MULTIPLYING RATIONAL EXPRESSIONS

1. FACTOR EVERYTHING
2. CANCEL IF POSSIBLE, ONLY GUIDELINE IS ONE IS ON TOP AND ONE IS ON BOTTOM
3. PUT TOPS TOGETHER, PUT BOTTOMS TOGETHER

(1) $\frac{x+5}{18x} \cdot \frac{9x^3}{x^2-25}$ DOTS

$\frac{x+5}{18x} \cdot \frac{9x^3}{(x+5)(x-5)}$

$\frac{x+5}{18x} \cdot \frac{9x^3}{(x+5)(x-5)}$

$\frac{1}{2x} \cdot \frac{x^3}{x-5}$

$\frac{1}{2} \cdot \frac{x^2}{x-5}$

$\frac{x^2}{2(x-5)}$

(2) GCF $\frac{4x+16}{x^2-3x-28} \cdot \frac{2x}{32}$ PSD

$\frac{4(x+4)}{(x-7)(x+4)} \cdot \frac{2x}{32}$

$\frac{4}{x-7} \cdot \frac{2x}{32}$

$\frac{1}{x-7} \cdot \frac{x}{16}$

$\frac{x}{4(x-7)}$

(3) GCF $\frac{10x-2}{x^2-9} \cdot \frac{x^2+2x-3}{5x^2-6x+1}$ PSD DOTS KEY #

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

$\frac{2}{(x+3)(x-3)} \cdot \frac{(x+3)(x-1)}{x-1}$

$\frac{2}{x-3} \cdot \frac{x-1}{x-1}$

$\frac{2}{x-3}$

(4) $(x+6) \cdot \frac{x+7}{x^2-4x-60}$ PSD

$\frac{x+6}{1} \cdot \frac{x+7}{(x-10)(x+6)}$

$\frac{x+7}{x-10}$

(5) $\frac{x^2-1}{20x^2} \div \frac{x^2-21x+20}{5x}$

REWRITE AS MULTIPLICATION BY FLIPPING THE FRACTION THAT FOLLOWS ÷ SYMBOL

DOTS $\frac{x^2-1}{20x^2} \cdot \frac{5x}{x^2-21x+20}$ PSD

$\frac{(x+1)(x-1)}{20x^2} \cdot \frac{5x}{(x-20)(x-1)}$

$\frac{x+1}{20x^2} \cdot \frac{5x}{x-20}$

$\frac{x+1}{4x^2} \cdot \frac{x}{x-20}$

$\frac{x+1}{4x} \cdot \frac{1}{x-20}$

$\frac{x+1}{4x(x-20)}$

(6) $\frac{10x^2+26x-12}{5x^2-7x+2} \div \frac{(x+3)^2}{x^2+2x-3}$

GCF $\frac{10x^2+26x-12}{5x^2-7x+2} \cdot \frac{x^2+2x-3}{(x+3)^2}$ PSD

KEY # KEY # $\frac{2(5x^2+13x-6)}{(5x-2)(x-1)} \cdot \frac{(x+3)(x-1)}{(x+3)(x+3)}$

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

$\frac{2(x+3)}{x-1} \cdot \frac{(x+3)(x-1)}{(x+3)(x+3)}$

$\frac{2}{x-1} \cdot \frac{(x+3)(x-1)}{x+3}$

$\frac{2}{x-1} \cdot \frac{x-1}{1}$

$\frac{2}{1} \cdot \frac{1}{1}$

2