Fractional Equations

Solve fractional equation using either *Method A* or *Method B.*

Example: $\frac{2}{7}x + \frac{1}{2} = 3$

Method A:

Eliminate both fractions at the same time.

Step 1: Find the lowest common multiple (LCM) of the two denominators, 7 and 2. To do so, we *focus on the larger* of the two numbers, 7. Does the 2 divide evenly into 7? No. Continue by going to the next higher multiple of 7, which is 14. Does the 2 divide evenly into 14? Yes. We already know that the 7 divides evenly into 14 since it is a multiple of 7. So the LCM of 2 and 7 is 14.

Step 2: Multiply each term by 14 to eliminate the 7 in the denominator of the term $\frac{2}{7}$ and the 2 in the denominator of the term $\frac{1}{2}$ at the same time.

$(14)\frac{2}{7}x + (14)\frac{1}{2} = (14)3$

Reference equation above:

1st Term: $(14)\frac{2}{7}x$ The 7 goes into 14 two times so we are left with $2 \cdot 2x$ resulting in $4x$

2nd Term: $(14)\frac{1}{2}$ The 2 goes into 14 seven times so we are left with $7 \cdot 1$ resulting in 7

3rd Term: $(14)3$ The 14 multiplies with the 3 resulting in 42

This is what the equation looks like after eliminating the 7 and the 2 in the denominators:

$4x + 7 = 42$

Fractions have been eliminated. Now solve for x with the remaining integers….

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Example: $\frac{2}{7}x + \frac{1}{2} = 3$

Method B:

Eliminate one fraction at a time.

Step 1: Multiply each term by 7 to eliminate the 7 in the denominator of the 1st term $\frac{2}{7}$

$(7)\frac{2}{7}x + (7)\frac{1}{2} = (7)\,3$

Reference equation above:

1st Term: $(7)\frac{2}{7}x$ The 7's cancel leaving $2x$

2nd Term: $(7)\frac{1}{2}$ The 7 multiplies with the numerator 1 resulting in $\frac{7}{2}$

3rd Term: $(7)\,3$ The 7 multiplies with the 3 resulting in 21

This is what the fractional equation looks like after eliminating the 7 in the denominator:

$2x + \frac{7}{2} = 21$

Step 2: multiply each term by 2 to eliminate the 2 in denominator of the 2nd term $\frac{7}{2}$

$(2)\,2x + (2)\frac{7}{2} = (2)\,21$

Reference equation above:

1st Term: $(2)\,2x$ The 2 multiplies with the $2x$ resulting in $4x$

2nd Term: $(2)\frac{7}{2}$ The 2's cancel leaving 7

3rd Term: 21 The 2 multiplies with the 21 resulting in 42

This is what the equation looks like after eliminating the 2 in the denominator:

$4x + 7 = 42$

Fractions have been eliminated. Now solve for x with the remaining integers….