

Radical and Radicand

- What are they?

Radical sign

$\pm \sqrt{k}$

Positive or Negative

Radicand:
or
expressio
n under
radical
symbol

The diagram illustrates the components of a radical expression. It shows the radical sign (√) and the radicand (k) under a radical symbol. The sign is labeled 'Radical sign' and the radicand is labeled 'Radicand: # or expression under radical symbol'. The sign is also labeled 'Positive or Negative'.

Perfect Squares

- Numbers whose square roots are integers or quotients of integers.

Examples: $\sqrt{4}$, $\sqrt{16}$, $\sqrt{25}$, $\sqrt{100}$, $\sqrt{\frac{1}{4}}$

\downarrow \downarrow \downarrow \downarrow \downarrow
 2 4 5 10 $\frac{1}{2}$

$\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$



Example 1

- Simplify

1. $\sqrt{16} = 4$ 2. $\sqrt[2]{25} = -5$

3. $\sqrt{\frac{1}{16}} = \frac{1}{4}$



What if the radicand is not a perfect square?

Ex.1 Simplify. Leave in radical form.

$$\sqrt{8}$$

Write the prime factorization of 8!

$$= \sqrt{2 \cdot 2 \cdot 2} \quad \text{Now circle your pairs!}$$

Pull out one number and throw out the other one.

What is left?

$$2\sqrt{2}$$



Example 2

• Simplify. Leave in radical form.

$$\sqrt{24}$$

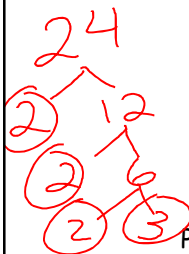
Write the prime factorization of 24!

$$= \sqrt{2 \cdot 2 \cdot 2 \cdot 3} \quad \text{Now circle your pairs!}$$

Pull out one number and throw out the other one.

What is left?

$$2\sqrt{6}$$



Example 3

- Give an approximation. Round to the nearest hundredth.

$$\sqrt{78}$$

$$\approx 8.83$$

