - d. Number of cubes inside a perfect cube
 - e. Sum of side lengths on a perfect square
 - f. Number of tiles inside a perfect square

2. Application questions using perimeter, area, and volume.
 - a. The area of a square is 36 in^2 . What is the perimeter of the square?

 - b. The volume of a cube is 27 ft^3 . What is the area of the square base (flat square on the bottom side) of the cube?

 - c. The perimeter of a square is 28 cm, what is the area of the same square?

 - d. The area of a square is 81 m^2 . What are the dimensions of this square?

 - e. The volume of a cube is 125 ft^3 . What are the dimensions of the cube?