Multiplication of Rational Expressions

Strategy – 1. **Factor the numerators and denominators of the expressions**

2. **Divide (cancel) out the common factors**

Example $\frac{x^2+x-6}{x^2-x-2} * \frac{x^2+7x+10}{x^2-9}$

1. $\frac{(x-2)(x+3)}{(x-2)(x+1)} * \frac{(x+5)(x+2)}{(x+3)(x-3)}$

2. $\frac{\cancel{(x-2)}\cancel{(x+3)}}{\cancel{(x-2)}(x+1)} * \frac{(x+5)(x+2)}{\cancel{(x+3)}(x-3)} = \frac{(X+5)(x+2)}{x-3}$

Multiply and simplify.

1. $\frac{8x}{16x^2} \bullet \frac{4x^3}{8x}$

2. $\frac{6ab^3}{9a^2} \bullet \frac{15ab}{3b^2}$

3. $\frac{18abc^2}{9a^2bc} \bullet \frac{27ac^4}{3a^2b^2c^2}$

4. $\frac{12x^3y}{-4xy^2} \bullet 20xy^4$

5. $\frac{x^2-4}{x^2+x-6} \bullet \frac{x^2-9}{x^2+6x+8}$

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

7. $\frac{x^2-8x-9}{x^2-9x-10} \cdot \frac{x^2-1}{x^2-81}$

8. $\frac{2x^2+x-3}{6x^2+5x-6} \bullet \frac{3x-2}{2x+3}$