$\frac{2}{3} \cdot \frac{2}{6} = \frac{4 \div 2}{18 \div 2} = \frac{2}{9}$

12-3 Multiplying Rational Expressions

Type 1 – All numerators and denominators are Monomials

1. $\frac{3}{x} \bullet \frac{4}{x^2} =$ $\frac{12}{x^3}$

2. $\frac{12c^2}{7} \bullet \frac{3}{4c^3} =$ $\frac{36c^2}{28c^3} = \frac{9}{7c}$

3. $\frac{4y^2}{3y} \bullet 12y =$ $\frac{4y^2}{3y} \cdot \frac{12y}{1} = \frac{48y^3}{3y} = \frac{16y^2}{1} = 16y^2$

Type 2 – Numerators and Denominators are Polynomials

4. $\frac{x-5}{4x+6} \bullet \frac{6x+9}{3x-15} =$ $\frac{(x-5)}{2(2x+3)} \cdot \frac{3(2x+3)}{3(x-5)} = \frac{3}{6} = \frac{1}{2}$

$1 \quad 6$
$2 \quad 3$

$(x+2)(x+3)$

5. $\frac{t^2+5t+6}{t-3} \bullet \frac{t^2-2t-3}{t^2+3t+2} =$ $\frac{(t+2)(t+3)}{(t-3)} \cdot \frac{(t+1)(t-3)}{(t+1)(t+2)} = t+3$

$\frac{x^2-25}{x^2-4x} \bullet \frac{x^2+x-20}{x^2+10x+25} =$ $\frac{(x+5)(x-5)}{x(x-4)} \cdot \frac{(x-4)(x+5)}{(x+5)(x+5)} = \frac{x-5}{x}$

Practice 12-3 Name _____

Multiply. Make sure that your answers are expressed in simplest form.

1. $\frac{4x}{2y} \bullet \frac{8y^2}{12x^4} =$

2. $\frac{a^2}{5ab} \bullet \frac{15ab}{12b^3} =$

3. $\frac{x+3}{x^2+6x+8} \bullet \frac{x+4}{2x+6} =$

4. $\frac{2x^2-50}{4x+8} \bullet \frac{x^2+4x+4}{x+5} =$

5. Find the product of $\frac{x^2-100}{x+6}$ and $\frac{5x^2+30x}{x^2-14x+40}$