

Section 7.4

READING AND SELF-DISCOVERY QUESTIONS

7.4

1. What does it mean to "clear the fractions" from an equation?

"Clearing the fractions" means to create an equivalent equation that does not contain fractions.

2. What process do you use for clearing the fractions from an equation?

Multiply all terms on both sides of the equation by the least common denominator of all the fractions in the equation.

CRITICAL THINKING QUESTIONS

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1. Why do some students prefer to use the process of clearing fractions instead of using common denominators to solve an equation with fractions?

Some students prefer to use the process of clearing fractions instead of using common denominators because using common denominators rather than least common denominators makes the resulting equation without denominators more complicated and may introduce extraneous solutions.

2. Explain to another student the process of clearing fractions from an equation.

To clear the fractions from an equation, you must first factor all the denominators, and then find the least common denominator of all the denominators. Finally, you multiply both sides of the equation by the least common denominator and simplify each side. If the clearing of fractions has been done correctly, there should be no remaining denominators after you simplify each side.

DEMONSTRATE YOUR UNDERSTANDING

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1. Write an equation with fractions where the LCD would be 12. Show how to clear the fractions and solve the equation.

Sample:

$$\frac{3}{4} + \frac{1}{3} = x$$

$$12 \cdot \left(\frac{3}{4} + \frac{1}{3} \right) = 12 \cdot x$$

$$9 + 4 = 12x$$

$$13 = 12x$$

$$\frac{13}{12} = \frac{12x}{12}$$

$$x = \frac{13}{12}$$

2. Write an equation with fractions using the variable x , such that the answer is $x = 6$.

Sample:

$$\frac{1}{3}x = 2$$

IDENTIFY AND CORRECT THE ERRORS

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In the second column, identify the error(s) you find in the following worked solution and describe the error made. Solve the problem correctly in the third column.

Problem	Describe Error	Correct Process
Solve: $\frac{x}{3} + \frac{x}{7} = 20$	<p>The student did not multiply the right side by 21.</p>	$7x + 3x = 420$ $10x = 420$ $x = 42$
<p>Worked Solution (What is wrong here?)</p>		
$\frac{x}{3} + \frac{x}{7} = 20$ $21\left(\frac{x}{3} + \frac{x}{7}\right) = 20$ $7x + 3x = 20$ $\frac{10}{2}x = \frac{20}{2}$ $x = 2$		