LESSON MAKER PRO

Root Quest

Find the side length or edge length hidden in each perfect power.

GRADE 8 · 8.AF.A.4.a

8.AF.A.4.a "Evaluate square roots of perfect squares (less than or equal to 225) and cube roots of perfect cubes (less than or equal to 1000)."

NAME _____ DATE _____

THE BIG IDEA

The square root of a perfect square is the nonnegative number that multiplies by itself to make that square. The cube root of a perfect cube is the number that multiplies by itself three times to make that cube.

WORKED EXAMPLE

Find $\sqrt{169}$.

1. Look for a whole number whose square is 169.
2. $13 \times 13 = 169$.
3. So $\sqrt{169} = 13$.

Answer: 13

PRACTICE 6 problems

1 Find $\sqrt{64}$.

ANSWER _____

2 Find $\sqrt[3]{125}$.

ANSWER _____

3 Find $\sqrt{225}$.

ANSWER _____

4 Find $\sqrt[3]{1000}$.

ANSWER _____

5 Find $\sqrt{121}$.

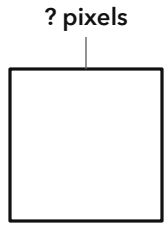
ANSWER _____

6 Find $\sqrt[3]{27}$.

ANSWER _____

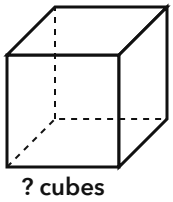
APPLY IT Show your work

1 A square game icon covers 144 square pixels. How many pixels long is each side?



ANSWER _____

2 A streamer stacks 729 small cubes into one large cube. How many small cubes are along each edge?



ANSWER _____

CHALLENGE One step up

One perfect square is 25. The sum of its square root and the square root of a second perfect square is 19. What is the second perfect square? Explain.

WORK SPACE AND ANSWER

Root Quest

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find $\sqrt{64}$.	**8**
2	Find $\sqrt[3]{125}$.	**5**
3	Find $\sqrt{225}$.	**15**
4	Find $\sqrt[3]{1000}$.	**10**
5	Find $\sqrt{121}$.	**11**
6	Find $\sqrt[3]{27}$.	**3**

PART 2 · APPLY IT

1. **12 pixels** The side length is $\sqrt{144} = 12$ pixels.
2. **9 small cubes** The number along each edge is $\sqrt[3]{729} = 9$.

CHALLENGE

196. Since $\sqrt{25} = 5$, the other square root is $19 - 5 = 14$. Then $14 \times 14 = 196$.

Accept answers with or without the radical expression when the value is correct. For the challenge, accept any explanation that finds the second square root as 14 and squares it to get 196.