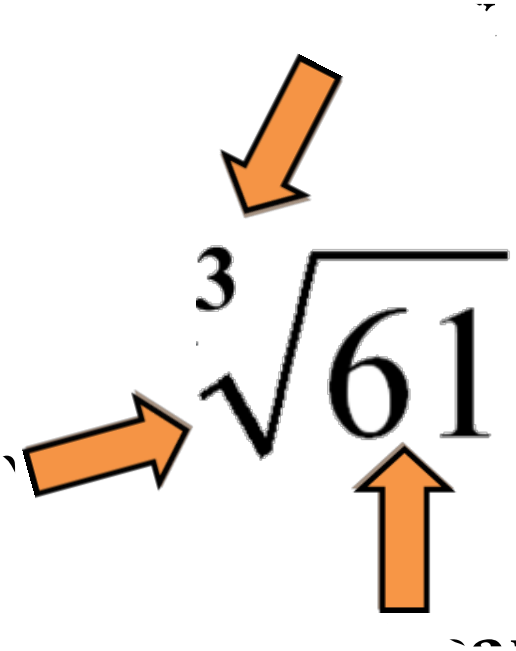

Radicals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61

ERASE FOR ANSWERS

Let's Check Your Understanding!

1. **What is the index of** $\sqrt[5]{13}$

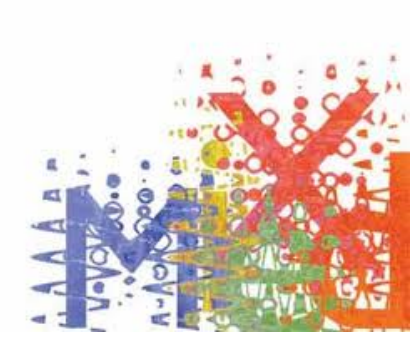
2. **What is the radicand of** $\sqrt[7]{24}$

3. **Explain the meaning of the index.**

4. **Write 2 as a square root, a cube root, and a fourth root.**

Mixed & Entire Radicals !!

Mixed Radical



$2\sqrt{3}$

A number is in front of the radical sign. "**Mixture**"

Entire Radical

$\sqrt{54}$

Everything is entirely under the radical sign.

Calculate $\sqrt{175}$

What do you notice?

Your answer is irrational, therefore lets simplify!!!

$$\sqrt{175}$$

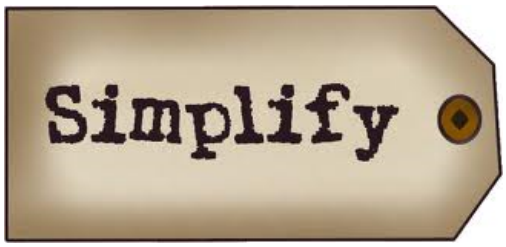
Use Prime Factorization !!

Prime Factorization

Simplify $\sqrt{175}$

$\sqrt{175} = \sqrt{5 \times 5 \times 7}$

$5\sqrt{7}$



$\sqrt{63}$

$\sqrt{3 \times 3 \times 7}$

$\sqrt{3 \times 3} \times 7$

$3\sqrt{7}$

Simplify. $\sqrt[3]{1080}$

$\sqrt[3]{2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5}$

$\sqrt[3]{2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5}$

$2 \times 3 \sqrt[3]{5}$

$6\sqrt[3]{5}$

$\sqrt[3]{120}$

$\sqrt[3]{2 \times 2 \times 2 \times 3 \times 5}$

$\sqrt[3]{2 \times 2 \times 2 \times 3 \times 5}$

$2\sqrt[3]{3 \times 5}$

$2\sqrt[3]{15}$

Try It Yourself!!!

Simplify:

a) $\sqrt{147}$ **b)** $\sqrt{80}$ **c)** $\sqrt{98}$

d) $\overline{\quad 81}$ **e)** $\overline{\quad 80}$ **f)** $\overline{\quad\quad 432}$

a) $\sqrt{147}$ **b)** $\sqrt{80}$ **c)** $\sqrt{98}$

a) $\sqrt{3 \times 7 \times 7}$

$7\sqrt{3}$

b) $\sqrt{2 \times 2 \times 2 \times 2 \times 5}$

$2 \times 2\sqrt{5}$

$4\sqrt{5}$

c) $\sqrt{2 \times 7 \times 7}$

$7\sqrt{2}$

d) $\sqrt[3]{81}$ e) $\sqrt[3]{80}$ f) $\sqrt[3]{432}$

d) $\sqrt[3]{3 \times 3 \times 3 \times 3}$

$3\sqrt[3]{3}$

e) $\sqrt[3]{2 \times 2 \times 2 \times 2 \times 5}$

$2\sqrt[3]{2 \times 5}$

$2\sqrt[3]{10}$

f) $\sqrt[3]{2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3}$

$2 \times 3\sqrt[3]{2}$

$6\sqrt[3]{2}$

Write $3\sqrt{12}$ as an entire radical

$3\sqrt[3]{12}$

$\sqrt{12 \times 3 \times 3 \times 3}$

$\sqrt{108}$

Write $2\sqrt[3]{6}$ as an entire radical

$$2\sqrt[3]{6}$$

$$\sqrt[3]{6 \text{ x } 2 \text{ x } 2 \text{ x } 2}$$

$$\sqrt[3]{48}$$

Write $4\sqrt[4]{3}$ as an entire radical

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

$$\sqrt[4]{3 \times 4 \times 4 \times 4 \times 4}$$

$$\sqrt[4]{768}$$

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

$$\sqrt[4]{3 \times 256}$$

$$\sqrt[4]{768}$$

Try It Yourself!!!

a) $6\sqrt{2}$ b) $4\sqrt[3]{7}$ c) $3\sqrt[4]{11}$

Try It Yourself!!!

a) $6\sqrt{2}$	b) $4\sqrt[3]{7}$	c) $3\sqrt[4]{11}$
$\sqrt{2 \times 6 \times 6}$	$\sqrt[3]{7 \times 4 \times 4 \times 4}$	$\sqrt[4]{11 \times 3 \times 3 \times 3 \times 3}$
$\sqrt{72}$	$\sqrt[3]{448}$	$\sqrt[4]{891}$
or $\sqrt{2 \times 36}$	$\sqrt[3]{64 \times 7}$	$\sqrt[4]{11 \times 81}$
$\sqrt{72}$	$\sqrt[3]{448}$	$\sqrt[4]{891}$

Simplify

$\sqrt[3]{3240}$

Express as an entire radical

$2\sqrt[4]{3}$

Simplify

$\sqrt[3]{3240} = \sqrt[3]{2\times2\times2\times3\times3\times3\times3\times5}$

$= 6\sqrt[3]{15}$

Express as an entire radical

$2\sqrt[4]{3} = \sqrt[4]{3\times2\times2\times2\times2}$

$= \sqrt[4]{48}$

Pg. 218

4 g, h

5 g, h

~~8~~

10 a, b, c, g, h, i

11 b, d, f, h, j

12 e, i, j

14

15

17 a, c

18 b, d

22 a

Use entire radicals please. :)