Ex: Divide and simplify if needed:

10) $\frac{\sqrt[3]{32}}{\sqrt[3]{-4}} = \sqrt[3]{\frac{32}{-4}} = \sqrt[3]{-8}$ → $2 \cdot 2 \cdot 2$ → -2

11) $\frac{\sqrt[3]{162x^5}}{\sqrt[3]{3x^2}} = \sqrt[3]{\frac{162x^5}{3x^2}}$ → $\sqrt[3]{54x^3}$ → $3 \cdot 3 \cdot 3$ → $3x\sqrt[3]{2}$

12) $\frac{\sqrt{12x^4}}{\sqrt{3x}} = \sqrt{\frac{12x^4}{3x^1}} = \sqrt{4x^3}$ → $2 \cdot 2$ → $2x\sqrt{x}$

Ex: Rationalize the denominator:

14) $\frac{\sqrt{3x^5}}{\sqrt{5y}} \cdot \frac{\sqrt{5y}}{\sqrt{5y}}$ → $\frac{\sqrt{15x^5y}}{\sqrt{25y^2}}$ → $5 \cdot 5$ → $= \frac{x^2\sqrt{15yx}}{5y}$

15) $\frac{\sqrt{2x^3}}{\sqrt{10xy}} = \sqrt{\frac{12x^3}{10xy}} = \sqrt{\frac{1x^2}{5y}}$ → $\frac{\sqrt{x^2}}{\sqrt{5y}} = \frac{x}{\sqrt{5y}} \cdot \frac{\sqrt{5y}}{\sqrt{5y}}$ → $\frac{x\sqrt{5y}}{\sqrt{25y^2}}$ → $5 \cdot 5$ → $= \frac{x\sqrt{5y}}{5y}$

16) $\frac{\sqrt{3a}}{\sqrt{9b^2c}} = \frac{\sqrt{3a}}{3b\sqrt{c}} \cdot \frac{\sqrt{c}}{\sqrt{c}}$ → $3 \cdot 3$ → $= \frac{\sqrt{3ac}}{3b\sqrt{c^2}}$ → $= \frac{\sqrt{3ac}}{3bc}$

17) $\sqrt{\frac{x}{8y}} = \frac{\sqrt{x}}{\sqrt{8y}} \cdot \frac{\sqrt{8y}}{\sqrt{8y}}$ → $\sqrt{8xy}$ → $2 \cdot 2 \cdot 2$ → $\frac{\sqrt{8xy}}{\sqrt{64y^2}}$ → $8 \cdot 8$ → $= \frac{2\sqrt{2xy}}{8y}$ → $= \frac{\sqrt{2xy}}{4y}$

18) $\frac{8\sqrt{20x^3}}{4\sqrt{24x}}$ → $2 \cdot 5 \cdot x^2$ → 6 → $\frac{2\sqrt{5x^2}}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{2\sqrt{30x^2}}{\sqrt{36}} = \frac{2x\sqrt{30}}{6}$ → 3 → $= \frac{x\sqrt{30}}{3}$

To rationalize the denominator:

Conjugate of $a + \sqrt{b} = a - \sqrt{b}$

Ex: $(\sqrt{5} + \sqrt{2})(\sqrt{5} - \sqrt{2})$

$\sqrt{25} - \sqrt{4}$

First & Last $5 - 2 = 3$

Ex: Rationalize the denominator.

19) $\frac{5}{2+\sqrt{3}} \cdot \frac{(2-\sqrt{3})}{(2-\sqrt{3})}$ → $\frac{10-5\sqrt{3}}{4-\sqrt{9}} = \frac{10-5\sqrt{3}}{4-3} = 10-5\sqrt{3}$

20) $\frac{2-\sqrt{3}}{4+\sqrt{3}} \cdot \frac{(4-\sqrt{3})}{(4-\sqrt{3})} = \frac{8-2\sqrt{3}-4\sqrt{3}+3}{16-3}$ → $\frac{11-6\sqrt{3}}{13}$

21) A rectangle has an area of 120 units^2. If one side is $5\sqrt{2}$ units, what is the measure of the remaining side length?

$A = lw$

$\frac{120}{5\sqrt{2}} = \frac{5\sqrt{2}w}{5\sqrt{2}}$

$\frac{120}{5\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = w$

$\frac{120\sqrt{2}}{5\sqrt{4}} = w$

$\frac{120\sqrt{2}}{10} = w$

$12\sqrt{2} = w$