GUIDED NOTES (MODEL NOTES)

Remember

If there is no visible index, the index is always __2__.

Simplifying Radicals

1. Find the __*factors*__ of the __*radicand*__.
2. Circle groups of identical factors based on the __*index*__.
3. Write each factor from each group once as the __*coefficient*__.

Examples

1) Simplify: $\sqrt{24}$

$$\sqrt{24} = \sqrt{2\cdot 2\cdot 2\cdot 3} = 2\cdot\sqrt{2\cdot 3} = \boxed{2\cdot\sqrt{6}}$$

2) Simplify: $\sqrt[3]{24}$

$$\sqrt[3]{24} = \sqrt[3]{2\cdot 2\cdot 2\cdot 3} = \boxed{2\cdot\sqrt[3]{3}}$$

3) Simplify: $\sqrt{x^4y^3}$

$$\sqrt{x^4y^3} = \sqrt{x\cdot x\cdot x\cdot x\cdot y\cdot y\cdot y} = x\cdot x\cdot y\cdot\sqrt{y} = \boxed{x^2y\cdot\sqrt{y}}$$

4) Simplify: $\sqrt[3]{x^4y^3}$

$$\sqrt[3]{x^4y^3} = \sqrt[3]{x\cdot x\cdot x\cdot x\cdot y\cdot y\cdot y} = x\cdot y\cdot\sqrt[3]{x} = \boxed{xy\cdot\sqrt[3]{x}}$$

5) Simplify: $\sqrt{96x^2y^5}$

$$\sqrt{96x^2y^5} = \sqrt{2^2\cdot 2^2\cdot 2\cdot 3\cdot x^2\cdot y^2\cdot y^2\cdot y} = 2\cdot 2\cdot x\cdot y\cdot y\cdot\sqrt{2\cdot 3\cdot y} = \boxed{4xy^2\cdot\sqrt{6y}}$$

6) Simplify: $\sqrt[3]{96x^2y^5}$

$$\sqrt[3]{96x^2y^5} = \sqrt[3]{2^3\cdot 2^2\cdot 3\cdot x^2\cdot y^3\cdot y^2} = 2\cdot y\cdot\sqrt[3]{2^2\cdot 3\cdot x^2\cdot y^2} = \boxed{2y\cdot\sqrt[3]{12x^2y^2}}$$