

Complete the list below...

$$\begin{array}{lll} \sqrt{1} = \sqrt{1 \cdot 1} = 1 & \sqrt{49} = & \sqrt{169} = \\ \sqrt{4} = \sqrt{2 \cdot 2} = 2 & \sqrt{64} = & \sqrt{196} = \\ \sqrt{9} = & \sqrt{81} = & \sqrt{225} = \\ \sqrt{16} = & \sqrt{100} = \sqrt{10 \cdot 10} = 10 & \sqrt{256} = \\ \sqrt{25} = & \sqrt{121} = \sqrt{11 \cdot 11} = 11 & \sqrt{289} = \\ \sqrt{36} = & \sqrt{144} = & \sqrt{324} = \end{array}$$

SIMPLIFYING RADICALS

No Decimals

$$1.) \sqrt{108} = 2 \cdot 3 \sqrt{3} = 6\sqrt{3}$$

Handwritten diagram for 108: $2^2 \cdot 3^3$. The 2's are circled, and the 3's are grouped as $3 \cdot 3$.

$$2.) \sqrt{48x^5y^8}$$

Handwritten diagram for $48x^5y^8$: Prime factorization $2^4 \cdot 3 \cdot x^5 \cdot y^8$. The 2's are circled, and the 3 is underlined. The x's and y's are grouped into pairs.

$$4^2xy^4\sqrt{3x}$$

$$3.) \sqrt{12x^{15}y^3z^6}$$

Handwritten diagram for $12x^{15}y^3z^6$: Prime factorization $2^2 \cdot 3 \cdot x^{15} \cdot y^3 \cdot z^6$. The 2's are circled, and the 3 is underlined. The x's, y's, and z's are grouped into pairs.

$$2^7xy^3z^3\sqrt{3xy}$$

ADDING / SUBTRACTING RADICALS

In order to add/subtract radicals, each term must have the same number under the radical and same index

4.) $4\sqrt{32} - 8\sqrt{128}$

$16\sqrt{2} - 64\sqrt{2} = -48\sqrt{2}$

5.) $2\sqrt{98} - \sqrt{24} + 2\sqrt{150} - 4\sqrt{8}$

$14\sqrt{2} - 2\sqrt{6} + 10\sqrt{6} - 8\sqrt{2}$

$6\sqrt{2} + 8\sqrt{6}$

MULTIPLYING RADICALS

In order to multiply radicals, we distribute the coefficients and multiply and distribute the radicals and multiply SEPARATELY

6.) $2\sqrt{8}(4+3\sqrt{6})$

$8\sqrt{8} + 6\sqrt{48}$

$16\sqrt{2} + 24\sqrt{3}$

7.) $(2-\sqrt{3})(5+2\sqrt{6})$

$10 + 4\sqrt{6} - 5\sqrt{3} - 2\sqrt{18}$

$10 + 4\sqrt{6} - 5\sqrt{3} - 6\sqrt{2}$

The back is due tomorrow.