Exercice 1 :

$A = 2^5 \times 2^{-2} \times 2^{-4}$

$A = 2^{5-2-4}$

$\boxed{A = 2^{-1}}$

$B = 3^7 \times 3^{-8} \times 3^{-2}$

$B = 3^{7-8-2}$

$\boxed{B = 3^{-3}}$

$C = ((-2)^4)^{-3}$

$C = (-2)^{4 \times (-3)}$

$C = (-2)^{-12}$

$\boxed{C = 2^{-12}}$

$D = 100 \times 10^3$

$D = 10^2 \times 10^3$

$D = 10^{2+3}$

$\boxed{D = 10^5}$

$E = 2^2 \times 4^3 \times 4^{-2}$

$E = 2^2 \times (2^2)^3 \times (2^2)^{-2}$

$E = 2^2 \times 2^{2 \times 3} \times 2^{2 \times (-2)}$

$E = 2^2 \times 2^6 \times 2^{-4}$

$E = 2^{2+6-4}$

$\boxed{E = 2^4}$

$F = \dfrac{6^2 \times 6^{-3} \times 6}{6^3 \times 6^{-2}}$

$F = \dfrac{6^{2-3+1}}{6^{3-2}}$

$F = \dfrac{6^0}{6^1}$

$F = 6^{0-1}$

$\boxed{F = 6^{-1}}$

Exercice 2 :

$G = 3\,698$

$\boxed{G = 3{,}698 \times 10^3}$

$H = 0{,}128$

$\boxed{H = 1{,}28 \times 10^{-1}}$

$I = 125 \times 10^2$

$\boxed{I = 1{,}25 \times 10^4}$

$J = 0{,}00058 \times 10^{-6}$

$\boxed{J = 5{,}8 \times 10^{-10}}$

$K = \dfrac{5 \times 10^3 \times 7 \times 10^{-9}}{2 \times 10^{-2} \times 10^{-12}}$

$K = \dfrac{5 \times 7}{2} \times \dfrac{10^3 \times 10^{-9}}{10^{-2} \times 10^{-12}}$

$K = \dfrac{35}{2} \times \dfrac{10^{3-9}}{10^{-2-12}}$

$K = 17{,}5 \times \dfrac{10^{-6}}{10^{-14}}$

$K = 17{,}5 \times 10^{-6+14}$

$K = 17{,}5 \times 10^8$

$\boxed{K = 1{,}75 \times 10^9}$

$L = \dfrac{9 \times 10^{-7} \times 2 \times 10^{15}}{0{,}6 \times 10^{-5} \times 10^{19}}$

$L = \dfrac{9 \times 2}{0{,}6} \times \dfrac{10^{-7} \times 10^{15}}{10^{-5} \times 10^{19}}$

$L = \dfrac{18}{0{,}6} \times \dfrac{10^{-7+15}}{10^{-5+19}}$

$L = \dfrac{6 \times 3}{6 \times 0{,}1} \times \dfrac{10^8}{10^{14}}$

$L = \dfrac{3}{0{,}1} \times 10^{8-14}$

$L = 30 \times 10^{-6}$

$\boxed{L = 3 \times 10^{-5}}$

$M = \dfrac{400 \times 10^{-3} \times 0{,}6 \times 10^{-11}}{0{,}002 \times (10^2)^3}$

$M = \dfrac{4 \times 10^2 \times 10^{-3} \times 6 \times 10^{-1} \times 10^{-11}}{2 \times 10^{-3} \times 10^{2 \times 3}}$

$M = \dfrac{4 \times 6}{2} \times \dfrac{10^2 \times 10^{-3} \times 10^{-1} \times 10^{-11}}{10^{-3} \times 10^6}$

$M = \dfrac{24}{2} \times \dfrac{10^{2-3-1-11}}{10^{-3+6}}$

$M = 12 \times \dfrac{10^{-13}}{10^3}$

$M = 12 \times 10^{-13-3}$

$M = 12 \times 10^{-16}$

$\boxed{M = 1{,}2 \times 10^{-15}}$

Exercice 3 :

$(2^2 \times 5 - 10)^2 - (2-5)^2$

$= (4 \times 5 - 10)^2 - (-3)^2$

$= (20 - 10)^2 - 9$

$= (10)^2 - 9$

$= 100 - 9$

$= \boxed{91}$

Exercice 4 :

$$P = \frac{1,5 \times 10^{-5} \times (2 \times 10^3)^2}{0,14 \times 10^2}$$

$$P = \frac{1,5 \times 10^{-5} \times 2^2 \times (10^3)^2}{0,14 \times 10^2}$$

$$P = \frac{1,5 \times 2^2}{0,14} \times \frac{10^{-5} \times 10^{3 \times 2}}{10^2}$$

$$P = \frac{1,5 \times 4}{0,14} \times \frac{10^{-5} \times 10^6}{10^2}$$

$$P = \frac{2 \times 3}{2 \times 0,07} \times \frac{10^{-5+6}}{10^2}$$

$$P = \frac{3}{0,07} \times \frac{10^1}{10^2}$$

$$P = \frac{3 \times 10^1}{0,07 \times 10^2}$$

$$\boxed{P = \frac{30}{7}}$$

Exercice 5 :

$D \in [CA]$, donc CA = CD + DA = 6 + 4 = 10. **<u>CA = 10 cm</u>**.

C est le point d'intersection des droites (DA) et (EB). Les droites (DE) et (AB) sont parallèles.

D'après le théorème de Thalès, on a :

$$\frac{CD}{CA} = \frac{CE}{CB} = \frac{DE}{AB}$$

On utilise :

$$\frac{CD}{CA} = \frac{CE}{CB}$$

On trouve :

$$CE = \frac{CD \times CB}{CA}$$

$$CE = \frac{6 \times 15}{10}$$

$$CE = 9$$

On utilise :

$$\frac{CD}{CA} = \frac{DE}{AB}$$

On trouve :

$$AB = \frac{CA \times DE}{CD}$$

$$AB = \frac{10 \times 4,8}{6}$$

$$AB = 8$$

On a donc **CE = 9 cm** et **AB = 8 cm**.