Math 2 **Name:** Key

Exponent Rules and Simplifying Radicals Practice

Simplify. Your answer should contain only positive exponents.

1. $m^4n^4 \cdot 2m^2n^{-2}$

$2m^6n^4$

2. $2u^{-4}v^3 \cdot 4uv$

$8u^{-3}v^4$

$\frac{8v^4}{u^3}$

3. $\frac{4x^1y^2y^4}{4x^3y^{-1} \cdot 3x^1y^0} = \frac{y^6}{3x^3}$

4. $\frac{2yx^{-4} \cdot x^0y^1}{3x^4y^{-1}} = \frac{2y^2}{3}$ or $\frac{2}{3}y^2$

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

$-12x^5$

6. $(3ab^2)^3$

$27a^3b^6$

7. $\left(\frac{2x^3}{x}\right)^5 = 32x^{10}$

8. $\frac{2x^4y^2}{x^2y^2} = 2x^2$

9. $\frac{5x^3}{10x^7} = \frac{1}{2x^4}$

10. $\frac{3a^2b^3c^{-2}}{(a^{-1}b^2c)^3} = \frac{3a^2b^3c^{-2}a^3}{a^{-3}b^6c^3c^2} = \frac{3a^5}{b^3c^5}$

Write each expression in radical form.

11. $m^{\frac{1}{2}} = \sqrt{m}$

12. $(2x)^{\frac{8}{5}} = \sqrt[5]{2^8x^8} = 2x\sqrt[5]{2^3x^3} = 2x\sqrt[5]{8x^3}$

13. $(6b)^{\frac{3}{2}} = \sqrt{6^3b^3}$ ← radical form $= 6b\sqrt{6b}$ ← simplified radical form

14. $12x^{\frac{2}{3}} = 12\sqrt[3]{x^2}$

Write each expression using rational exponents.

15. $\left(\sqrt[3]{v}\right)^2 = v^{\frac{2}{3}}$

16. $\sqrt[5]{r^4} = r^{\frac{4}{5}}$

17. $\sqrt[10]{x^8} = x^{\frac{8}{10}} = x^{\frac{4}{5}}$

18. $\sqrt[3]{x^2y} = x^{\frac{2}{3}}y^{\frac{1}{3}}$ or $(x^2y)^{\frac{1}{3}}$