



Square and cube roots

GRADE 8 MATH

Name _____

Date _____

Read each item carefully: are you solving an equation or evaluating a symbol?

WORKED EXAMPLE

$x^2 = 25 \rightarrow x = \pm 5$ (two solutions). $\sqrt{25} \rightarrow 5$ (one value). $\sqrt[3]{-8} = -2$.

1. List the perfect squares to 144 and the perfect cubes to 125.

FLUENCY

Show your thinking

Answer

2. Solve $x^2 = 81$ and $x^2 = 1$.

FLUENCY

Show your thinking

Answer

3. Evaluate $\sqrt{81}$, $\sqrt{144}$ and $\sqrt[3]{64}$.

FLUENCY

Show your thinking

Answer

4. Explain, in your own words, why $x^2 = 36$ has two solutions but $\sqrt{36}$ has one.

REASONING

Show your thinking

Answer

5. Solve $x^3 = 64$ and $x^3 = -27$.

APPLICATION

Show your thinking

Answer

6. Why does a square root of a negative number not exist, while a cube root does?

REASONING

Show your thinking

Answer

7. Solve $x^2 = 2$. Is x rational?

APPLICATION

Show your thinking

Answer

8. A cube has volume 125 cm^3 . How long is each edge?

APPLICATION

Show your thinking

Answer

9. Ivan writes $\sqrt[3]{64} = 21\frac{1}{3}$ because $64 \div 3 = 21\frac{1}{3}$. Explain his error and give the right answer.

REASONING

Show your thinking

Answer