3ème **SOUTIEN : PUISSANCES D'UN NOMBRE**

EXERCICE 1 :

Calculer :

$2^5 =$ $(-3)^3 =$ $-2^4 =$ $2^{-2} =$

$(-2)^4 =$ $\left(\frac{2}{3}\right)^4 =$ $2 + 3^2 =$

$\frac{2^2}{3} =$ $2^5 + 2^3 =$ $(2 + 3)^2 =$

EXERCICE 2 :

Ecrire sous la forme a^n où a est un nombre et n un entier relatif :

$2^7 \times 2^5 =$ $27 \times 3^{-4} =$

$(-3)^4 \times (-3)^5 =$ $(-7)^3 \times 7^4 =$

$7^{-6} \times 7 =$ $\frac{17^3}{17^{-2}} =$

$\frac{1}{13^{-3}} =$ $\frac{100}{10^7} =$

$(15^3)^{-7} =$ $\frac{1}{11^8} =$

$4^5 \times 9^5 =$ $(2^3)^2 \times 9^3 =$

$\left(\frac{3}{7}\right)^2 \times \frac{3}{7} =$ $\frac{7^3}{2^3} =$

$\frac{16}{25} =$ $144 =$

EXERCICE 3 :

1. Calculer les expressions suivantes :

   $A = 8 + 2^3 \times (12 - 9)^2$

   $B = [11^2 - 11 \times (-3)^2] : (11 \times 2)$

2. Vérifier que $A + B = 3^4$

3ème **CORRECTION DU SOUTIEN : PUISSANCE D'UN NOMBRE**

EXERCICE 1 :

$2^5 = \mathbf{32}$ $(-3)^3 = \mathbf{-27}$ $-2^4 = \mathbf{-16}$ $2^{-2} = \frac{1}{2^2} = \mathbf{\frac{1}{4}}$

$(-2)^4 = \mathbf{16}$ $\left(\frac{2}{3}\right)^4 = \frac{2^4}{3^4} = \mathbf{\frac{16}{81}}$ $2 + 3^2 = 2 + 9 = \mathbf{11}$

$\frac{2^2}{3} = \mathbf{\frac{4}{3}}$ $2^5 + 2^3 = 32 + 8 = \mathbf{40}$ $(2 + 3)^2 = 5^2 = \mathbf{25}$

EXERCICE 2 :

$2^7 \times 2^5 = \mathbf{2^{12}}$ $27 \times 3^{-4} = 3^3 \times 3^{-4} = \mathbf{3^{-1}}$

$(-3)^4 \times (-3)^5 = \mathbf{(-3)^9}$ $(-7)^3 \times 7^4 = (-7)^3 \times (-7)^4 = \mathbf{(-7)^7}$

$7^{-6} \times 7 = 7^{-6} \times 7^1 = \mathbf{7^{-5}}$ $\frac{17^3}{17^{-2}} = 17^{3-(-2)} = \mathbf{17^5}$

$\frac{1}{13^{-3}} = \mathbf{13^3}$ $\frac{100}{10^7} = \frac{10^2}{10^7} = 10^{2-7} = \mathbf{10^{-5}}$

$(15^3)^{-7} = 15^{3\times(-7)} = \mathbf{15^{-21}}$ $\frac{1}{11^8} = \mathbf{11^{-8}}$

$4^5 \times 9^5 = (4 \times 9)^5 = \mathbf{36^5}$ $(2^3)^2 \times 9^3 = 2^6 \times (3^2)^3 = 2^6 \times 3^6 = (2 \times 3)^6 = \mathbf{6^6}$

$\left(\frac{3}{7}\right)^2 \times \frac{3}{7} = \left(\frac{3}{7}\right)^2 \times \left(\frac{3}{7}\right)^1 = \mathbf{\left(\frac{3}{7}\right)^3}$ $\frac{7^3}{2^3} = \left(\frac{7}{2}\right)^3 = \mathbf{3{,}5^3}$

$\frac{16}{25} = \frac{4^2}{5^2} = \left(\frac{4}{5}\right)^2 = \mathbf{0{,}8^2}$ $144 = \mathbf{12^2}$

EXERCICE 3 :

1. $A = 8 + 2^3 \times (12 - 9)^2$
$= 8 + 2^3 \times 3^2$
$= 8 + 8 \times 9$
$= 8 + 72$
$= \mathbf{80}$

$B = [11^2 - 11 \times (-3)^2] : (11 \times 2)$
$= (121 - 11 \times 9) : 22$
$= (121 - 99) : 22$
$= 22 : 22$
$= \mathbf{1}$

2. $A + B = 80 + 1 = 81 = \mathbf{3^4}$