

## Formative Assessment: Practice Cube and Square Roots

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Square Roots

1. Evaluate:  $\sqrt{81}$

2. Evaluate:  $\sqrt{64}$

3. Evaluate:  $\sqrt{121}$

4. The  $\sqrt{110}$  is between which two positive consecutive integers?

and

5. The  $\sqrt{40}$  is between which two positive consecutive integers?

and

6. The  $\sqrt{51}$  is between which two positive consecutive integers?

and

7. The  $\sqrt{80}$  is between which two positive consecutive integers?

and

8. The  $\sqrt{8}$  is between which two positive consecutive integers?

and

Cube Roots

Evaluate:

9.  $\sqrt[3]{27}$

10.  $\sqrt[3]{216}$

11.  $\sqrt[3]{-343}$

12.  $\sqrt[3]{-512}$

13. The  $\sqrt[3]{300}$  is between which two consecutive integers?

and

14. The  $\sqrt[3]{50}$  is between which two consecutive integers?

and

15. The  $\sqrt[3]{-1001}$  is between which two consecutive integers?

and

16. The  $\sqrt[3]{-9}$  is between which two consecutive integers?

and

17. Explain in your own words why  $\sqrt{-4}$  is not possible.

18. Explain in your own words why  $\sqrt[3]{-8}$  is possible.

19. The volume of a cube is 64 blocks. What is the length of one side of the cube?

20. The volume of a cube is 1000 blocks. What is the length of one side of the cube?

21. The area of a square welcome mat is 100 inches. How long is the length of one side?

22. The length of one side of a square baseball field is 90 feet. What is the area of the baseball field?

23. Order the following numbers from least to greatest.

$$\sqrt[3]{-64} \quad \sqrt[3]{210} \quad \sqrt[3]{8} \quad \sqrt{121} \quad -\sqrt{25} \quad \sqrt{10}$$

Simplify the radical (square root)

24.  $\sqrt{8}$

25.  $\sqrt{27}$

26.  $\sqrt{128}$

27.  $\sqrt{162}$

## Formative Assessment: Practice Cube and Square Roots

Name: Answer Key Date: \_\_\_\_\_

### Square Roots

1. Evaluate:  $\sqrt{81} = 9$

2. Evaluate:  $\sqrt{64} = 8$

3. Evaluate:  $\sqrt{121} = 11$

4. The  $\sqrt{110}$  is between which two positive consecutive integers?

10 and 11

$$\sqrt{100} < \sqrt{110} < \sqrt{121}$$
$$10 < \sqrt{110} < 11$$

5. The  $\sqrt{40}$  is between which two positive consecutive integers?

6 and 7

$$\sqrt{36} < \sqrt{40} < \sqrt{49}$$
$$6 < \sqrt{40} < 7$$

6. The  $\sqrt{51}$  is between which two positive consecutive integers?

7 and 8

$$\sqrt{49} < \sqrt{51} < \sqrt{64}$$
$$7 < \sqrt{51} < 8$$

7. The  $\sqrt{80}$  is between which two positive consecutive integers?

8 and 9

$$\sqrt{64} < \sqrt{80} < \sqrt{81}$$
$$8 < \sqrt{80} < 9$$

8. The  $\sqrt{8}$  is between which two positive consecutive integers?

2 and 3

$$\sqrt{4} < \sqrt{8} < \sqrt{9}$$
$$2 < \sqrt{8} < 3$$

Cube Roots

Evaluate:

9.  $\sqrt[3]{27} = 3$

10.  $\sqrt[3]{216} = 6$

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

12.  $\sqrt[3]{-512} = -8$

13. The  $\sqrt[3]{300}$  is between which two consecutive integers?

6 and 7

$$\sqrt[3]{216} < \sqrt[3]{300} < \sqrt[3]{343}$$
$$6 < \sqrt[3]{300} < 7$$

14. The  $\sqrt[3]{50}$  is between which two consecutive integers?

3 and 4

$$\sqrt[3]{27} < \sqrt[3]{50} < \sqrt[3]{64}$$
$$3 < \sqrt[3]{50} < 4$$

15. The  $\sqrt[3]{-1001}$  is between which two consecutive integers?

$\boxed{-11}$  and  $\boxed{-10}$

$$\begin{aligned}\sqrt[3]{-1331} &< \sqrt[3]{-1000} < \sqrt[3]{-1000} \\ -11 &< \sqrt[3]{-1000} < -10\end{aligned}$$

16. The  $\sqrt[3]{-9}$  is between which two consecutive integers?

$\boxed{-3}$  and  $\boxed{-2}$

$$\begin{aligned}\sqrt[3]{-27} &< \sqrt[3]{-9} < \sqrt[3]{-8} \\ -3 &< \sqrt[3]{-9} < -2\end{aligned}$$

17. Explain in your own words why  $\sqrt{-4}$  is not possible.

Answers will vary

18. Explain in your own words why  $\sqrt[3]{-8}$  is possible.

Answers will vary

19. The volume of a cube is 64 blocks. What is the length of one side of the cube?

$$\sqrt[3]{64} = \boxed{4}$$

20. The volume of a cube is 1000 blocks. What is the length of one side of the cube?

$$\sqrt[3]{1000} = \boxed{10}$$

21. The area of a square welcome mat is 100 inches. How long is the length of one side?

$$\sqrt{100} = \boxed{10}$$

22. The length of one side of a square baseball field is 90 feet. What is the area of the baseball field?

$$90^2 = \boxed{8,100 \text{ ft}^2}$$

23. Order the following numbers from least to greatest.

$$\sqrt[3]{125} < \sqrt[3]{210} < \sqrt[3]{216}$$

$$\begin{array}{cccccc} \sqrt[3]{-64} & 5 < \sqrt[3]{210} < 6 & \sqrt[3]{8} & \sqrt{121} & -\sqrt{25} & \sqrt{10} \\ \downarrow & & \downarrow & \downarrow & \downarrow & \\ -4 & & 2 & 11 & -5 & 3.16\dots \end{array}$$

$$-\sqrt{25}, \sqrt[3]{-64}, \sqrt[3]{8}, \sqrt{10}, \sqrt[3]{210}, \sqrt{121}$$

Simplify the radical (square root)

24.  $\sqrt{8} = \sqrt{4}\sqrt{2} = \boxed{2\sqrt{2}}$

25.  $\sqrt{27} = \sqrt{9}\sqrt{3} = \boxed{3\sqrt{3}}$

26.  $\sqrt{128} = \sqrt{16}\sqrt{8} = \sqrt{16}\sqrt{4}\sqrt{2} = \boxed{8\sqrt{2}}$   
 $4 \cdot 2 \sqrt{2}$

27.  $\sqrt{162} = \sqrt{81}\sqrt{2} = \boxed{9\sqrt{2}}$