7-1 Practice

Multiplication Properties of Exponents

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

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

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

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

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

9. $(-18m^2n)^2\left(-\dfrac{1}{6}mn^2\right)$
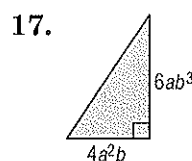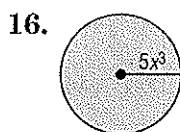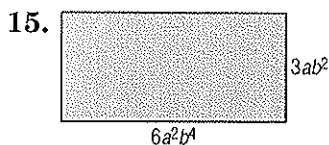
10. $(0.2a^2b^3)^2$

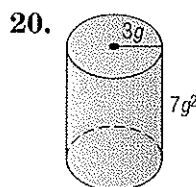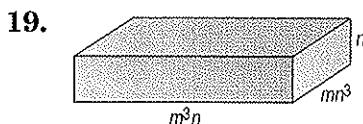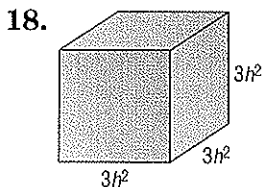11. $\left(\dfrac{2}{3}p\right)^2$

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

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

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

GEOMETRY Express the area of each figure as a monomial.

15.

$3ab^2$
$6a^2b^4$

16.

$5x^3$

17.

$6ab^3$
$4a^2b$

GEOMETRY Express the volume of each solid as a monomial.

18.

$3h^2$
$3h^2$
$3h^2$

19.

n
mn^3
m^3n

20.

$3g$
$7g^2$

21. **COUNTING** A panel of four light switches can be set in 2^4 ways. A panel of five light switches can set in twice this many ways. In how many ways can five light switches be set?

22. **HOBBIES** Tawa wants to increase her rock collection by a power of three this year and then increase it again by a power of two next year. If she has 2 rocks now, how many rocks will she have after the second year?

7-2 Practice

Division Properties of Exponents

Simplify each expression. Assume that no denominator equals zero.

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

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

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

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

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

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

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

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

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

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

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

12. 12^{-2}

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

28. BIOLOGY A lab technician draws a sample of blood. A cubic millimeter of the blood contains 22^3 white blood cells and 22^5 red blood cells. What is the ratio of white blood cells to red blood cells?

29. COUNTING The number of three-letter "words" that can be formed with the English alphabet is 26^3. The number of five-letter "words" that can be formed is 26^5. How many times more five-letter "words" can be formed than three-letter "words"?