

# 7-1

Determine whether each expression is a monomial. Write *yes* or *no*.

**Explain**

1.  $\frac{21a^2}{7b}$

2.  $\frac{b^3c^2}{2}$

**Simplify each expression.**

3.  $(-5x^2y)(3x^4)$

4.  $(2ab^2f^2)(4a^3b^2f^2)$

5.  $(3ad^4)(-2a^2)$

6.  $(4g^3h)(-2g^5)$

7.  $(-15xy^4)\left(-\frac{1}{3}xy^3\right)$

8.  $(-xy)^3(xz)$

9.  $(-18m^2n)^2\left(-\frac{1}{6}mn^2\right)$

10.  $(0.2a^2b^3)^2$

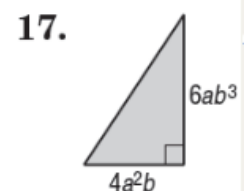
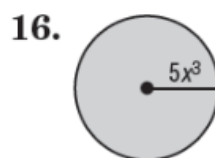
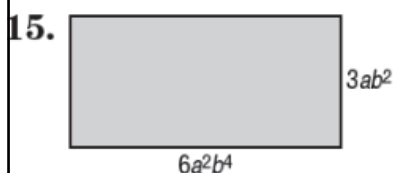
11.  $\left(\frac{2}{3}p\right)^2$

12.  $\left(\frac{1}{4}ad^3\right)^2$

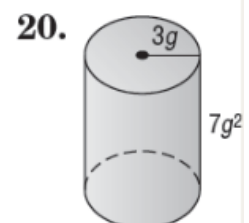
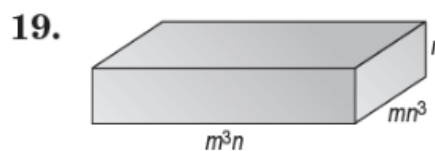
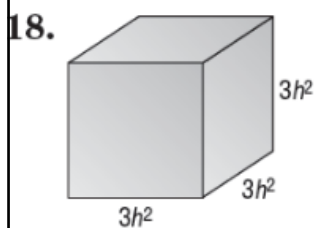
13.  $(0.4k^3)^3$

14.  $[(4^2)^2]^2$

**GEOMETRY** Express the area of each figure as a monomial.



**GEOMETRY** Express the volume of each solid as a monomial.



**7-2**

Simplify each expression. Assume that no denominator equals zero.

1.  $\frac{8^8}{8^4}$

2.  $\frac{a^4b^6}{ab^3}$

3.  $\frac{xy^2}{xy}$

4.  $\frac{m^5np}{m^4p}$

5.  $\frac{5c^2d^3}{-4c^2d}$

6.  $\frac{8y^7z^6}{4y^6z^5}$

7.  $\left(\frac{4f^6g}{3h^6}\right)^3$

8.  $\left(\frac{6w^5}{7p^6r^3}\right)^2$

9.  $\frac{-4x^2}{24x^5}$

10.  $x^3(y^{-5})(x^{-8})$

11.  $p(q^{-2})(r^{-3})$

12.  $12^{-2}$

13.  $\left(\frac{3}{7}\right)^{-2}$

14.  $\left(\frac{4}{3}\right)^{-4}$

15.  $\frac{22r^3s^2}{11r^2s^{-3}}$

16.  $\frac{-15w^0u^{-1}}{5u^3}$

17.  $\frac{8c^3d^2f^4}{4c^{-1}d^2f^{-3}}$

18.  $\left(\frac{x^{-3}y^5}{4^{-3}}\right)^0$

19.  $\frac{6f^{-2}g^3h^5}{54f^{-2}g^{-5}h^3}$

20.  $\frac{-12t^{-1}u^5x^{-4}}{2t^{-3}ux^5}$

21.  $\frac{r^4}{(3r)^3}$

22.  $\frac{m^{-2}n^{-5}}{(m^4n^3)^{-1}}$

23.  $\frac{(j^{-1}k^3)^{-4}}{j^3k^3}$

24.  $\frac{(2a^{-2}b)^{-3}}{5a^2b^4}$

25.  $\left(\frac{q^{-1}r^3}{qr^{-2}}\right)^{-5}$

26.  $\left(\frac{7c^{-3}d^3}{c^5dh^{-4}}\right)^{-1}$

27.  $\left(\frac{2x^3y^2z}{3x^4yz^{-2}}\right)^{-2}$

**7-3**

Express each number in scientific notation.

1. 1,900,000

2. 0.000704

3. 50,040,000,000

4. 0.0000000661

Express each number in standard form.

5.  $5.3 \times 10^7$

6.  $1.09 \times 10^{-4}$

7.  $9.13 \times 10^3$

8.  $7.902 \times 10^{-6}$

Evaluate each product. Express the results in both scientific notation and standard form.

9.  $(4.8 \times 10^4)(6 \times 10^6)$

10.  $(7.5 \times 10^{-5})(3.2 \times 10^7)$

11.  $(2.06 \times 10^4)(5.5 \times 10^{-9})$

12.  $(8.1 \times 10^{-6})(1.96 \times 10^{11})$

13.  $(5.29 \times 10^8)(9.7 \times 10^4)$

14.  $(1.45 \times 10^{-6})(7.2 \times 10^{-5})$

Evaluate each quotient. Express the results in both scientific notation and standard form.

15.  $\frac{4.2 \times 10^5}{3 \times 10^{-3}}$

16.  $\frac{1.76 \times 10^{-11}}{2.2 \times 10^{-5}}$

17.  $\frac{7.05 \times 10^{12}}{9.4 \times 10^7}$

18.  $\frac{2.04 \times 10^{-4}}{3.4 \times 10^5}$