

Real numbersBlock 10 Student Activity Sheet

1. Complete the table of perfect cubes.

x	x^3
1	1
2	
3	
4	
5	
6	
7	
8	
9	
10	

2. What value of x makes $x^3 = 216$ true?
3. A sculptor is working with a large block of ice in the shape of a cube. He would like to cut 125 smaller cubes with side lengths of 1 foot.
- a. How many smaller cubes will be along each side of the larger cube? Write this solution using the cube root symbol. Explain, and draw a picture of the large ice cube split up.
- b. How many cuts along each side of the larger cube does the sculptor need to make?

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4. The ice sculptor has another large block of ice that he would like to cut into smaller cubes of 1-foot side length. He knows that the larger cube has a volume of 45 cubic feet of ice. Using your table of perfect cube roots, estimate the number of smaller cubes will be along each side of the larger cube.

5. **REINFORCE** Solve the following cube root equations.

a. What value of x makes $x^3 = 729$ true?

b. What value of x makes $x^3 = 1728$ true?

c. What value of x makes $x^3 = 1331$ true?

d. What value of x makes $x^3 = -64$ true?

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6. **REINFORCE** You are cutting a large cube of tofu into smaller cubes. If you cut 27 smaller cubes, how many smaller cubes will be along each edge of the larger tofu cube? Write your solution using the cube root symbol. Sketch a picture of the larger cube of tofu showing the slices needed to create the smaller cubes.

7. **REINFORCE** Find each cube root, or list the two consecutive whole numbers that the given number is between. Do not use a calculator.

	Cube root or estimate	Explanation
$\sqrt[3]{512}$	8	$8 \times 8 \times 8 = 512$
$\sqrt[3]{200}$	between 5 and 6	$\sqrt[3]{125} < \sqrt[3]{200} < \sqrt[3]{216}$
$\sqrt[3]{100}$		
$\sqrt[3]{729}$		
$\sqrt[3]{1100}$		
$\sqrt[3]{343}$		

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8. **REINFORCE** Locate each ordered pair on the coordinate plane. It may be necessary to approximate the location of the ordered pair. Connect points within each list.

List A (x,y)	List B (x,y)	List C (x,y)	List D (x,y)	List E (x,y)
$(-1, 4.5)$	$(-1, 4\frac{1}{2})$	$(\frac{1}{2}, \sqrt{4})$	$(1, 4\frac{3}{4})$	$(5, -\frac{3}{4})$
$(-2\frac{1}{2}, \sqrt[3]{64})$	$(-4.5, 7.0)$	$(0, 1.5)$	$(2.5, 6.5)$	$(\sqrt{16}, -1\frac{3}{4})$
$(-4, 3\frac{1}{2})$	$(-5\frac{1}{2}, \sqrt{36})$	$(-0.8, 1.5)$	$(\sqrt{25}, \sqrt{49})$	$(5, -2.75)$
$(-4.5, 2.5)$	$(-5, 5)$	$(-1.5, 1)$	$(5, 4.25)$	$(\sqrt{36}, -1.75)$
$(-4, 1.5)$	$(-4.5, 2\frac{1}{2})$	$(-1, 0.5)$		
$(-3, 0)$		$(0, 0)$	Begin new line $(\sqrt[3]{27}, 4\frac{3}{4})$	Begin new line $(5, -1.25)$
$(-0.5, -0.75)$		$(\sqrt{6}, 0)$	$(\sqrt[3]{27}, 5\frac{1}{2})$	$(4.5, -1.75)$
$(6, -\frac{3}{4})$		$(3, 0.5)$	$(5, \sqrt{40})$	$(5, -2.25)$
$(7\frac{1}{2}, 0.75)$		$(3.5, \frac{1}{2})$		$(5.5, -1.75)$
$(7.7, 1.25)$		$(4, 1.2)$		$(5, -1.25)$
$(7\frac{7}{10}, 2)$		$(4, 1.5)$		
$(7\frac{1}{2}, 2.50)$		$(3.5, 1.75)$		
$(6\frac{1}{2}, 3\frac{1}{4})$		$(3, 1\frac{3}{4})$		
$(6, 3.75)$		$(2\frac{1}{2}, \sqrt[3]{8})$		
$(4.5, 4.5)$		$(\frac{1}{2}, \sqrt[3]{8})$		
$(3, 4.75)$				
$(1, 4.75)$				
$(-1, 4.5)$				

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List F (x,y)
Draw a line by connecting $(-2\frac{1}{2}, 4)$ to $(-5, 6.5)$
Draw a line by connecting $(6\frac{1}{2}, 3.25)$ to $(6.5, -0.5)$
Draw a line by connecting $(7.7, 1.25)$ to $(8, 1.25)$
Draw a line by connecting $(7.7, 2)$ to $(8, \sqrt{4})$
Draw a line by connecting $(8, 3.5)$ to $(8, -\frac{1}{2})$

