

SIMPLIFYING RADICAL EXPRESSIONS

Perfect Squares: 1, 4, 9, 16, 25, _____, _____, _____, _____, _____, _____, 144...

x^2, x^4, x^6, \dots Exponents must be _____.

$\sqrt{25}$ is read "the square root of 25".

$$\sqrt{25} = 5 \text{ because } 5^2 = 25 \quad \sqrt{36} = 6 \text{ because } \underline{\quad} = \underline{\quad} \quad \sqrt{100} = \underline{\quad} \quad \sqrt{49} = \underline{\quad}$$

$$\sqrt{a^6} = a^3 \text{ because } (a^3)^2 = a^6 \quad \sqrt{m^{16}} = m^8 \text{ because } \underline{\quad} = \underline{\quad} \quad \sqrt{y^{10}} = \underline{\quad} \quad \sqrt{a^2} = \underline{\quad}$$

Hint: Divide the exponent by _____.

In the expression \sqrt{a} , the $\sqrt{\quad}$ is called the radical and a is called the radicand.

Simplify (Simplifying Perfect Squares):

- $\sqrt{4}$
- $\sqrt{16}$
- $-\sqrt{100}$
- $\sqrt{a^8}$
- $\sqrt{w^{12}}$
- $\sqrt{a^6 b^{10}}$
- $\sqrt{9a^2}$
- $-\sqrt{81m^{64}}$
- $\sqrt{49a^4 b^{12}}$
- $\sqrt{121x^{14} y^6}$

Simplify (Simplifying Radicals that are not Perfect Squares):

- $\sqrt{20} = \sqrt{4} \cdot \sqrt{5} = 2\sqrt{5}$
- $\sqrt{27} = \sqrt{9}\sqrt{3} = 3\sqrt{3}$
- $\sqrt{48} = \sqrt{16}\sqrt{3} = 4\sqrt{3}$
- $\sqrt{45} = \sqrt{\quad}\sqrt{\quad} = \underline{\quad}\sqrt{\quad}$
- $\sqrt{12} = \sqrt{\quad}\sqrt{\quad} = \underline{\quad}$
- $\sqrt{50} = \underline{\quad}$
- $\sqrt{a^5} = \sqrt{a^4}\sqrt{a} = a^2\sqrt{a}$
- $\sqrt{x^9} = \sqrt{\quad}\sqrt{\quad} = \underline{\quad}$
- $\sqrt{x^3} = \underline{\quad}$

Simplify:

- $\sqrt{18}$
- $\sqrt{125}$
- $\sqrt{72}$
- $\sqrt{180}$
- $\sqrt{a^3}$
- $\sqrt{b^7}$
- $\sqrt{m^{11}}$
- $\sqrt{75x^7 y^5}$
- $\sqrt{27a^{11} b^7}$
- $\sqrt{32a^7 b^4}$
- $\sqrt{9a^8}$
- $\sqrt{45a^7}$
- $\sqrt{36x^2 y^6}$
- $\sqrt{12x^{20} y^8}$
- $-\sqrt{200}$
- $\sqrt{196}$
- $\sqrt{63x^4 y}$
- $\sqrt{6x^3}$
- $\sqrt{100x^5 y}$
- $\sqrt{80x^{100} y^{49}}$