Unit 8 Lesson 10: Edge Lengths, Volumes, and Cube Roots

1 Ordering Squares and Cubes (Warm up)

Student Task Statement

Let a, b, c, d, e, and f be positive numbers.

Given these equations, arrange a, b, c, d, e, and f from least to greatest. Explain your reasoning.

- $a^2 = 9$

- $b^3 = 8$

- $c^2 = 10$

- $d^3 = 9$

- $e^2 = 8$

- $f^3 = 7$

2 Card Sort: Rooted in the Number Line

Student Task Statement

Your teacher will give your group a set of cards. For each card with a letter and value, find the two other cards that match. One shows the location on a number line where the value exists, and the other shows an equation that the value satisfies. Be prepared to explain your reasoning.

3 Cube Root Values

Student Task Statement

What two whole numbers does each cube root lie between? Be prepared to explain your reasoning.

1. $\sqrt[3]{5}$

2. $\sqrt[3]{23}$

3. $\sqrt[3]{81}$
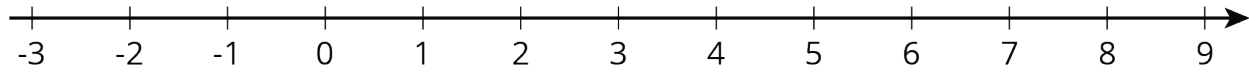
4. $\sqrt[3]{999}$

4 Solutions on a Number Line

Student Task Statement

The numbers x, y, and z are positive, and:

$$x^3 = 5 \qquad\qquad y^3 = 27 \qquad\qquad z^3 = 700$$

-3   -2   -1   0   1   2   3   4   5   6   7   8   9

1. Plot x, y, and z on the number line. Be prepared to share your reasoning with the class.

2. Plot $-\sqrt[3]{2}$ on the number line.