

**EXERCICE 1 :**

Ecrire sans radical :

$$A = \sqrt{1,5^2} \quad B = (\sqrt{1,3})^2 \quad C = \sqrt{900} + \sqrt{1600}$$

$$D = \sqrt{2} \times \sqrt{32} \quad E = \sqrt{\frac{1}{25}} \quad F = (7\sqrt{5})^2$$

$$G = \sqrt{3^2} + \sqrt{7^2} \quad H = (\sqrt{10 + 3})^2 \quad I = -2^2\sqrt{5^2}$$

**EXERCICE 2 :**Ecrire sous la forme  $a + b\sqrt{c}$  où  $a, b, c$  sont des entiers avec  $c$  le plus petit possible :

$$A = \sqrt{5} (2 + 3\sqrt{5}) \quad B = (2 + \sqrt{3}) (1 - \sqrt{3})$$

$$C = (3 - 4\sqrt{7}) (5 + 2\sqrt{7}) \quad D = -2\sqrt{27} + \sqrt{64} + 5\sqrt{75}$$

$$E = 2\sqrt{50} + 3\sqrt{32} - 2\sqrt{49} \quad F = (3 - 2\sqrt{5}) (3\sqrt{5} + 4)$$

**EXERCICE 3 :**

$$\text{On donne } A = 3 + 2\sqrt{2} \quad \text{et} \quad B = 1 - \sqrt{2}$$

Exprimer le plus simplement possible :

$$\text{a. } A + B \quad \text{b. } A - B \quad \text{c. } 2A - 6B$$

$$\text{d. } 3B - A \quad \text{e. } A \times B$$

**EXERCICE 4 :**

Ecrire sans radical au dénominateur :

$$A = \frac{5}{\sqrt{5}} \quad B = \frac{\sqrt{15}}{\sqrt{25}} \quad C = \frac{2\sqrt{6}}{3\sqrt{7}}$$

**EXERCICE 1 :**

$$A = \sqrt{1,5^2} = \mathbf{1,5}$$

$$\sqrt{a^2} = a$$

$$B = (\sqrt{1,3})^2 = \mathbf{1,3}$$

$$(\sqrt{a})^2 = a$$

$$C = \sqrt{900} + \sqrt{1600} = 30 + 40 = \mathbf{70}$$

$$D = \sqrt{2} \times \sqrt{32} = \sqrt{2 \times 32} = \sqrt{64} = \mathbf{8}$$

$$\sqrt{a} \times \sqrt{b} = \sqrt{a \times b}$$

$$E = \sqrt{\frac{1}{25}} = \frac{\sqrt{1}}{\sqrt{25}} = \mathbf{\frac{1}{5}}$$

$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$$

$$F = (7\sqrt{5})^2 = 7^2 \times (\sqrt{5})^2 = 49 \times 5 = \mathbf{245}$$

$$(a \times b)^n = a^n \times b^n \quad \text{et} \quad (\sqrt{a})^2 = a$$

$$G = \sqrt{3^2} + \sqrt{7^2} = 3 + 7 = \mathbf{10}$$

$$\sqrt{a^2} = a$$

$$H = (\sqrt{10 + 3})^2 = \sqrt{13^2} = \mathbf{13}$$

$$\sqrt{a^2} = a$$

$$I = -2^2\sqrt{5^2} = -4 \times 5 = \mathbf{-20}$$

$$\sqrt{a^2} = a$$

**EXERCICE 2:**

$$A = \sqrt{5} (2 + 3\sqrt{5}) = \sqrt{5} \times 2 + \sqrt{5} \times 3\sqrt{5} = 2\sqrt{5} + 3\sqrt{25} = 2\sqrt{5} + 3 \times 5 = \mathbf{15 + 2\sqrt{5}}$$

$$B = (2 + \sqrt{3})(1 - \sqrt{3}) = 2 - 2 \times \sqrt{3} + \sqrt{3} - (\sqrt{3})^2 = 2 - 2\sqrt{3} + \sqrt{3} - 3 = \mathbf{-1 - \sqrt{3}}$$

$$C = (3 - 4\sqrt{7})(5 + 2\sqrt{7}) = 15 + 3 \times 2\sqrt{7} - 4\sqrt{7} \times 5 - 4\sqrt{7} \times 2\sqrt{7} \\ = 15 + 6\sqrt{7} - 20\sqrt{7} - 8\sqrt{49} = 15 + 6\sqrt{7} - 20\sqrt{7} - 8 \times 7 \\ = 15 + 6\sqrt{7} - 20\sqrt{7} - 56 = \mathbf{-41 - 14\sqrt{7}}$$

$$D = -2\sqrt{27} + \sqrt{64} + 5\sqrt{75} = -2\sqrt{9 \times 3} + 8 + 5\sqrt{25 \times 3} \\ = -2 \times \sqrt{9} \times \sqrt{3} + 8 + 5 \times \sqrt{25} \times \sqrt{3} = -2 \times 3 \times \sqrt{3} + 8 + 5 \times 5 \times \sqrt{3} \\ = -6\sqrt{3} + 8 + 25\sqrt{3} = \mathbf{8 + 19\sqrt{3}}$$

$$E = 2\sqrt{50} + 3\sqrt{32} - 2\sqrt{49} = 2 \times \sqrt{25 \times 2} + 3 \times \sqrt{16 \times 2} - 2 \times 7 \\ = 2 \times \sqrt{25} \times \sqrt{2} + 3 \times \sqrt{16} \times \sqrt{2} - 14 = 2 \times 5 \times \sqrt{2} + 3 \times 4 \times \sqrt{2} - 14 \\ = 10\sqrt{2} + 12\sqrt{2} - 14 = \mathbf{-14 + 22\sqrt{2}}$$

$$F = (3 - 2\sqrt{5})(3\sqrt{5} + 4) = 3 \times 3\sqrt{5} + 12 - 2\sqrt{5} \times 3\sqrt{5} - 2\sqrt{5} \times 4 \\ = 9\sqrt{5} + 12 - 6 \times \sqrt{25} - 8\sqrt{5} = 9\sqrt{5} + 12 - 6 \times 5 - 8\sqrt{5} \\ = 9\sqrt{5} + 12 - 30 - 8\sqrt{5} = \mathbf{-18 + \sqrt{5}}$$

**EXERCICE 3:**

$$A = 3 + 2\sqrt{2} \quad \text{et} \quad B = 1 - \sqrt{2}$$

$$\text{a. } A + B = 3 + 2\sqrt{2} + 1 - \sqrt{2} = \mathbf{4 + \sqrt{2}}$$

$$\text{b. } A - B = (3 + 2\sqrt{2}) - (1 - \sqrt{2}) = 3 + 2\sqrt{2} - 1 + \sqrt{2} = \mathbf{2 + 3\sqrt{2}}$$

$$\text{c. } 2A - 6B = 2(3 + 2\sqrt{2}) - 6(1 - \sqrt{2}) = 6 + 4\sqrt{2} - 6 + 6\sqrt{2} = \mathbf{10\sqrt{2}}$$

$$\text{d. } 3B - A = 3(1 - \sqrt{2}) - (3 + 2\sqrt{2}) = 3 - 3\sqrt{2} - 3 - 2\sqrt{2} = \mathbf{-5\sqrt{2}}$$

$$\begin{aligned} \text{e. } A \times B &= (3 + 2\sqrt{2})(1 - \sqrt{2}) = 3 - 3\sqrt{2} + 2\sqrt{2} - 2\sqrt{2} \times \sqrt{2} \\ &= 3 - 3\sqrt{2} + 2\sqrt{2} - 2\sqrt{4} = 3 - 3\sqrt{2} + 2\sqrt{2} - 2 \times 2 = 3 - 3\sqrt{2} + 2\sqrt{2} - 4 \\ &= \mathbf{-1 - \sqrt{2}} \end{aligned}$$

**EXERCICE 4:**

$$A = \frac{5}{\sqrt{5}} = \frac{5 \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} = \frac{5 \times \sqrt{5}}{\sqrt{25}} = \frac{5 \times \sqrt{5}}{5} = \mathbf{\sqrt{5}}$$

$$B = \frac{\sqrt{15}}{\sqrt{25}} = \frac{\mathbf{\sqrt{15}}}{\mathbf{5}}$$

$$C = \frac{2\sqrt{6}}{3\sqrt{7}} = \frac{2\sqrt{6} \times \sqrt{7}}{3\sqrt{7} \times \sqrt{7}} = \frac{2\sqrt{42}}{3 \times \sqrt{49}} = \frac{2\sqrt{42}}{3 \times 7} = \frac{\mathbf{2\sqrt{42}}}{\mathbf{21}}$$