

## Stick Quiz

Perform the following operations and simplify.

$$1. \frac{24rt^2}{-8t} = -3rt$$

$t \neq 0$

$$3. \frac{3b^2 - 7b + 2}{b^2 + 3b - 10}$$

$$2. \frac{3xy^3}{5a^2} \div \frac{6x^2y}{a^3} = \frac{ay^2}{10x}$$

$a, x, y \neq 0$

$$\frac{3b-1}{b+5}$$

$b \neq 2, -5$

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$$\frac{3b^2 - 7b + 2}{b^2 + 3b - 10}$$

$\begin{array}{r} -10 \div 3 \\ -7 \div 5 \end{array}$

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

$$(b-2)(b+5) = 0$$

$$b-2=0 \quad b+5=0$$

$$b=2 \quad b=-5$$

$$3b^2 - 7b + 2 \quad \begin{array}{r} b \mid -7 \\ -6 \quad -11 \end{array}$$

$$(3b^2 - 6b) + (-1b + 2)$$

$$3b(b-2) - 1(b-2)$$

$$(b-2)(3b-1)$$

$$\frac{3b-1}{b+5} \quad b \neq 2, -5$$

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$$2x^2 - 11x - 6$$

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$$\frac{x^2 + 9x + 20}{8x + 16} \bullet \frac{4x^2 + 16x + 16}{x^2 - 25}$$

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$$8x + 16$$

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$$\frac{3a^2 + 6a + 3}{a^2 - 3a - 10} \cdot \frac{12a^2 - 12}{a^2 - 4}$$

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? ? ?

# Questions

? ? ?

## on

? ? ?

# Homework

? ? ?

? ? ?

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## LESSON 8-2 Adding and Subtracting Rational Expressions

I can... simplify rational expressions by addition and subtraction.

$$\frac{3ac^3f^3}{8a^2bcf^4} \cdot \frac{12ab^2c}{18ab^3c^2f}$$

$$\frac{\overset{1}{\cancel{3}} \cdot \overset{2}{\cancel{12}} a^2 c^4 b^2 f^3}{\overset{2}{\cancel{8}} \cdot \overset{3}{\cancel{18}} a^3 b^4 c^3 f^5} = \frac{c}{4ab^2f^2}$$

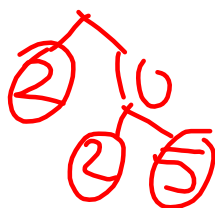
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# Finding the LCM

$$15a^2bc^3 = 5 \cdot 3 \cdot a^2bc^3$$

$$16b^5c^2 = 2^4 \cdot b^5c^2$$

$$20a^3c^6 = 2^2 \cdot 5 \cdot a^3c^6$$



$$\text{LCM} = 2^4 \cdot 3 \cdot 5 a^3 b^5 c^6$$

$$240 a^3 b^5 c^6$$

Least Common Multiple

1. Factor
2. Use each factor the greatest # of times it appears
3. simplify

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1. Find the LCM of the following.

$$\begin{array}{r} -2 \mid -1 \\ -2 \cdot 1 \end{array}$$

$$x^3 - x^2 - 2x = x(x^2 - x - 2) = x(x-2)(x+1)$$

$$x^2 - 4x + 4 = (x-2)(x-2) = (x-2)^2$$

$$\begin{array}{r} 4 \mid -4 \\ -2 \cdot 2 \end{array}$$

$$\text{LCM} = x(x+1)(x-2)^2$$

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1. Factor
2. Use EACH factor the greatest # of times it appears.

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You Try!!

Find the LCM of the following.

2.  $6x^2zy^3$ ,  $9x^3y^2z^2$ , and  $4x^2z$

3.  $x^3 + 2x^2 - 3x$  and  $x^2 + 6x + 9$

$$x(x^2 + 2x - 3)$$

$$x(x+3)(x-1)$$

$$\begin{array}{r} -3 \overline{) 2} \\ 3 \cdot -1 \end{array}$$

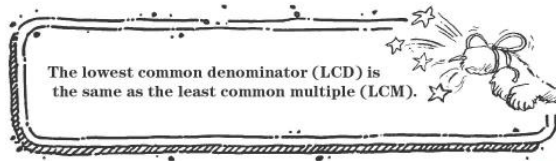
$$(x+3)(x+3) = (x+3)^2$$

$$x(x-1)(x+3)^2$$

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## Adding and Subtracting Rational Expressions

$$\frac{5a^2}{6b} + \frac{9}{14a^2b^2}$$



Find LCM of Denominator

$$6b = 2 \cdot 3 \cdot b$$

$$14a^2b^2 = 7 \cdot 2 \cdot a^2 \cdot b^2$$

$$\text{LCM} =$$

Now-- Multiply Denominators to get to LCM

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

$\begin{matrix} \wedge \\ \textcircled{2} \end{matrix}$ 

 $\begin{matrix} \wedge \\ \textcircled{3} \end{matrix}$

$$\frac{12}{18} + \frac{4}{18} = \frac{12+4}{18} = \frac{16}{18} = \frac{8}{9}$$

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$$\frac{5a^2}{6b} \cdot \frac{7a^2b}{7a^2b} + \frac{9}{14a^2b^2} \cdot \frac{3}{3} = \frac{35a^4b}{42a^2b^2} + \frac{27}{42a^2b^2}$$

$\text{LCM} = 2 \cdot 3 \cdot 7 \cdot a^2 \cdot b^2 = 42a^2b^2$

$$\frac{35a^4b + 27}{42a^2b^2}$$

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Simplify.

4.  $\frac{3x^2}{2y} + \frac{5}{12xy^2}$

$2 \cdot 3xy^2$

$$\frac{3x^2}{2y} \cdot \frac{2 \cdot 3xy}{2 \cdot 3xy} + \frac{5}{12xy^2}$$

$$\frac{18x^3y}{12xy^2} + \frac{5}{12xy^2}$$

$$= \frac{18x^3y + 5}{12xy^2}$$

 $x, y \neq 0$ 

1. Find LCM of Denominator.
2. Multiply to get to LCM.
3. Add Expression.

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5. Simplify.

$$\frac{2(x+10)}{3x-15} - \frac{(3x+15)}{6x-30}$$

$3(x-5)$        $6(x-5)$   
 $2 \cdot 3(x-5)$

$$\frac{2(x+10)}{6(x-5)} - \frac{(3x+15)}{6(x-5)}$$

$$\frac{2(x+10) - (3x+15)}{6(x-5)}$$

$$\frac{2x+20-3x-15}{6(x-5)}$$

$$\frac{-x+5}{6(x-5)}$$

$$\frac{-1(x-5)}{6(x-5)}$$

$$\boxed{-\frac{1}{6}}_{x \neq 5}$$

1. Find LCM of Denominator.
2. Multiply to get to LCM.
3. Subtract Expression.

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You Try!!  
Simplify.

6.  $\frac{x+5}{2x-4} - \frac{3x+8}{4x-8}$

1. Find LCM of Denominator.
2. Multiply to get to LCM.
3. Subtract Expression.

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## CHALLENGE!!

$$\frac{1}{12a} + \frac{6}{1} - \frac{3}{5a^2}$$

$\frac{1}{2 \cdot 2 \cdot 3a} + \frac{6}{1} - \frac{3}{5a^2}$   
 LCM =  $60a^2$

$$\frac{1}{12a} \cdot \frac{5a}{5a} + \frac{6}{1} \cdot \frac{60a^2}{60a^2} - \frac{3}{5a^2} \cdot \frac{12}{12}$$

$$\frac{5a}{60a^2} + \frac{360a^2}{60a^2} - \frac{36}{60a^2}$$

$$\frac{5a}{60a^2} + \frac{360a^2}{60a^2} - \frac{36}{60a^2}$$

$$\frac{5a + 360a^2 - 36}{60a^2}$$

$$\frac{360a^2 + 5a - 36}{60a^2}$$

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# Homework 8.2

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