Multiplying Exponents

exponent

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

base

Directions: Find the value of each expression.

1. $4^3 \cdot 4^2 = 4^{3+2} = 4^5$

$4 \times 4 \times 4 \times 4 \times 4$

$16 \times 16 \times 4$

256×4

$\boxed{1024}$

2. $(-2)^3(-2)^4 = (-2)^{3+4} = (-2)^7$

$-2 \cdot -2 \cdot -2 \cdot -2 \cdot -2 \cdot -2 \cdot -2$

$4 \cdot 4 \cdot 4 \cdot -2$

$16 \cdot -8 = \boxed{-128}$

Directions: Simplify each expression.

3. $b^3 \cdot b^4 = b^{3+4} = \boxed{b^7}$

4. $e^5 \cdot e^{11} = e^{5+11} = \boxed{e^{16}}$

5. $(4a)(6a^2) = 24a^{1+2} = \boxed{24a^3}$

6. $(5x^2)(-3x^4) = -15x^{2+4} = \boxed{-15x^6}$

7. $\left(\frac{2}{3}x^7y^8\right)\left(\frac{15}{4}x^{12}\right) = \frac{5}{2}x^{7+12}y^8 = \boxed{\frac{5}{2}x^{19}y^8}$

$$\frac{\overset{1}{\cancel{2}}}{\underset{1}{\cancel{3}}} \cdot \frac{\overset{5}{\cancel{15}}}{\underset{2}{\cancel{4}}} = \frac{5}{2}$$

8. $(-9z)(8z^4)(-z^7) = 72z^{1+4+7} = \boxed{72z^{12}}$