$\frac{3}{x} = \frac{2}{8}$

$\frac{2x}{2} = \frac{24}{2}$

$x = 12$

Lesson 8: Linear Equations in Disguise

Classwork

Example 3

Can this equation be solved?

$$\frac{6+x}{7x+\frac{2}{3}} = \frac{3}{8}$$

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

CLT! $48 + 8x = 21x + 2$

$x = x$!

$-8x \quad -8x$

Solve!

$48 = 13x + 2$

$-2 \quad -2$

$\frac{46}{13} = \frac{13x}{13}$

$\frac{46}{13} = x$

Example 4

Can this equation be solved?

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

$1\left(3x+9\right)$

$3x+9$

$3x + 9 = 56$

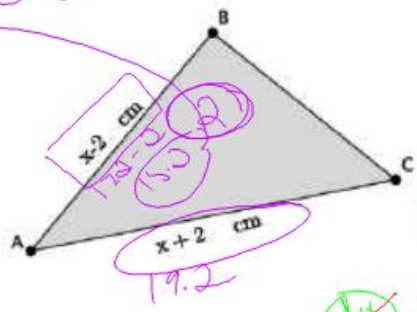
$-9 \quad -9$ subtract 9

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

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

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.



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

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

$-9.5x \quad -9.5x$

$2.5x + -24 = 19$

$+24 \quad +24$

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

$x = 17.2$

Exercises

Solve the following equations of rational expressions, if possible.

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

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

$9 - 9x = 12x + 6$

$+9x \quad +9x$

$9 = 21x + 6$

$-6 \quad -6$

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

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

$3/4$

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

$\frac{1}{7} = x$