LESSON MAKER PRO

Root Detective

Find square and cube roots by inspection.

GRADE 8 · 8.NOS.B.4.b

8.NOS.B.4.b "Evaluate square roots of perfect squares from 1 to 100 and cube roots of perfect cubes from 1 to 125 by inspection."

NAME _____ DATE _____

FIND THE ROOT

A square root is the nonnegative number that, when multiplied by itself, gives the number inside the root. A cube root is the number that, when multiplied by itself three times, gives the number inside the root. Use products you know to find each root.

WORKED EXAMPLE

Find $\sqrt[3]{64}$.

1. $4 \times 4 = 16$
2. $16 \times 4 = 64$
3. So, $\sqrt[3]{64} = 4$.

Answer: 4

PRACTICE 6 problems

1 Find $\sqrt{9}$.

ANSWER _____

2 Find $\sqrt[3]{8}$.

ANSWER _____

3 Find $\sqrt{25}$.

ANSWER _____

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

ANSWER _____

5 Find $\sqrt{81}$.

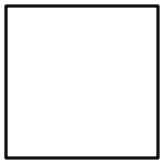
ANSWER _____

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

ANSWER _____

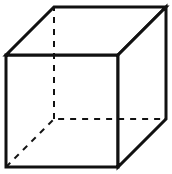
APPLY IT Show your work

1 At a school gaming event, the play area shown covers 100 square feet. How long is one side?



ANSWER _____

2 A display case for a collectible has the shape shown and holds 27 cubic inches. How long is each edge?



ANSWER _____

CHALLENGE One step up

Find $\sqrt{36} + \sqrt[3]{1}$. Explain how you checked each root.

WORK SPACE AND ANSWER

ANSWER KEY # Root Detective

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find $\sqrt{9}$.	**3**
2	Find $\sqrt[3]{8}$.	**2**
3	Find $\sqrt{25}$.	**5**
4	Find $\sqrt[3]{27}$.	**3**
5	Find $\sqrt{81}$.	**9**
6	Find $\sqrt[3]{125}$.	**5**

PART 2 · APPLY IT

1. **10 feet** The side length is $\sqrt{100}$. Since 10 × 10 = 100, each side is 10 feet.
2. **3 inches** The edge length is $\sqrt[3]{27}$. Since 3 × 3 × 3 = 27, each edge is 3 inches.

CHALLENGE

7. Since 6 × 6 = 36, $\sqrt{36}$ = 6. Since 1 × 1 × 1 = 1, $\sqrt[3]{1}$ = 1. Their sum is 7.

For the challenge, accept any explanation that correctly checks both roots by multiplication and adds their values.