8-2 Practice

Dividing Monomials

Simplify. Assume that no denominator is equal to zero.

1. $\dfrac{8^8}{8^4}$ $\neq 8^4 \text{ or } 4096$

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

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

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

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

6. $\dfrac{8y^7z^6}{4y^6z^5}$ $\boxed{2yz}$

7. $\left(\dfrac{4f^3g}{3h^6}\right)^3$ $\boxed{\dfrac{64f^9g^3}{27h^{18}}}$

8. $\left(\dfrac{6w^5}{7p^6s^3}\right)^2$ $\boxed{\dfrac{36w^{10}}{49p^{12}s^6}}$

9. $\dfrac{-4c^2}{24c^5}$ $\boxed{\dfrac{-1}{6c^3}}$

10. $x^3(y^{-5})(x^{-8})$ $x^{-5}y^{-5} = \boxed{\dfrac{1}{x^5y^5}}$

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

12. $12^{-2} = \dfrac{1}{12^2} = \boxed{\dfrac{1}{144}}$

13. $\left(\dfrac{3}{7}\right)^{-2}$ $\dfrac{3^{-2}}{7^{-2}} = \dfrac{7^2}{3^2} = \boxed{\dfrac{49}{9}}$

14. $\left(\dfrac{4}{3}\right)^{-4}$ $\dfrac{4^{-4}}{3^{-4}} = \dfrac{3^4}{4^4} = \boxed{\dfrac{81}{256}}$

15. $\dfrac{22r^3s^2}{11r^2s^{-3}}$ $\boxed{2rs^5}$

16. $\dfrac{-15w^0u^{-1}}{5u^3}$ $-3u^{-4} = \boxed{\dfrac{-3}{u^4}}$

17. $\dfrac{8c^3d^2f^4}{4c^{-1}d^2f^{-3}}$ $\boxed{2c^4d^7}$

18. $\left(\dfrac{x^{-3}y^5}{4^{-3}}\right)^0$ $\boxed{1}$

19. $\dfrac{6f^{-2}g^3h^5}{54f^{-2}g^{-5}h^3}$ $\boxed{\dfrac{1}{9}g^8h^2}$

20. $\dfrac{-12t^{-1}u^5v^{-4}}{2t^{-3}uv^5}$ $\boxed{\dfrac{-6t^2u^4}{v^9}}$

21. $\dfrac{r^4}{(3r)^3}$ $\dfrac{r^4}{27r^3} = \boxed{\dfrac{r}{27}}$

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

23. $\dfrac{(j^{-1}k^3)^{-4}}{j^3k^3}$ $\dfrac{j^4k^{-12}}{j^3k^3} = \boxed{\dfrac{j}{k^{15}}}$

24. $\dfrac{(2a^{-2}b)^{-3}}{5a^2b^4}$ $\dfrac{2^{-3}a^6b^{-3}}{5a^2b^4} = \boxed{\dfrac{a^4}{40b^7}}$

25. $\left(\dfrac{q^{-1}r^3}{qr^{-2}}\right)^{-5}$ $\dfrac{q^5r^{-15}}{q^{-5}r^{10}} = \boxed{\dfrac{q^{10}}{r^{25}}}$

26. $\left(\dfrac{7c^{-3}d^3}{c^5de^{-4}}\right)^{-1}$ $\dfrac{7^{-1}c^3d^{-3}}{c^{-5}d^{-1}e^4} = \boxed{\dfrac{c^8}{7d^2e^4}}$

27. $\left(\dfrac{2x^3y^2z}{3x^4yz^{-2}}\right)^{-2}$ $\dfrac{2^{-2}x^{-6}y^{-4}z^{-2}}{3^{-2}x^{-8}y^{-2}z^4} = \boxed{\dfrac{9x^2}{4y^2z^6}}$

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?

$\dfrac{22^3}{22^5} = 22^{-2} = \boxed{\dfrac{1}{22^2} \text{ or } \dfrac{1}{484}}$

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"?

$\dfrac{26^5}{26^3} = \boxed{26^2 \text{ or } 676}$