

# CHAPTER 1 - RADICALS

Natural 1, 2, 3, 4...

Whole 0, 1, 2, 3, ...

Integers -2, -1, 0, 1, 2, ...

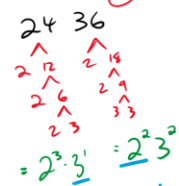
Rational  $\frac{2}{3}, \frac{4}{5}, \frac{1}{2}$

Irrational  $\pi, \sqrt{5}$

Imaginary  $\sqrt{-1}$

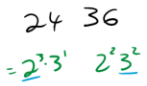
Real

GCF



GCF:  $2^2 \cdot 3 = 12$

LCM



LCM:  $2^3 \cdot 3^2 = 8 \cdot 9 = 72$

→ 24 48 72

→ 36 72

$\sqrt{72}$

"Simplify" means turn into a mixed radical

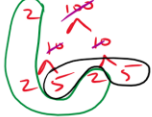


$\sqrt{200}$



$10\sqrt{2}$

$\sqrt[3]{200}$



$2\sqrt[3]{25}$

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

$\sqrt{\frac{25}{81}} = \frac{5}{9}$

$-2\sqrt{2} \times -3\sqrt{14} = 6\sqrt{28}$

$6\sqrt{28} = 12\sqrt{7}$

$3\sqrt{5} + 2\sqrt{5} = 5\sqrt{5}$

$3\sqrt{5} \times 2\sqrt{5} = 6\sqrt{25} = 30$

$5\sqrt{3} + 2\sqrt{5}$  N/A like  $5x+2y$

$5\sqrt{3} \times 2\sqrt{5} = 10\sqrt{15}$

# CHAPTER 2 - EXPONENTS

Remember:

$3^0 = 1, 3^2 = 9, 3^{-2} = \frac{1}{3^2} = \frac{1}{9}, 3^{1/2} = \sqrt{3}, 3^{-1/2} = \frac{1}{3^{1/2}}, -3^{-2} = -\frac{1}{(3^2)}, -3^{-1/2} = -\frac{1}{\sqrt{3}}$

$\sqrt{\frac{1}{9}} = \frac{1}{3}, \sqrt[3]{\frac{1}{9}} = \frac{1}{\sqrt[3]{9}}$

$\sqrt{x^7} = x^{7/2}$

$\left(\frac{1}{16}\right)^{-1/2} = \left(\frac{16}{1}\right)^{1/2} = 4$

$(-5x^2y^3)(2x^4y)^{-3}$

$\left(\frac{-5x^2}{y^3}\right)\left(\frac{1}{2x^4y}\right)^3$

$\left(\frac{-5x^2}{y^3}\right)\left(\frac{1}{8x^{12}y^3}\right)$

$\left(\frac{-5x^2}{8x^{12}y^6}\right)$

$= \frac{-5}{8x^{10}y^6}$

$\left(\frac{5a^2b^5}{2a^3a^2b^2}\right)^3$

$\left(\frac{5a^2b^5}{2a^5b^2}\right)^3$

$\left(\frac{5ab^3}{2}\right)^3 = \left(\frac{2}{5ab^3}\right)^3$

$= \frac{8}{125a^3b^9}$

$2\sqrt{5} = \sqrt[3]{5 \cdot 2 \cdot 2 \cdot 2}$