

Study the following.

square root (**skwair root**) – a square root of a number is another number which when squared, gives the first number. (The square root of 16 is 4.)

cube root (**kyoob root**)– a cube root of a number is another number which when cubed, gives the first number. (The cube root of 8 is 2.)

fourth root- a fourth root of a number is another number which when raised to the fourth power, gives the first number. (The fourth root of 16 is 2.)

fifth root, etc – these are similar to the above, except when raised to the fifth power, etc.

Say each word out loud and write it in the blank.

root _____
square _____
cube _____

Write each definition in your own words.

square root

cube root

fourth root

fifth root

Matching.

square root

another number which when squared, gives the first number.

cube root

another number which when raised to the fourth power, gives the first number

fourth root

another number which when cubed, gives the first number

Fill in the blanks.

Write 2 examples of a square root.

1. the square root of _____ is _____.
2. the square root of _____ is _____.

Write 2 examples of a cube root.

1. the cube root of _____ is _____.
2. the cube root of _____ is _____.

Write 2 examples of a fourth root.

1. the fourth root of _____ is _____.
2. the fourth root of _____ is _____.

Study the following.

$\sqrt{\quad}$ - the symbol for square root ($\sqrt{12}$)

$\sqrt[3]{\quad}$ - the symbol for cube root ($\sqrt[3]{24}$)

$\sqrt[4]{\quad}$ - the symbol for fourth root ($\sqrt[4]{57}$)

Write two examples of each, using the above symbols.

square root

cube root

fourth root

Study the following.

The square root of a number is the opposite of a number squared.

Take the number 5. 5 squared is 25. The square root of 25 is 5.

To figure out a square root, say, “what number squared gives the number under the square root symbol?”

Or say, “What number times itself gives the number under the square root symbol?”

Examples: $\sqrt{9}$ What number squared = 9 ? The answer is 3.
 $\sqrt{9} = 3$

$\sqrt{49}$ What number times itself gives 49? The answer is 7.
 $\sqrt{49} = 7$

Solve.

1. $\sqrt{4} =$
2. $\sqrt{36} =$
3. $\sqrt{100} =$
4. $\sqrt{1} =$
5. $\sqrt{81} =$
6. $\sqrt{64} =$
7. $\sqrt{16} =$
8. $\sqrt{9} =$
9. $\sqrt{25} =$
10. $\sqrt{49} =$

Review squares of the numbers 1 to 10.

$$1^2 = 1$$

$$2^2 = 4$$

$$3^2 = 9$$

$$4^2 = 16$$

$$5^2 = 25$$

$$6^2 = 36$$

$$7^2 = 49$$

$$8^2 = 64$$

$$9^2 = 81$$

$$10^2 = 100$$

Square roots are the opposite of squares.

$$\sqrt{1} = 1$$

$$\sqrt{4} = 2$$

$$\sqrt{9} = 3$$

$$\sqrt{16} = 4$$

$$\sqrt{25} = 5$$

$$\sqrt{36} = 6$$

$$\sqrt{49} = 7$$

$$\sqrt{64} = 8$$

$$\sqrt{81} = 9$$

$$\sqrt{100} = 10$$

Fill in the blanks.

What two things could you say to yourself to figure out a square root?

1. _____

2. _____

Write the squares of the following.

1. $1^2 =$
2. $2^2 =$
3. $3^2 =$
4. $4^2 =$
5. $5^2 =$
6. $6^2 =$
7. $7^2 =$
8. $8^2 =$
9. $9^2 =$
10. $10^2 =$

Write the square roots.

11. $\sqrt{1} =$
12. $\sqrt{4} =$
13. $\sqrt{36} =$
14. $\sqrt{16} =$
15. $\sqrt{64} =$
16. $\sqrt{9} =$
17. $\sqrt{49} =$
18. $\sqrt{25} =$
19. $\sqrt{81} =$
20. $\sqrt{100} =$

Solve.

21. $\sqrt{25} =$
22. $\sqrt{9} =$
23. $\sqrt{4} =$
24. $\sqrt{36} =$
25. $\sqrt{1} =$
26. $\sqrt{81} =$
27. $\sqrt{100} =$
28. $\sqrt{49} =$
29. $\sqrt{16} =$
30. $\sqrt{64} =$

Study the following.

The cube root of a number is the opposite of a number cubed.

Take the number 3.

3 cubed is $3 * 3 * 3 = 27$

the cube root of 27 is 3.

To figure out a cube root, say, "What number cubed gives the number under the cube root symbol?"

Or "What number times itself and times itself again gives the number under the cube root symbol?"

Examples: $\sqrt[3]{8}$ What number cubed is 8.
 $2 * 2 * 2 = 8$ so the answer is 2.

$\sqrt[3]{125}$ What number times itself and times itself again gives 125?
 $5 * 5 * 5 = 125$ so the answer is 5.

Solve.

1. $\sqrt[3]{8}$ =
2. $\sqrt[3]{1000}$ =
3. $\sqrt[3]{125}$ =
4. $\sqrt[3]{64}$ =
5. $\sqrt[3]{1}$ =

Fill in the blanks.

What two things could you say to yourself to figure out a cube root?

- 1.
- 2.

Study the following.

Other roots like fourth roots, fifth roots, etc. are done the same way.

Example: $\sqrt[4]{16} = 2$ because $2*2*2*2 = 16$

$$\sqrt[5]{100,000} = 10 \text{ because } 10*10*10*10*10 = 100,000$$

Solve.

1. $\sqrt[6]{1}$

2. $\sqrt[6]{64}$

3. $\sqrt[4]{81}$

4. $\sqrt[4]{10000}$

5. $\sqrt[10]{1}$

6. $\sqrt[5]{32}$