

# EXPONENTS WITH EXPONENTS

NAME: \_\_\_\_\_

Fill in the blank provided, describe each step used to simplify the expression

$$(2xy)^3 x^2 y^7$$

$$(2)^3 (x)^3 (y)^3 x^2 y^7 \quad \underline{\hspace{10cm}}$$

$$(8)(x^3)(y^3)x^2 y^7 \quad \underline{\hspace{10cm}}$$

$$8 x^5 y^{10} \quad \underline{\hspace{10cm}}$$

Determine whether each problem was simplified correctly. If there it was not simplified correctly, describe the mistake and correct it.

2.

$$(4x^3)^2 (xy^2)^5$$

$$= (4)^2 (x^3)^2 (x)^5 (y^2)^5$$

$$= 16x^6 x^5 y^{10}$$

$$= 16x^{30} y^{10}$$

3.

$$\frac{(a^2)^4 (-3bc)^3}{b^7}$$

$$= \frac{a^8 (-3)^3 (b)^3 (c)^3}{b^7}$$

$$= \frac{a^8 (-9)b^3 c^3}{b^7}$$

$$= -9a^8 b^4 c^3$$

4.

$$\frac{(2fg^2h)^4}{(fgh)^7}$$

$$= \frac{(2)^4 (f)^4 (g^2)^4 (h)^4}{(f)^7 (g)^7 (h)^7}$$

$$= \frac{8f^4 g^6 h^4}{f^7 g^7 h^7}$$

$$= \frac{8}{f^3 g h^3}$$

5.

$$\frac{(-g^3h)^5}{g \cdot h^4 \cdot g^2 \cdot h}$$

$$= \frac{(-g^3)^5 (h)^5}{g^3 \cdot h^5}$$

$$= \frac{g^{15} \cdot h^5}{g^3 \cdot h^5}$$

$$= g^{12}$$

Simplify each expression.

6.  $\frac{(2x^6)^3}{4x^4}$

7.  $\frac{(-4xy)^4}{16x^7y}$

8.  $\frac{(2x^6)^3}{(4y^3)^2}$

9.  $\frac{(-4xy)^4}{(-4xy)^5}$

10.  $(-x^4h^7)^5 (xh)^2$

11.  $(xy^{-2})^3$

12.  $(x^2)^{-3}$

13.  $\frac{(-y)^4}{y \cdot y \cdot y^2}$

