LESSON MAKER PRO

Root Power Practice

Square roots, cube roots, and equation solutions

GRADE 8 · 8.EE.A.2

CCSS.Math.Content.8.EE.A.2 "Use square root and cube root symbols to represent solutions to equations of the form x 2 = p and x 3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes..."

NAME _____ DATE _____

ROOT SYMBOLS AND SOLUTIONS

When x^2 = p, write x = ±√p because both a positive and a negative number can have the same square. When x^3 = p, write x = ∛p because a positive number has one real cube root.

WORKED EXAMPLE

Solve x^2 = 81/100.

1. Take the square root of both sides: x = ±√(81/100).
2. Find the roots: √81 = 9 and √100 = 10.
3. Write both solutions: x = ±9/10.

Answer: x = 9/10 or x = -9/10

PRACTICE 6 problems

1 Evaluate √49.

ANSWER _____

2 Evaluate ∛64.

ANSWER _____

3 Solve x^2 = 1/4.

ANSWER _____

4 Solve x^3 = 8/27.

ANSWER _____

5 Evaluate √121.

ANSWER _____

6 Is √2 rational or irrational?

ANSWER _____

APPLY IT Show your work

1 A student is making a square cover image for a music playlist. Its area is 144 square centimeters. What is the length of one side?

WORK SPACE

ANSWER _____

2 A game designer models a cube-shaped prize box with volume 216 cubic centimeters. What is the length of each edge?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Without a calculator, place √50 between two consecutive whole numbers. Explain how nearby perfect squares support your answer.

_____

_____

ANSWER KEY

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Evaluate √49.	**7**
2	Evaluate ∛64.	**4**
3	Solve x^2 = 1/4.	**x = 1/2 or x = -1/2**
4	Solve x^3 = 8/27.	**x = 2/3**
5	Evaluate √121.	**11**
6	Is √2 rational or irrational?	**irrational**

PART 2 · APPLY IT

1. **12 centimeters** Let s be the side length. Since s^2 = 144, s = √144 = 12.
2. **6 centimeters** Let e be the edge length. Since e^3 = 216, e = ∛216 = 6.

CHALLENGE

7 < √50 < 8, because 49 < 50 < 64 and √49 = 7 while √64 = 8.

For square equations, accept x = ±a/b or both solutions listed separately. For the challenge, require both the correct interval and reasoning using the nearby perfect squares.