Lesson 5.6

Using Multiplicative Inverses (Reciprocals) to Solve Equations

Goal: to use reciprocals to solve equations involving fractions.

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Solve:

$\frac{4x}{3} = 10$ $\cdot 3$

$4x = 30$ $x = \frac{15}{2}$ $7\frac{1}{2}$

$x + 7 = 12$ $-7 \quad -7$

Write the original problem in another way to solve.

$\frac{3}{4} \cdot \frac{4}{3}x = \frac{5}{1} \cdot \frac{3}{2} = \frac{15}{2} = 7\frac{1}{2}$

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One way to solve equations with fractions is to multiply both sides of the equation by the multiplicative inverse.

Solve $\frac{2}{3}x = 16$ $\cdot \frac{3}{2}$

$x = 24$

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Solve:

$\frac{5}{6}m = 20 \cdot \frac{6}{5}$

$m = 24$

$\frac{7}{8}x = 56 \cdot \frac{8}{-7}$

$x = \frac{64}{-1} = -64$

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Solve:

$\frac{13}{16} = \frac{3}{8}g + \frac{1}{2}$ $-\frac{1}{2}$

$-\frac{13}{16} - \frac{8}{16} = \frac{3}{8}g$

$-\frac{21}{16} = \frac{3}{8}g$ $\cdot \frac{8}{3}$

$-\frac{7}{2} = g$

$2\overline{)\frac{3}{4}}$ $-3\frac{1}{2}$

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Solve:

$4 = \frac{3}{5}x + 16$ $-4 \quad -4$

$-\frac{5}{3} \cdot \frac{3}{5}x = \frac{-12}{1} \cdot -\frac{5}{3}$

$x = -20$

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Solve:

$$\frac{5}{14}+\frac{2}{7}X=1\frac{5}{42}$$

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There are currently 1680 students at Fairview High School. So far this year, an average of $3\frac{1}{3}$ new students have enrolled at the school each week. The school has a maximum capacity of 1750 students. If this growth rate continues, in how many weeks will the school reach its maximum capacity?

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