

Pre – College Algebra  
Multiplying and Dividing Rational Functions

Name \_\_\_\_\_

Simplify each expression

$$1. \frac{6x^2y^3}{2x^2y^2} \cdot \frac{10x^3y^4}{18y^2}$$

$$6. \frac{x^2-4}{x+3} \cdot \frac{x^2+4x+3}{2x-4}$$

$$2. \frac{4x-2x^2}{x^2-5x+6} \cdot \frac{x^2-4x+3}{2x}$$

$$7. \frac{2x^2-2}{x^2-6x-7} \cdot (x^2 - 10x + 21)$$

$$3. \frac{(x-3)^2}{x^2-6x+9} \cdot \frac{x^3-9x}{x^2-9}$$

$$8. \frac{x+4}{x^2-25} \cdot (x^2 + 3x - 10)$$

$$4. \frac{x^2+3x-10}{x^2+8x+15} \cdot \frac{x^2+5x+6}{x^2+4x+4}$$

$$9. \frac{4x^2y}{15x^3y^3} \div \frac{2xy^2}{5xy^3}$$

$$5. \frac{x^2-11x+24}{x^2-18x+80} \cdot \frac{x^2-15x+50}{x^2-9x+20}$$

$$10. \frac{x+2}{x+3} \div \frac{x^2+x-12}{x^2-9}$$

$$11. \quad \frac{3x+6}{x^2-9} \div \frac{6x^2+12x}{4x+12}$$

$$16. \quad \frac{2n^2-3n-14}{25-n^2} \cdot \frac{2n^2-13n+21}{n^2-10n+25}$$

$$12. \quad \frac{x^2+8x+16}{x+2} \div \frac{x^2+6x+8}{x^2-4}$$

$$17. \quad \frac{6p^2-6p}{p^2+7p-18} \cdot \frac{p^2-81}{3p^2-27p}$$

$$13. \quad \frac{x^2-14x+48}{x^2-6x} \div (3x-24)$$

$$18. \quad \frac{r^2-9}{15} \div \frac{r^3-27}{5r^2+15r+45}$$

$$14. \quad (x-5) \div \frac{x^2-11x+30}{x^2+7x+12} \cdot (x-6)$$

$$19. \quad \frac{q^2-2q}{q^2+6q-16} \cdot \frac{q^2-64}{q^2-8q}$$

$$15. \quad \frac{35d-7d^2}{d^2+7d} \cdot \frac{d^2+12d+35}{d^2-25}$$

$$20. \quad \frac{3s^2}{s^2-16} \div \frac{s^3+4s^2+16s}{s^3-64}$$

$$21. \quad \frac{\frac{2a^2 - a - 21}{5a + 20}}{\frac{a^2 + 7a + 12}{a^2 + 8a + 16}}$$

$$22. \quad \frac{\frac{3b^2 + 2b - 8}{12b + 18}}{\frac{3b^2 + 2b - 8}{2b^2 - 7b - 15}}$$

$$23. \quad \frac{10m^2 + 80m}{3m - 9} \cdot \frac{m^2 + 4m - 21}{m^2 - 9m + 20} \cdot \frac{5m^2 + 10m}{2m - 10}$$

$$24. \quad \frac{12p^2 + 3p}{p + 3} \cdot \frac{p^2 + 2p - 63}{p^2 - p - 12} \cdot \frac{p - 7}{9p^3 - 9p^2}$$