Product of Powers Property

$$a^m \cdot a^n = a^{m+n}$$

When multiplying the same base, we ADD the exponents and the base stays the same.

Examples

1. $x\left(x^5\right) = x^{1+5} = x^6$
2. $n \cdot m^4 \cdot n^3 \cdot m^2 = m^{4+2}n^{1+3} = m^6n^4$
3. $4 \cdot 4^2 = 4^{1+2} = 4^3 = 64$
4. $\left(5a^3\right)\left(2a^5\right) = 5 \cdot 2a^{3+5} = 10a^8$

Try These

Simplify each expression.

1. $4^3 \cdot 4^5$

2. $7^5 \cdot 7$

3. $a^4 \cdot a^2$

4. $y^8(y)$

5. $(k^3)(k^6)(k)$

6. $(m^2n)(mn^4)$

7. $(3b^4)(-2b)$

8 $(g^2h^5)(g^7h^3)$

9. $-5x^3(-3x^4)$

10. $(st)(sv)(tv)$

11. $(rt^7)(r^3s)(t^2s^5)$

12. $(8mp^5)(2m^3p^3)(mp)$