Multiply

In order to multiply radicals you must have the same INDEX

How to multiply:

1. Multiply the outside of the radicals and multiply the inside of the radicals

2. Simplify the radicals

1. $\sqrt{5}(\sqrt{10}+\sqrt{15})$

$\sqrt{5\cdot10}+\sqrt{5\cdot15}$

$\sqrt{50}+\sqrt{75}$

50 = 2 · 25 = 2 · 5 · 5

75 = 5 · 15 = 5 · 5 · 3

$5\sqrt{2}+5\sqrt{3}$

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

$-6\sqrt{3}+(-3\sqrt{3\cdot6})$

$-6\sqrt{3}-3\sqrt{18}$

$-6\sqrt{3}-3\cdot3\sqrt{2}$

18 = 2 · 9 = 2 · 3 · 3

$3\sqrt{2}$

$-6\sqrt{3}-9\sqrt{2}$

Divide

How to simplify with a denominator:

1. Split one radical into 2.

2. Simplify numerator and denominator separately.

3. $\sqrt{\frac{16}{25}}=\frac{\sqrt{16}}{\sqrt{25}}=\frac{4}{5}$

4. $\sqrt{\frac{32}{4}}\Rightarrow\frac{\sqrt{32}}{\sqrt{4}}=\frac{\sqrt{32}}{2}=\frac{4\sqrt{2}}{2}=2\sqrt{2}$

32 = 4 · 8 = 2 · 2 · 4 · 2

2 · 2 · 2 · 2 · 2 = 2 · 2 · √2

$\sqrt{\frac{8}{1}}=\frac{\sqrt{8}}{\sqrt{1}}=\frac{\sqrt{8}}{1}=2\sqrt{2}$

8 = 4 · 2 = 2 · 2 · 2

$2\sqrt{2}$