Simplifying Radicals

$\sqrt{40x^4y^5z^3} = \sqrt{2\cdot2\cdot2\cdot5\cdot x\cdot x\cdot x\cdot x\cdot y\cdot y\cdot y\cdot y\cdot y\cdot z\cdot z}$

4 10

2 2 2 5

$2xxyyz\sqrt{2\cdot5\cdot y\cdot z}$

$2x^2y^2z\sqrt{10yz}$

<u>IMPORTANT</u> - when simplifying variables with even exponents inside a radical and the result is an odd exponent, you must use the absolute value to make sure the simplified exponent is not negative

$\sqrt{72x^3y^4z^5} = \sqrt{2\cdot2\cdot2\cdot3\cdot3\cdot x\cdot x\cdot x\cdot y\cdot y\cdot y\cdot y\cdot z\cdot z\cdot z\cdot z\cdot z}$

9 8

3 3 2 4

2 2

$= 2\cdot3\cdot x\cdot y\cdot y\cdot z\cdot z\sqrt{2xz}$

$= 6xy^2z^2\sqrt{2xz}$

Practice

$\sqrt{32r^2s^4t^5}$

$\sqrt{56xy^{10}z^5}$

$\sqrt{147x^6y^7}$