REVIEW: Cube Roots

Name _____

Key Concept and Vocabulary

A **cube root** of a number p is a number whose cube is equal to p.

A **perfect cube** is a number that can be written as the cube of an integer.

$\sqrt[3]{8} = 2$

$\sqrt[3]{-8} = -2$

Cube root

Skill Examples

1. $\sqrt[3]{1000}$

   ∴ Because $10^3 = 1000$, $\sqrt[3]{1000} = 10$.

2. $\sqrt[3]{-64}$

   ∴ Because $(-4)^3 = -64$, $\sqrt[3]{-64} = -4$.

3. $\sqrt[3]{\dfrac{1}{8}}$

   ∴ Because $\left(\dfrac{1}{2}\right)^3 = \dfrac{1}{8}$, $\sqrt[3]{\dfrac{1}{8}} = \dfrac{1}{2}$.

Application Example

4. The volume of a cube-shaped container is 512 cubic inches. What is the edge length of the container?

   $V = s^3$

   $512 = s^3$

   $\sqrt[3]{512} = \sqrt[3]{s^3}$

   $8 = s$

   ∴ The edge length of the container is 8 inches.

PRACTICE MAKES *PURR*-FECT®

Check your answers at BigIdeasMath.com.

Find the cube root.

5. $\sqrt[3]{27} = $ _____

6. $\sqrt[3]{-1} = $ _____

7. $\sqrt[3]{343} = $ _____

8. $\sqrt[3]{-125} = $ _____

9. $\sqrt[3]{216} = $ _____

10. $\sqrt[3]{729} = $ _____

11. $\sqrt[3]{\dfrac{1}{27}} = $ _____

12. $\sqrt[3]{\dfrac{1}{1000}} = $ _____

13. $\sqrt[3]{\dfrac{1}{125}} = $ _____

14. $\sqrt[3]{-\dfrac{1}{216}} = $ _____

15. $\sqrt[3]{\dfrac{8}{64}} = $ _____

16. $\sqrt[3]{-\dfrac{27}{125}} = $ _____

Evaluate the expression.

17. $2\sqrt[3]{27} + 4 = $ _____

18. $5 - \sqrt[3]{-8} = $ _____

19. $\sqrt[3]{\dfrac{1}{64}} + 6 = $ _____

20. $4\sqrt[3]{\dfrac{125}{8}} - 10 = $ _____

21. $\dfrac{1}{3}\left(\sqrt[3]{729} - 3\right) = $ _____

22. $10\left(\dfrac{1}{3} + \sqrt[3]{\dfrac{1000}{216}}\right) = $ _____

23. **ROOM** The volume of a cube-shaped room is 729 cubic feet. You paint four walls of the room. How many square feet do you paint?

_____