

- 1) Go over pages 94-99 mc
- 2) Turn in page 94 (1-15) on separate paper and 80-81 (odds)
- 3) Lesson: Linear Equations in Disguise
- 4) Homework: page 89

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Lesson 8: Linear Equations In Disguise

Classwork
Example 3
Can this equation be solved?

$$8(6+x) = 3\left(7x + \frac{2}{3}\right)$$

1) Put () around expressions.
2) Cross multiply
3) Solve
4) Check

$$\begin{aligned}
 8(6+x) &= 3\left(7x + \frac{2}{3}\right) \\
 48 + 8x &= 21x + 2 \\
 -8x &\quad -8x \\
 48 &= 13x + 2 \\
 -2 &\quad -2 \\
 46 &= 13x \\
 \frac{46}{13} &= \frac{13x}{13} \\
 3\frac{7}{13} &= \frac{13}{13} = x \\
 13 &\sqrt[3]{46} \\
 &\quad \frac{3}{-39} \\
 &\quad \overline{7}
 \end{aligned}$$

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Example 4

Can this equation be solved?

$$\frac{7}{(3x+9)} = \frac{1}{8}$$

$$1(3x+9) = 7(8)$$

$$3x+9 = 56$$

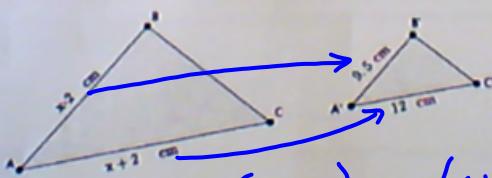
$$\underline{-A} \quad \underline{-9}$$

$$\frac{3x}{3} = \frac{47}{3}$$

$$x = \frac{47}{3} = 15\frac{2}{3}$$

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Example 5

In the diagram below, $\triangle ABC \sim \triangle A'B'C'$. Using what we know about similar triangles, we can determine the value of x .

$$\frac{(x-2)}{9.5} = \frac{(x+2)}{12}$$

$$12(x-2) = 9.5(x+2)$$

$$12x - 24 = 9.5x + 19$$

$$\underline{-9.5x} \quad \underline{-9.5x}$$

$$2.5x - 24 = 19$$

$$\underline{+24} \quad \underline{+24}$$

$$\frac{2.5x}{2.5} = \frac{43}{2.5}$$

$$x = 17.2$$

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Exercises

Solve the following equations of rational expressions, if possible.

1. $\frac{(2x+1)(1-x)}{9} = \frac{6}{6}$

$$6(2x+1) = 9(1-x)$$

$$\begin{array}{rcl} 12x + 6 & = & 9 - 9x \\ +9x & & +9x \\ \hline 21x + 6 & = & 9 \\ -6 & & -6 \end{array}$$

$$\frac{21x}{21} = \frac{3}{21}$$

$$x = \frac{3}{21} \div 3 = \frac{1}{7}$$

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2. $\frac{(5+2x)}{3x-1} = \frac{6}{7}$

$$7(5+2x) = 6(3x-1)$$

$$\begin{array}{rcl} 35 + 14x & = & 18x - 6 \\ -14x & & -14x \\ \hline 35 & = & 4x - 6 \end{array}$$

$$\begin{array}{rcl} +6 & & +6 \\ \hline 41 & = & 4x \end{array}$$

$$\begin{array}{rcl} \frac{41}{4} & = & x \\ 10\frac{1}{4} & = & x \end{array}$$

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$$3. \frac{(x+9)}{12} = \frac{(-2x-\frac{1}{2})}{3}$$

$$3(x+9) = 12(-2x - \frac{1}{2})$$

$$\begin{array}{r} 3x + 27 = -24x - 6 \\ +24x \\ \hline 27x + 27 = -6 \end{array}$$

$$\begin{array}{r} 27x + 27 = -6 \\ -27 \\ \hline 27x = -33 \end{array}$$

$$\begin{array}{r} 27x = -33 \\ \hline 27 \end{array}$$

$$x = -\frac{33}{27} \div 3 = -\frac{11}{9} = -1\frac{2}{9} = -1.\overline{2}$$

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

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

$$\begin{array}{r} 16x + 2 = 15 - 20x \\ +20x \\ \hline 36x + 2 = 15 \end{array}$$

$$\begin{array}{r} 36x = 13 \\ \hline 36 \end{array}$$

$$x = \frac{13}{36}$$

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Homework

Solve on separate sheet of paper.
Solve the following equations of rational expressions, if possible. If an equation cannot be solved, explain why.

1. $\frac{5}{6x-2} = \frac{-1}{x+1}$

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

2. $\frac{4-x}{8} = \frac{7x-1}{3}$

7. $\frac{6x+1}{3} = \frac{9-x}{7}$

3. $\frac{3x}{x+2} = \frac{5}{9}$

8. $\frac{\frac{1}{2}x-8}{12} = \frac{-2-x}{15}$

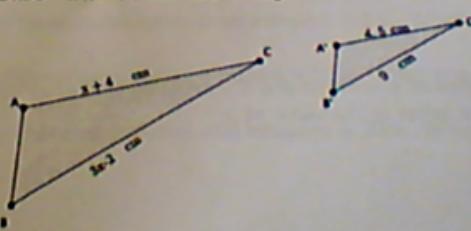
4. $\frac{2x+6}{3} = \frac{x-3}{2}$

9. $\frac{3-x}{1-x} = \frac{3}{2}$

5. $\frac{7-2x}{6} = \frac{x-5}{1}$

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10. In the diagram below,
- $\triangle ABC \sim \triangle A'B'C'$
- . Determine the lengths of
- \overline{AC}
- and
- \overline{BC}
- .



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