Name _____

Rational Expression Worksheet #6: Multiplying & Dividing

Multiply or divide the rational expressions. Show work & factor when necessary.

1. $\frac{2x+6}{5x+10} \cdot \frac{x+2}{x^2+4x+3} = \frac{2(x+3)}{5(x+2)} \cdot \frac{x+2}{(x+3)(x+1)} = \frac{2}{5(x+1)}$

2. $\frac{x^2-x-12}{3x-9} \div \frac{x-4}{12} = \frac{(x-4)(x+3)}{3(x-3)} \cdot \frac{12}{x-4} = \frac{12(x+3)}{3(x-3)} = \frac{4(x+3)}{x-3}$

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

4. $\frac{6}{x^2+9x+20} \cdot \frac{8x+40}{6x-12} = \frac{6}{(x+4)(x+5)} \cdot \frac{8(x+5)}{6(x-2)} = \frac{8}{(x+4)(x-2)}$

5. $\frac{5x-15}{4x^2} \cdot \frac{x^3}{6x-18} = \frac{5(x-3)}{4x^2} \cdot \frac{x^3}{6(x-3)} = \frac{5x}{24}$

6. $\frac{7x^2}{12x} \div \frac{14x^3}{48y^3} = \frac{7x^2}{12x} \cdot \frac{48y^3}{14x^3} = \frac{336x^2y^3}{168x^4} = \frac{2y^3}{x^2}$

7. $\frac{x^2+5x-24}{2x+2} \div \frac{3x+24}{x^2-8x-9} = \frac{(x+8)(x-3)}{2(x+1)} \cdot \frac{(x-9)(x+1)}{3(x+8)} = \frac{(x-3)(x-9)}{6}$

8. $\frac{24x^3}{50x} \cdot \frac{30}{8x^2} = \frac{3x}{5x} \cdot \frac{3}{1} = \frac{9x}{5}$

9. $\frac{4x}{8x+8} \cdot \frac{x^2+8x+7}{8x^3} = \frac{4x}{8(x+1)} \cdot \frac{(x+1)(x+7)}{8x^3} = \frac{4x(x+7)}{64x^3} = \frac{x+7}{16x^2}$

10. $\frac{6x-12}{x^2-9x+18} \cdot \frac{7x-21}{5x-10} = \frac{6(x-2)}{(x-3)(x-6)} \cdot \frac{7(x-3)}{5(x-2)} = \frac{42}{5(x-6)}$