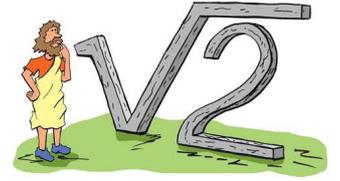
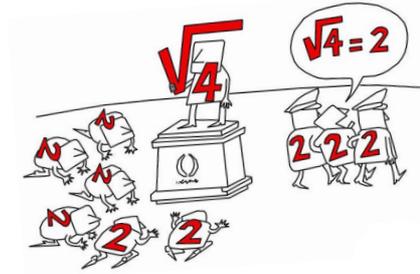


REAL NUMBER



-  Square Roots
-  Cube Roots
-  Operations on Quadric Radicals
-  Understanding Real Number Again



Learning Objective

1. Understanding a new way to represent numbers - square root
2. Extending the arithmetic operation to the 6th operation - extracting roots.
3. Simplify and into my eval lady call number is rational or irrational.
4. Perform arithmetic operations under real number system.

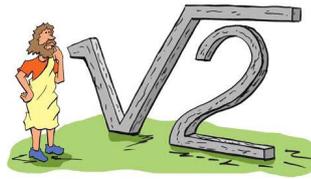
KeyWords



- | | | |
|--|---|---|
|  square root |  real number |  principal square root |
|  index |  radicand |  extracting root |
|  cube root |  nth root |  odd root |
|  even root |  quadratic radical |  simplified quadratic |
|  radical like quadratic radical | | |



1.1 Square Roots



Question...???

Give a square with area of 36 cm^2 . What is the size length of the square



Analysis ...

Area of a square = the length of the side \times the length of the side

Give a square with area of 36 cm^2 .

Let the length of the side of the square be a unit.

From the formula the area of a square

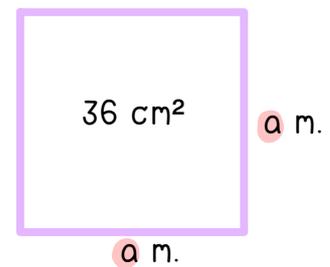
then, $a \times a = 36$

or $a^2 = 36$

since. $6^2 = 36$ and $(-6)^2 = 36$

but, the length of the side of a square must be positive,
that is the length of each side of the square is 6 units.

The area is $6 \times 6 = 36 \text{ cm}^2$



If a number whose square is a , then this number is called a square root of a .

$6^2 = 36$	we say that	6 is a square root of 36
$(-6)^2 = 36$	we say that	-6 is a square root of 36

Therefore, 6 and -6 are square root of 36

Example 1

Find the square root(s) of 81.



Practice (p.3)



1. What are the square root(s) of 121 ?
2. What are the square root(s) of 0 ?
3. What are the square root(s) of $4/25$
4. Does -4 have a square root? Why?



WorkBook



REAL



NUMBER



1.1 Square Roots

A. Definition of Square Roots

1. In the following numbers, which one has no square root. ()

- A. $|-9|$ B. 0 C. -9 D. $(-9)^2$

2. Is each expression well defined? Why?

- (1) $-\sqrt{3}$ (2) $\sqrt{(-3)^2}$ (3) $\sqrt{-3^2}$ (4) $\sqrt{\frac{1}{10^2}}$

3. Find the square root(s) of each number.

- (1) 196 (2) $\frac{25}{9}$ (3) $\frac{1}{10^6}$ (4) 0.0016

4. If a positive number has a square root of 4, then what is the other square root of this number?



WorkBook



REAL



NUMBER



1.1 Square Roots

A. Definition of Square Roots



5. Solve each equation for x .

(1) $x^2 = 1.44$

(2) $x^2 - 81 = 0$

(3) $4x^2 = 49$

(4) $25x^2 - 36 = 0$



6. Given that a number has two square roots, including $a + 3$ and $2a - 15$. Find this number.

