

# Section 11.6 Worksheet

Name: KEY

Find the common denominator between the pair of rational expressions.

1.)  $\frac{2}{7}, \frac{x}{4}$   
 ① Factor: 7  
 ② LCM:  $7 \cdot 4 = \boxed{28}$

4.)  $\frac{7}{x+3}, \frac{4}{x}$   
 ①  $(x+3)$   
 ②  $\boxed{x(x+3)}$

2.)  $\frac{4}{x-4}, \frac{2}{x+2}$   
 ①  $(x-4)$   
 ②  $\boxed{(x-4)(x+2)}$

5.)  $\frac{9x}{8x^3}, \frac{x+2}{4x}$   
 ①  $2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x$   
 $2 \cdot 2 \cdot x$   
 ②  $2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x = \boxed{8x^3}$

3.)  $\frac{2}{2}, \frac{x}{4x}$   
 ①  $2$   
 $2 \cdot 2 \cdot x$   
 ②  $2 \cdot 2 \cdot x = \boxed{4x}$

6.)  $\frac{5}{x+6}, \frac{7+x}{x+5}$   
 ①  $(x+6)$   
 $(x+5)$   
 ②  $\boxed{(x+6)(x+5)}$

Find the sum of the rational expression and simplify.

7.)  $\frac{3}{2x} + \frac{1}{x}$   
 ①  $2 \cdot x$   
 ②  $2 \cdot x = 2x$   
 $\frac{1}{x} = \frac{2}{2x}$   
 ③  $\frac{3}{2x} + \frac{2}{2x}$   
 $\boxed{\frac{5}{2x}}$   
 ④  $\frac{5}{2 \cdot x}$

8.)  $\frac{2x+3}{4} + \frac{x+1}{2}$   
 ①  $2 \cdot 2$   
 ②  $2 \cdot 2 = 4$   
 $\frac{x+1}{2} = \frac{2x+2}{4}$   
 ③  $\frac{2x+3}{4} + \frac{2x+2}{4}$   
 $\boxed{\frac{4x+5}{4}}$   
 ④  $\frac{(4x+5)}{2 \cdot 2}$

9.)  $\frac{6x}{2x} + \frac{7-x}{8x}$   
 ①  $2 \cdot x$   
 $2 \cdot 2 \cdot 2 \cdot x = 8x$   
 ②  $\frac{6x}{2x} = \frac{24x}{8x}$   
 $\frac{7-x}{8x}$   
 ③  $\frac{24x}{8x} + \frac{7-x}{8x}$   
 $\boxed{\frac{23x+7}{8x}}$   
 ④  $\frac{(23x+7)}{2 \cdot 2 \cdot 2 \cdot x}$

10.)  $\frac{x+8}{3x-3} + \frac{x+2}{x-1}$   
 ①  $3(x-1)$   
 $(x-1)$   
 ②  $\frac{x+2}{x-1} = \frac{3x+6}{3(x-1)}$   
 $\frac{x+8}{3(x-1)} + \frac{3x+6}{3(x-1)}$   
 $\boxed{\frac{4x+14}{3(x-1)}}$   
 ④  $\frac{2(2x+7)}{3(x-1)}$

11.)  $\frac{x+6}{2} + \frac{x-10}{5}$   
 ①  $2$   
 $5$   
 $2 \cdot 5 = 10$   
 ②  $\frac{x+6}{2} = \frac{5x+30}{10}$   
 $\frac{x-10}{5} = \frac{2x-20}{10}$   
 ③  $\frac{5x+30}{10} + \frac{2x-20}{10}$   
 $\boxed{\frac{7x+10}{10}}$   
 ④  $\frac{(3x+10)}{5 \cdot 2}$

12.)  $\frac{4}{x} + \frac{x-5}{x^2}$   
 ①  $x$   
 $x \cdot x = x^2$   
 ②  $\frac{4}{x} = \frac{4x}{x^2}$   
 ③  $\frac{4x}{x^2} + \frac{x-5}{x^2}$   
 $\boxed{\frac{5x-5}{x^2}}$   
 ④  $\frac{5(x-1)}{x \cdot x}$

Find the difference of the rational expression and simplify.

13.)  $\frac{x-1}{6x^2} - \frac{2}{3x}$

①  $3 \cdot 2 \cdot x \cdot x$   
 $3 \cdot x$

②  $3 \cdot 2 \cdot x \cdot x = 6x^2$

②  $\frac{2}{3x} \xrightarrow{\times 2x} \frac{4x}{6x^2}$

③  $\frac{x-1}{6x^2} - \frac{4x}{6x^2}$

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

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

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

①  $3 \cdot 5 = 15$

②  $3 \cdot 5 = 15$

②  $\frac{2x}{3} \xrightarrow{\times 5} \frac{10x}{15}$      $\frac{x+1}{5} \xrightarrow{\times 3} \frac{3x+3}{15}$

③  $\frac{10x}{15} - \frac{3x+3}{15}$

$\frac{7x-3}{15}$

④  $\frac{(13x+3)}{5 \cdot 3}$

15.)  $\frac{x-7}{x-4} - \frac{x+8}{3x-12}$

①  $3(x-4)$

②  $3(x-4)$

②  $\frac{x-7}{x-4} \xrightarrow{\times 3} \frac{3x-21}{3(x-4)}$

③  $\frac{3x-21}{3(x-4)} - \frac{x+8}{3(x-4)}$

$\frac{2x-29}{3(x-4)}$

④  $\frac{(2x-29)}{3 \cdot x \cdot (x-4)}$

16.)  $\frac{8}{x-2} - \frac{4}{x+2}$

①  $(x-2)(x+2)$

②  $(x-2)(x+2)$

②  $\frac{8}{x-2} \xrightarrow{\times (x+2)} \frac{8x+16}{(x-2)(x+2)}$

$\frac{4}{x+2} \xrightarrow{\times (x-2)} \frac{4x-8}{(x-2)(x+2)}$

③  $\frac{8x+16}{(x+2)(x-2)} - \frac{4x-8}{(x+2)(x-2)} = \frac{4x+24}{(x+2)(x-2)}$

**REVIEW:**

Simplify the expression.

17.)  $\frac{x^2 - 4x + 4}{x - 2}$

$1 \cdot 4 = 4$   
 $-2 + 2 = -4$

$x^2 - 2x - 2x + 4$

$x(x-2) - 2(x-2)$

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

$x-2$

18.)  $\frac{x^2+x}{8x}$

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

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

④  $\frac{4(x+6)}{(x+2)(x-2)}$