

Simplifying:

$$\frac{4x^2y}{12xy^3} \rightarrow \frac{1x}{3y^2}$$

- ① Reduce #'s
- ② Apply exponent properties

$$\frac{x^2 - 4x - 12}{x^2 - 4} \rightarrow \frac{(x-6)(x+2)}{(x-2)(x-2)} \rightarrow \frac{x-6}{x-2}$$

- ① FACTOR
- ② CANCEL

Multiplying:

$$\frac{5x^2y}{2x^3y^4} \cdot \frac{6x^4y}{10y^2} \xrightarrow{\text{multiply}} \frac{30x^6y^2}{20x^3y^6} \xrightarrow{\text{reduce}} \frac{3x^3}{2y^4}$$

$$\xrightarrow{\text{reduce}} \frac{5}{2xy^3} \cdot \frac{3x^4}{5y} \xrightarrow{\text{multiply}} \frac{15x^4}{10xy^4} \xrightarrow{\text{reduce}} \frac{3x^3}{2y^4}$$

$$\frac{4x^2+4x}{x^2+2x-3} \cdot \frac{x^2+x-6}{8x}$$

↓ FACTOR ↓

$$\frac{4x(x+1)}{(x-3)(x-1)} \cdot \frac{(x-3)(x-2)}{8x}$$

↓ CANCEL ↓

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

Dividing:

$$\frac{3x^5y^2}{4xy^3} \div \frac{6xy}{2x^4}$$

↓ CHANGE ↓ FLIP

$$\frac{3x^5y^2}{4xy^3} \cdot \frac{2x^4}{6xy} \xrightarrow{\text{multiply}} \frac{6x^8}{24xy^2} \xrightarrow{\text{reduce}} \frac{x^7}{4y^2}$$

$$\frac{5x}{3x-12} \div \frac{x^2-2x}{x^2-6x+8}$$

↓ CHANGE ↓ FLIP

$$\frac{5x}{3(x-4)} \cdot \frac{(x-2)(x-4)}{x(x-2)}$$

↓ FACTOR ↓ GCF

CANCEL

$$\frac{5}{3}$$

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