

Cubes and Cube Roots

A **perfect cube** has three identical integer factors.

For example: $8 = 2 \cdot 2 \cdot 2 = 2^3$ and $-8 = -2 \cdot -2 \cdot -2 = -2^3$ or $(-2)^3$

Therefore, 2 is the **cube root** of 8 and -2 is the **cube root** of -8,
or rather _____

Identify the cube root of the following perfect cubes:

1. The cube root of 27 is _____ because ()³ = _____
2. The cube root of -27 is _____ because ()³ = _____
3. The cube root of 216 is _____ because ()³ = _____
4. The cube root of -216 is _____ because ()³ = _____
5. The cube root of 1 is _____ because ()³ = _____
6. The cube root of -1 is _____ because ()³ = _____
7. The cube root of -125 is _____ because ()³ = _____
8. The cube root of 125 is _____ because ()³ = _____
9. The cube root of -64 is _____ because ()³ = _____
10. The cube root of 64 is _____ because ()³ = _____

Simplify each expression

1. _____ + 15

2. 20 - _____

3. _____

4. _____

Name _____

Solve the following problems involving cube roots:

1. What is the side length of a cube that has a volume of 27 cubic centimeters? Show why your answer is correct.

Why would it be unrealistic to ask this same question for a cube with a volume of -27 cubic centimeters?

2. You have a gift box that is a perfect cube. Its volume is 8 cubic inches. How much wrapping paper do you need to cover the box? Give an explanation for your answer.

Would this gift box likely be able to hold Hershey's kisses or a large birthday cake? Justify your answer.