

# Fiche 18 : Les puissances

## Théorie

Pour calculer une puissance, il suffit

- d'écrire celle-ci sous forme d'un produit de facteurs égaux et
- de le calculer de proche en proche.

Exemple :  $2^5 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 32$

### Exercice 1

Complète les calculs suivants

$$5^3 = 5 \cdot 5 \cdot 5 = \underline{\hspace{2cm}}$$

$$2^4 = 2 \cdot 2 \cdot 2 \cdot 2 = \underline{\hspace{2cm}}$$

$$10^3 = 10 \cdot 10 \cdot 10 = \underline{\hspace{2cm}}$$

$$4^3 = 4 \cdot 4 \cdot 4 = \underline{\hspace{2cm}}$$

$$3^4 = 3 \cdot 3 \cdot 3 \cdot 3 = \underline{\hspace{2cm}}$$

$$2^3 = 2 \cdot 2 \cdot 2 = \underline{\hspace{2cm}}$$

### Exercice 2

Écris les produits suivants sous forme de puissances

$5 \cdot 5 \cdot 5 = \underline{\hspace{2cm}}$

$1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 = \underline{\hspace{2cm}}$

$7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 = \underline{\hspace{2cm}}$

$10 \cdot 10 \cdot 10 = \underline{\hspace{2cm}}$

$11 \cdot 11 \cdot 11 \cdot 11 = \underline{\hspace{2cm}}$

$4 \cdot 4 = \underline{\hspace{2cm}}$

$2 \cdot 3 \cdot 2 \cdot 3 \cdot 2 \cdot 3 = \underline{\hspace{2cm}}$

$\underbrace{2 \cdot 2 \cdot 2 \cdot \dots \cdot 2 \cdot 2}_{10 \text{ facteurs}} = \underline{\hspace{2cm}}$

Prénom :

### **Exercice 3**

Calcule les puissances suivantes

$6^2 = \underline{\hspace{2cm}}$

$7^2 = \underline{\hspace{2cm}}$

$3^2 = \underline{\hspace{2cm}}$

$10^3 = \underline{\hspace{2cm}}$

$8^2 = \underline{\hspace{2cm}}$

$5^2 = \underline{\hspace{2cm}}$

$4^2 = \underline{\hspace{2cm}}$

$5^3 = \underline{\hspace{2cm}}$

$9^2 = \underline{\hspace{2cm}}$

$10^2 = \underline{\hspace{2cm}}$

$2^3 = \underline{\hspace{2cm}}$

$5^3 = \underline{\hspace{2cm}}$

$3^2 = \underline{\hspace{2cm}}$

$2^4 = \underline{\hspace{2cm}}$

$5^4 = \underline{\hspace{2cm}}$

$10^4 = \underline{\hspace{2cm}}$

$6^2 = \underline{\hspace{2cm}}$

$3^3 = \underline{\hspace{2cm}}$

$10^3 = \underline{\hspace{2cm}}$

$9^2 = \underline{\hspace{2cm}}$

$5^2 = \underline{\hspace{2cm}}$

$11^2 = \underline{\hspace{2cm}}$

$4^2 = \underline{\hspace{2cm}}$

$3^4 = \underline{\hspace{2cm}}$

$7^2 = \underline{\hspace{2cm}}$

$2^6 = \underline{\hspace{2cm}}$

$10^2 = \underline{\hspace{2cm}}$

$2^{10} = \underline{\hspace{2cm}}$

$2^5 = \underline{\hspace{2cm}}$

$4^4 = \underline{\hspace{2cm}}$

### **Exercice 4**

Complète par = ou  $\neq$

$3^2 \underline{\hspace{0.5cm}} 2^3$

$10^2 \underline{\hspace{0.5cm}} 20$

$3^2 \dots\dots 2^3$

$40^2 \dots\dots 160$

$4^2 \underline{\hspace{0.5cm}} 2^4$

$10^3 \underline{\hspace{0.5cm}} 10\ 000$

$4^2 \dots\dots 2^4$

$20^3 \dots\dots 8000$

$3^1 \underline{\hspace{0.5cm}} 3$

$10^5 \underline{\hspace{0.5cm}} 100\ 000$

$3^1 \dots\dots 3$

$5^3 \dots\dots 15$

$1^4 \underline{\hspace{0.5cm}} 1$

$10^2 \underline{\hspace{0.5cm}} 100$

$1^3 \dots\dots 3$

$3^5 \dots\dots 125$

$1^4 \dots\dots 1$

$5^3 \dots\dots 8$

Prénom :

### **Exercice 5**

Comme dans l'exemple, regroupe les facteurs communs et calcule.

$$6 \times 5 \times 6 \times 4 \times 5 \times 5 = 5^3 \times 6^2 \times 4 = 125 \times 36 \times 4 = 18\,000$$

$3 \times 3 \times 3 \times 2 \times 2 \times 3 = \underline{\hspace{15cm}}$

$10 \times 10 \times 10 \times 2 \times 2 = \underline{\hspace{15cm}}$

$5 \times 4 \times 4 \times 5 = \underline{\hspace{15cm}}$

$6 \times 7 \times 6 \times 6 = \underline{\hspace{15cm}}$

$4 \times 2 \times 3 \times 2 \times 2 = \underline{\hspace{15cm}}$

$4 \times 9 \times 4 \times 4 = \underline{\hspace{15cm}}$

$3 \times 4 \times 4 \times 4 \times 3 = \underline{\hspace{15cm}}$

$6 \times 10 \times 6 \times 6 \times 10 = \underline{\hspace{15cm}}$

### **Exercice 6**

Calcule les expressions suivantes en faisant attention aux opérations

$5 + 3 = \dots\dots\dots 2^4 = \dots\dots\dots 3 + 3 + 3 = \dots\dots\dots 10^2 = \dots\dots\dots$

$5^3 = \dots\dots\dots 4^2 = \dots\dots\dots 3 \cdot 3 = \dots\dots\dots 10 \cdot 2 = \dots\dots\dots$

$5 \cdot 3 = \dots\dots\dots 4 + 2 = \dots\dots\dots 3 \cdot 3 \cdot 3 = \dots\dots\dots 10 + 2 = \dots\dots\dots$

$3^5 = \dots\dots\dots 2 \cdot 4 = \dots\dots\dots 3 \cdot 2 = \dots\dots\dots 10 \cdot 10 = \dots\dots\dots$

$5 - 3 = \dots\dots\dots 4 \cdot 2 = \dots\dots\dots 3^3 = \dots\dots\dots 2^{10} = \dots\dots\dots$