NAME _____ DATE _____ PERIOD _____

# 9-1 Skills Practice

## Multiplying and Dividing Rational Expressions

**Simplify each expression.**

1. $\frac{21x^3y}{14x^2y^2}$ $\frac{3x}{2y}$

2. $\frac{5ab^3}{25a^2b^2}$ $\frac{b}{5a}$

3. $\frac{(x^6)^3}{(x^3)^4} = \frac{x^{18}}{x^{12}} = x^6$

4. $\frac{8y^2(y^6)^3}{4y^{24}}$ $\frac{8y^{20}}{4y^{24}} = \frac{2}{y^4}$

5. $\frac{18}{2x-6} = \frac{18}{2(x-3)} = \frac{9}{x-3}$

6. $\frac{x^2-4}{(x-2)(x+1)} = \frac{(x+2)(x-2)}{(x-2)(x+1)} = \frac{x+2}{x+1}$

7. $\frac{3a^2-24a}{3a^2+12a}$ $\frac{3a(a-8)}{3a(a+4)} = \frac{a-8}{a+4}$

8. $\frac{3m}{2f} \cdot \frac{f^3}{6}$ $\frac{3mf^3}{12f} = \frac{mf^2}{4}$

9. $\frac{24g^3}{5f^2} \cdot \frac{10(gf)^3}{8g^5f} = \frac{240f^3g^6}{40f^3g^5} = 6g$

10. $\frac{5r^2}{r^2-4} \cdot \frac{r+2}{10r^5} = \frac{1}{2r^3(r-2)}$

11. $\frac{7g}{y^2} \div 21g^3$
$\frac{7g}{y^2} \cdot \frac{1}{21g^3} = \frac{1}{3g^2y^2}$

12. $\frac{80y^4}{49z^5v^7} \div \frac{25y^5}{14z^{12}v^5}$ $\frac{16}{80y^4} \cdot \frac{2z^7}{14z^5} = \frac{32z^7}{35v^2y}$

13. $\frac{3x^2}{x+2} \div \frac{3x}{x^2-4}$
$\frac{3x^2}{x+2} \cdot \frac{(x+2)(x-2)}{3x} = x(x-2)$ or $x^2-2x$

14. $\frac{q^2+2q}{6q} \div \frac{q^2-4}{3q^2}$ $\frac{q(q+2)}{6q} \cdot \frac{3q^2}{(q+2)(q-2)} = \frac{q^2}{2(q-2)}$

15. $\frac{w^2-5w-24}{w+1} \cdot \frac{w^2-6w-7}{w+3}$
$\frac{(w-8)(w+3)}{w+1} \cdot \frac{(w-7)(w+1)}{w+3} = (w-8)(w-7)$

16. $\frac{t^2+19t+84}{4t-4} \cdot \frac{2t-2}{t^2+9t+14}$ $\frac{(t+7)(t+12)}{4(t-1)} \cdot \frac{2(t-1)}{(t+7)(t+2)} = \frac{t+12}{2(t+2)}$

17. $\frac{x^2-5x+4}{2x-8} \div (3x^2-3x)$
$\frac{(x-4)(x-1)}{2(x-4)} \cdot \frac{1}{3x(x-1)} = \frac{1}{6x}$

18. $\frac{16a^2+40a+25}{3a^2-10a-8} \div \frac{4a+5}{a^2-8a+16}$ $\frac{(4a+5)(4a+5)}{(3a+2)(a-4)} \cdot \frac{(a-4)(a-4)}{(4a+5)} = \frac{(4a+5)(a-4)}{3a+2}$

19. $\frac{\frac{c^2y}{2d^2}}{\frac{-c^6}{5d}}$
$\frac{c^2y}{2d^2} \cdot \frac{5d}{-c^6} = \frac{5c^2dy}{-2c^6d^2} = \frac{-5y}{2c^4d}$

20. $\frac{\frac{a^2-b^2}{4a}}{\frac{a+b}{2a}}$ $\frac{(a+b)(a-b)}{4a} \cdot \frac{2a}{a+b} = \frac{a-b}{2}$