

# 14-2 Fractions

I can reduce fractions

I can add/subtract fractions

I can multiply/divide fractions

REDUCE the following fractions

$$\frac{4}{6} \quad \boxed{\frac{2}{3}}$$

$$\frac{39}{104} = \frac{3}{8}$$

$$\frac{4x^2}{80x} \xrightarrow{\cancel{4} \cancel{x} \cancel{x}} \frac{x}{20}$$

$$\frac{3x+6}{9}$$

$$\begin{aligned} & \frac{3x}{9} + \frac{6}{9} \\ & \frac{x}{3} + \frac{2}{3} \\ & \frac{x+2}{3} \\ & \boxed{\frac{(x+2)}{3}} \end{aligned}$$

You Try! REDUCE the following fractions

$$\frac{10}{120} = \frac{1}{12}$$

$$\frac{45}{30} = \frac{3}{2}$$

$$\frac{11x}{44} = \frac{x}{4}$$

$$\frac{8x-2}{2} = 4x-1$$

Find the LCD of the two fractions

$$\frac{2}{3} \text{ and } \frac{5}{6} \quad \boxed{6}$$

$$\frac{12}{15} \text{ and } \frac{7}{25}$$

$$\text{LCD: } 3 \cdot 5 \cdot 5 = \boxed{75}$$

$$\frac{11}{2x^2} \text{ and } \frac{22}{3x}$$

$$\boxed{6x^2}$$

$$\frac{1}{(x+2)} \text{ and } \frac{2}{(x+3)}$$

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

You Try! Find the LCD of the two fractions

$$\frac{4}{5} \text{ and } \frac{5}{4}$$

20

$$\frac{3}{x} \text{ and } \frac{5}{9}$$

9x

$$\frac{2}{x} \text{ and } \frac{13}{x-1}$$

$$x(x-1) \rightarrow \checkmark$$

$$x^2 - x$$

Add/subtract the following fractions

$$\frac{2 \cdot 2}{2 \cdot 3} + \frac{5}{6} = \frac{4}{6} + \frac{5}{6} = \frac{9}{6} = \boxed{\frac{3}{2}}$$

$$\frac{2 \cdot 2}{2 \cdot 9} - \frac{1 \cdot 3}{6 \cdot 3} \rightarrow \frac{4}{18} - \frac{3}{18} = \boxed{\frac{1}{18}}$$

$$\frac{2 \cdot 1}{2 \cdot 2x^2} + \frac{3 \cdot x}{4x \cdot x} \rightarrow \frac{2}{4x^2} + \frac{3x}{4x^2} = \boxed{\frac{2+3x}{4x^2}}$$

LCD:  $4x^2$

$$\frac{x \cdot 3x}{x(x+1)} - \frac{7(x+1)}{x(x+1)} \rightarrow \frac{3x^2}{x(x+1)} - \frac{(7x+7)}{x(x+1)} = \boxed{\frac{3x^2-7x-7}{x(x+1)}}$$

LCD:  $x(x+1)$

You Try! Add/subtract the following fractions

$$\frac{9}{30} + \frac{3}{10} + \frac{4}{15} = \frac{8}{30} \quad \boxed{\frac{17}{30}}$$

$$2x \cdot \frac{7x}{3} - \frac{9 \cdot 3}{2x} = \frac{14x^2}{(3)(2x)} - \frac{27}{(3)(2x)} = \frac{14x^2 - 27}{6x}$$

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

$$\frac{x^2 - x + 3x + 15}{(x+5)(x-1)} = \frac{x^2 + 2x + 15}{(x+5)(x-1)}$$

Multiply the fractions and SIMPLIFY

$$\frac{3}{5} \cdot \frac{3}{4} = \frac{9}{20}$$

$$\frac{3}{1} \cdot \frac{2}{9} = \frac{6}{9} = \frac{2}{3}$$

$$\frac{2}{5} \cdot \frac{3x}{7} = \frac{6}{35}$$

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

You Try! Multiply the fractions and SIMPLIFY

$$\frac{14}{15} \cdot \frac{4}{5} = \frac{56}{75}$$

$$\frac{5x}{9} \cdot \frac{3x}{2} = \frac{15x^2}{18} = \frac{5x^2}{6}$$

Divide the following fractions then simplify

$$\frac{1}{2} \div \frac{3}{4} = \frac{1}{2} \cdot \frac{4}{3} = \frac{2}{3}$$

*Do not do!  $\frac{1}{2} \cdot \frac{3}{4} = \frac{3}{8}$*

$$\frac{3}{5} \div \frac{7}{1} = \frac{3}{5} \cdot \frac{1}{7} = \frac{3}{35}$$

$$\frac{2x}{5} \div \frac{3x}{4} = \frac{2x}{5} \cdot \frac{4}{3x} = \frac{8}{15}$$

$$\frac{3}{x+1} \div \frac{x+3}{x} = \frac{3}{x+1} \cdot \frac{x}{x+3} = \frac{3x}{(x+1)(x+3)}$$

You Try! Divide the following fractions then simplify

$$\frac{11}{13} \div \frac{2}{3} = \frac{11}{13} \cdot \frac{3}{2} = \frac{33}{26}$$

$$\frac{5x}{3} \div \frac{x}{7} = \frac{5x}{3} \cdot \frac{7}{x} = \frac{35x}{3x} = \frac{35}{3}$$

$$\frac{x+3}{x} \div \frac{x-3}{x^2} = \frac{(x+3)}{x} \cdot \frac{x^2}{(x-3)} = \frac{(x+3)x}{x-3} = \frac{x^2+3x}{x-3}$$

~~X~~ = X

Simplify (hint: order of operations!)

$$\frac{1}{2} + \frac{3}{4} = \frac{1}{2} \cdot \frac{2}{2} + \frac{21}{4} = \frac{2}{4} + \frac{21}{4} = \frac{23}{4}$$

$$\frac{5}{8} \div \frac{3}{2} - \frac{1}{4} = \frac{5}{12} - \frac{1 \cdot 3}{4 \cdot 3} = \frac{5}{12} - \frac{3}{12} = \frac{2}{12} = \frac{1}{6}$$

$$\frac{1}{2}x + \frac{3}{4}x \cdot \frac{7}{2}$$

$$\frac{1}{2}x + \frac{21}{8}x$$

$$\frac{4}{8}x + \frac{21}{8}x = \frac{25}{8}x$$

$$4x + 21x -$$

You Try! Simplify (hint: order of operations!)

$$\frac{5}{4} + \frac{8}{3} \div \frac{1}{2}$$

$$\frac{9}{10} \bullet 2 - \frac{7}{2}$$

$$\frac{2}{3}x + \frac{3}{2}x - \frac{1}{6}x$$

Watch

**NUMBER TOWN**

while doing your HW :)