

# MULTIPLYING MONOMIALS

To multiply monomials, use the **PRODUCT RULE**:

$$x^a \cdot x^b = x^{a+b}$$

## NUMERICAL BASES

**Directions:** Find each product. Express your final answers using only positive exponents.

14.  $4^3 \cdot 4^8$   $4^{3+8}$   
 $4^{11}$

15.  $(-7)^4 \cdot (-7)^5$   
 $-7^9$

16.  $2^{-6} \cdot 2^2$   
 $2^{-4} = \frac{1}{2^4}$

17.  $15^1 \cdot 15^6$   
 $15^7$

18.  $5^9 \cdot 5^{-1}$   
 $5^8$

19.  $(-1)^{-2} \cdot (-1)^{-3}$   
 $(-1)^{-5} = \frac{1}{(-1)^5}$

## VARIABLE BASES

20.  $x^2 \cdot x^5$   
 $x^7$

21.  $m^{-1} \cdot m^3$   
 $m^2$

22.  $k^{-7} \cdot k^7$   
 $k^0 = 1$

23.  $a^4 \cdot a^3 \cdot a^{-9}$   
 $a^{-5} = \frac{1}{a^5}$

24.  $x^4 \cdot y \cdot x^{-1}$   
 $x^3 y$

25.  $s \cdot r^{-2} \cdot r^{-4} \cdot s$   
 $s^2 r^{-6} = \frac{s^2}{r^6}$

➤ **Examples with Coefficients:**

- MULTIPLY the coefficients.
- SIMPLIFY the variables with the product rule.

26.  $4a^7 \cdot 2a^3$   
 $8a^{10}$

27.  $(5m) \cdot (-3m^2)$   
 $-15m^3$

28.  $2w^{-1} \cdot -7w^4 \cdot 3w^5$   
 $-42w^8$

29.  $8p^{-5} \cdot 2p^{-1} \cdot p$   
 $16p^{-5} = \frac{16}{p^5}$

30.  $(-2ab) \cdot (6a^2b^3)$   
 $-12a^3b^4$

31.  $-12p^8q^{-2} \cdot \frac{1}{3}p^3q^2$   
 $-4p^{11}$

32.  $7c^3d^2 \cdot 2cd \cdot -c^3d^8$   
 $-14c^7d^{11}$

33.  $(-7ab) \cdot (4a^8b^2) \cdot (7ab^6)$   
 $-28a^{10}b^9$

34.  $-8k^4 \cdot 2k + 3k^2 \cdot k^3$   
 $-16k^5 + 3k^5 = -13k^5$

35.  $9m^6 \cdot 2mn^4 - 4m^2n^3 \cdot 3m^5n$   
 $18m^7n^4 - 12m^7n^4$   
 $6m^7n^4$