Rational Expressions: Multiplication

If $\dfrac{a}{b}$ and $\dfrac{c}{d}$ are rational numbers, then $\dfrac{a}{b} \cdot \dfrac{c}{d} = \dfrac{ac}{bd}$

To Multiply Rational Expressions
1. Completely factor the numerators and the denominators where possible.
2. Divide both numerator and denominator by all common factors.
3. Multiply the remaining factors in the numerator and in the denominator.

$$\frac{5x-5y}{x} \cdot \frac{1}{x-y} = \frac{5(x-y)}{x} \cdot \frac{1}{x-y} = \frac{5}{x} \cdot \frac{1}{1} = \frac{5}{x}$$

TRY:

$$\frac{15}{4x^2} \cdot \frac{12x^4}{5} \qquad\qquad\qquad \frac{(x-5)(x+4)}{12(x-3)} \cdot \frac{6(x-3)}{(x+4)(x-5)}$$

$$\frac{2x(x-7)}{(x+5)(x-7)} \cdot \frac{(x+6)(x+5)}{3(x+6)} \qquad\qquad \frac{19x^2}{12y-1} \cdot \frac{1-12y}{3x}$$

$$\frac{3a-3y}{3a-3y-ab+by} \cdot \frac{b^2-9}{6b+18} \qquad\qquad \frac{x^2+5x+6}{x} \cdot \frac{x^2}{3x+6} \cdot \frac{9}{x^2-4}$$