

Interrogation de mathématiques CORRIGEE

Ecrire le plus simplement possible les expressions suivantes.

C'est à dire sous l'une des formes suivantes :

- d'un nombre entier ou décimal
- $a\sqrt{b}$ où a et b sont deux entiers, b étant le plus petit possible.
- $a + b\sqrt{c}$ où b et c sont deux entiers, c étant le plus petit possible.

$$A = \sqrt{169 \times 49 \times 196}$$

$$B = \sqrt{27} \times \sqrt{81} \times \sqrt{75}$$

$$C = \sqrt{6,3} \times \sqrt{0,7} \times \sqrt{4}$$

$$D = \sqrt{343} \times \sqrt{\frac{1}{63}}$$

$$E = \sqrt{2 \times 3^2 \times 5^4}$$

$$F = \sqrt{250} \times \sqrt{8}$$

$$G = \sqrt{125} \times \sqrt{\frac{8}{27}} \times \sqrt{\frac{16}{5}} \times \sqrt{\frac{3}{50}}$$

$$H = \sqrt{\frac{1}{10}} \times \frac{\sqrt{270}}{\sqrt{64}} \times \sqrt{32}$$

$$I = (1 - \sqrt{13})^2$$

$$J = (2\sqrt{3} + \sqrt{6})^2$$

$$K = (3\sqrt{7} - 4)(3\sqrt{7} + 4)$$

$$L = (2\sqrt{3} - 3\sqrt{2})(3\sqrt{3} + 2\sqrt{2})$$

$$M = 2\sqrt{2} + \sqrt{32} - 2\sqrt{50}$$

$$N = \sqrt{24} - 2\sqrt{96} + 3\sqrt{54}$$

$$O = \sqrt{1\,000} - \sqrt{27} + \sqrt{490} + 3\sqrt{3} - 5\sqrt{10}$$

Correction de l'interrogation de mathématiques

$A = \sqrt{169 \times 49 \times 196}$ $A = \sqrt{169} \times \sqrt{49} \times \sqrt{196}$ $A = 13 \times 7 \times 14$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$A = 1\,274$</div> <p><i>(connaître les carrés parfaits)</i></p>	$B = \sqrt{27} \times \sqrt{81} \times \sqrt{75}$ $B = \sqrt{3 \times 9} \times 9 \times \sqrt{3 \times 25}$ $B = \sqrt{3} \times \sqrt{9} \times 9 \times \sqrt{3} \times \sqrt{25}$ $B = \sqrt{3} \times 3 \times 9 \times \sqrt{3} \times 5$ $B = 3 \times 3 \times 9 \times 5$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$B = 405$</div> <p><i>(reconnaître les carrés parfaits)</i></p>	$C = \sqrt{6,3} \times \sqrt{0,7} \times \sqrt{4}$ $C = \sqrt{9 \times 0,7} \times \sqrt{0,7} \times 2$ $C = \sqrt{9} \times \sqrt{0,7} \times \sqrt{0,7} \times 2$ $C = 3 \times 0,7 \times 2$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$C = 4,2$</div> <p><i>(manipuler des décimales)</i></p>
$D = \sqrt{343} \times \sqrt{\frac{1}{63}}$ $D = \sqrt{49 \times 7} \times \sqrt{\frac{1}{9 \times 7}}$ $D = \sqrt{49} \times \sqrt{7} \times \frac{1}{\sqrt{9 \times 7}}$ $D = 7 \times \frac{1}{3}$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$D = \frac{7}{3}$</div> <p><i>(simplifier les calculs)</i></p>	$E = \sqrt{2 \times 3^2 \times 5^4}$ $E = \sqrt{2} \times \sqrt{3^2} \times \sqrt{5^4}$ $E = \sqrt{2} \times 3 \times 5^2$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$E = 75\sqrt{2}$</div> <p><i>(car : $\sqrt{5^4} = \sqrt{(5^2)^2} = 5^2$)</i></p>	$F = \sqrt{250} \times \sqrt{8}$ $F = \sqrt{25 \times 10} \times \sqrt{4 \times 2}$ $F = \sqrt{25} \times \sqrt{10} \times \sqrt{4} \times \sqrt{2}$ $F = 5 \times \sqrt{5 \times 2} \times 2 \times \sqrt{2}$ $F = 5 \times \sqrt{5} \times \sqrt{2} \times 2 \times \sqrt{2}$ $F = 5 \times 2 \times 2 \times \sqrt{5}$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$F = 20\sqrt{5}$</div> <p><i>(simplifier les calculs)</i></p>
$G = \sqrt{125} \times \sqrt{\frac{8}{27}} \times \sqrt{\frac{16}{5}} \times \sqrt{\frac{3}{50}}$ $G = \sqrt{\frac{125 \times 8 \times 16 \times 3}{27 \times 5 \times 50}}$ $G = \sqrt{\frac{25 \times 5 \times 4 \times 2 \times 16 \times 3}{9 \times 3 \times 5 \times 25 \times 2}}$ $G = \sqrt{\frac{4 \times 16}{9}}$ $G = \frac{\sqrt{4} \times \sqrt{16}}{\sqrt{9}}$ $G = \frac{2 \times 4}{3}$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$G = \frac{8}{3}$</div> <p><i>(simplifier méthodiquement les calculs)</i></p>	$H = \sqrt{\frac{1}{10}} \times \frac{\sqrt{270}}{\sqrt{64}} \times \sqrt{32}$ $H = \sqrt{\frac{1 \times 270 \times 32}{10 \times 64}}$ $H = \sqrt{\frac{1 \times 3 \times 9 \times 10 \times 32}{10 \times 32 \times 2}}$ $H = \sqrt{\frac{3 \times 9}{2}}$ $H = \frac{\sqrt{3} \times \sqrt{9}}{\sqrt{2}}$ $H = \frac{3\sqrt{3}}{\sqrt{2}}$ $H = \frac{3\sqrt{3} \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}}$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$H = \frac{3\sqrt{6}}{2}$</div>	
$I = (1 - \sqrt{13})^2 \rightarrow (a - b)^2$ $I = 1 - 2\sqrt{13} + 13$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$I = 14 - 2\sqrt{13}$</div>	$J = (2\sqrt{3} + \sqrt{6})^2 \rightarrow (a + b)^2$ $J = (2\sqrt{3})^2 + 2 \times 2\sqrt{3} \times \sqrt{6} + (\sqrt{6})^2$ $J = 12 + 4 \times \sqrt{3} \times \sqrt{3} \times \sqrt{2} + 6$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$J = 18 + 12\sqrt{2}$</div>	$K = (3\sqrt{7} - 4)(3\sqrt{7} + 4)$ $K = (3\sqrt{7})^2 - 4^2$ $K = 3^2 \times (\sqrt{7})^2 - 16$ $K = 63 - 16$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$K = 47$</div> <p>$\rightarrow (a + b)(a - b)$</p>

$L = (2\sqrt{3} - 3\sqrt{2})(3\sqrt{3} + 2\sqrt{2})$ $L = 2\sqrt{3} \times 3\sqrt{3} + 2\sqrt{3} \times 2\sqrt{2} - 3\sqrt{2} \times 3\sqrt{3} - 3\sqrt{2} \times 2\sqrt{2}$ $L = 6 \times 3 + 4\sqrt{6} - 9\sqrt{6} - 6 \times 2$ $L = 18 - 5\sqrt{6} - 12$ $\boxed{L = 6 - 5\sqrt{6}}$ <p><i>(pas d'identité remarquable donc double développement)</i></p>	$M = 2\sqrt{2} + \sqrt{32} - 2\sqrt{50}$ $M = 2\sqrt{2} + \sqrt{16 \times 2} - 2\sqrt{25 \times 2}$ $M = 2\sqrt{2} + \sqrt{16} \times \sqrt{2} - 2 \times \sqrt{25} \times \sqrt{2}$ $M = 2\sqrt{2} + 4\sqrt{2} - 10\sqrt{2}$ $M = (2 + 4 - 10)\sqrt{2}$ $\boxed{M = -4\sqrt{2}}$
$N = \sqrt{24} - 2\sqrt{96} + 3\sqrt{54}$ $N = \sqrt{4 \times 6} - 2\sqrt{16 \times 6} + 3\sqrt{9 \times 6}$ $N = \sqrt{4} \times \sqrt{6} - 2 \times \sqrt{16} \times \sqrt{6} + 3 \times \sqrt{9} \times \sqrt{6}$ $N = 2\sqrt{6} - 2 \times 4 \times \sqrt{6} + 3 \times 3 \times \sqrt{6}$ $N = 2\sqrt{6} - 8\sqrt{6} + 9\sqrt{6}$ $\boxed{N = 3\sqrt{6}}$	$O = \sqrt{1\,000} - \sqrt{27} + \sqrt{490} + 3\sqrt{3} - 5\sqrt{10}$ $O = \sqrt{100 \times 10} - \sqrt{9 \times 3} + \sqrt{49 \times 10} + 3\sqrt{3} - 5\sqrt{10}$ $O = \sqrt{100} \times \sqrt{10} - \sqrt{9} \times \sqrt{3} + \sqrt{49} \times \sqrt{10} + 3\sqrt{3} - 5\sqrt{10}$ $O = 10\sqrt{10} - 3\sqrt{3} + 7\sqrt{10} + 3\sqrt{3} - 5\sqrt{10}$ $\boxed{O = 12\sqrt{10}}$