Exponents Practice

Simplify each expression. Be sure to use only positive exponents.

1. $(14fg^2h^2)(3f^4g^2h^2)$

$42f^5g^4h^4$

2. $(x^5y^7)^4$

$x^{20}y^{28}$

3. $(2b^3c^4)^2$

$4b^6c^8$

4. $(2gh^4)^3(-2g^4h)^3$

$(8g^3h^{12})(-8g^{12}h^3) = -64g^{15}h^{15}$

$-2^3 = -2\cdot-2\cdot-2 = -8$

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

$d^0f^0 = 1 \cdot 1$

6. $\left(\dfrac{2a^4c^3}{5b^2d^2}\right)^2 = \dfrac{4a^8c^6}{25b^4d^4}$

7. $\left(\dfrac{24a^{11}b^{16}c^6}{18a^6b^4c^6}\right)^3 = \left(\dfrac{4}{3}a^5b^{12}\right)^3 = \dfrac{64a^{15}b^{36}}{27}$

8. $\dfrac{(4k^3m^2)^3}{(5k^2m^{-3})^{-2}} = \dfrac{64k^9m^6}{5^{-2}k^{-4}m^6} = 1600k^{13}$

9. $\left(\dfrac{c^3d^3f}{2c^{-4}d^{-5}}\right)^{-3} \rightarrow \left(\dfrac{c^7d^8f}{2}\right)^{-3} = \dfrac{c^{-21}d^{-24}f^{-3}}{2^{-3}} = \dfrac{8}{c^{21}d^{24}f^3}$

10. The area of the rectangle is $30x^2y^6$ square inches. Its width is $6xy^2$ inches. What is the length of the rectangle?

$A = L \cdot w$

$\dfrac{A}{w} = L$

$\dfrac{30x^2y^6}{6xy^2} = 5xy^4$

11. What is the ratio of the height to the radius?

$h = x^7y^5z^{10}$ $\quad r = x^2y^3z^2$

$\dfrac{h}{r} = \dfrac{x^7y^5z^{10}}{x^2y^3z^2} = x^5y^2z^8$