Simplifying Roots and Cube Roots

- Make sure you have submitted the homework from schoolnet over the weekend.
  Passcode: FBFRIWEEK2

Square Root: A number that you can multiply by itself to get the number under the radical

Principal square root: the positive root

Radical Symbol $\sqrt{}$

Radicand: The expression under the radical symbol.

Perfect Square: The square of an integer.
Ex. $6^2 = 36$ (36 is a perfect sqaure)

Squares and Square Roots

Example1: 7^2 = (7)(7)= 49, so 7 is a square root of 49.

Example 2: $(-4)^2$ = (-4)(-4)= 16

Squares and Square Roots are INVERSE OPERATIONS!

1) $11^2 = 121$,
so $\sqrt{121}$ = 11.

2) 6^2 = 36,
so $\sqrt{36}$ = 6.

3) 10^2 = 100, so 10 is a square root of 100.

4) 4^2 = 16, so 4 is a square root of 16.

5) $9^2 = 81$, so 9 is a square root of 81.

6) $(-3)^2$= 9, so $\sqrt{9}$ = -3.

Simplifying Square Root Expressions

6) $\sqrt{36} =$ $\sqrt{6 \cdot 6} = 6$

7) $\sqrt{100} =$ $\sqrt{10 \cdot 10} = 10$

8) $\sqrt{25} =$ $\sqrt{5 \cdot 5} = 5$

9) $\sqrt{4} =$ $\sqrt{2 \cdot 2} = 2$

10) $\sqrt{81} =$ $\sqrt{9 \cdot 9} = 9$

11) $\sqrt{121} =$ $\sqrt{11 \cdot 11} = 11$

12) $\sqrt{\frac{9}{16}} = \frac{\sqrt{9}}{\sqrt{16}} = \frac{3}{4}$

13) $\sqrt{\frac{81}{100}} = \frac{\sqrt{81}}{\sqrt{100}} = \frac{9}{10}$

14) $-\sqrt{49} = -\sqrt{7 \cdot 7} = -7$

Cube Roots

Example 1: 3 × 3 × 3 = 27, so the cube root of 27 is 3.

Example 2: 4 × 4 × 4 = 64, so the cube root of 64 is 4.

1) $\sqrt[3]{8}$ = $\sqrt[3]{2 \cdot 2 \cdot 2} = 2$

2) $\sqrt[3]{343}$ = $\sqrt[3]{7 \cdot 7 \cdot 7} = 7$

3) $\sqrt[3]{125}$ = $\sqrt[3]{5 \cdot 5 \cdot 5} = 5$

4) $(-2)^3$ = $-2 \cdot -2 \cdot -2 = -8$

5) $-(3)^3$ = $-(3 \cdot 3 \cdot 3) = -27$

Word Problems: DRAW A PICTURE

1) A contractor is tiling a square patio that has the area shown at the right. What is the approximate side length of the patio? Round to the nearest foot.

$65\ ft^2$

$A = s^2$

$65 = s^2$

$\sqrt{65} = \sqrt{s^2}$

$\sqrt{64}$ ← $8 \approx s$

8 ft

2) A square picture has an area of 225 in^2. What is the side length of the picture?

$225\ in^2$

$A = s^2$

$225 = s^2$

$\sqrt{225} = \sqrt{s^2}$

$15 = s$

15 inches

Homework/Classwork: Exponent WS on Weebly