Bell Ringer - Solve the equation.

$$\frac{4}{3}x + 14 = -30$$

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$$-14 \quad -14$$

$$\frac{3}{4} \cdot \frac{4}{3}x = -\frac{44}{1} \cdot \frac{3}{4}$$

$$x = -33$$

Chapter 11-1 Ratio and Proportion Notes

Ratio: a comparison of two quantities (numbers).
Proportion: an equation that states two ratios are equivalent.

If $\frac{a}{b} = \frac{c}{d}$, then $\frac{b}{a} = \frac{d}{c}$ and $ad = bc$

Reciprocals are equal.

Cross products are equal.

Extraneous Solution: a solution that does not work with the original problem. Examples are a negative length or a ratio that has a denominator of zero.

Solve the proportion and check for extraneous solutions. No decimal answers. Integers, fractions, or mixed numbers only.

1) $\frac{2}{3} = \frac{3}{w}$

Solve the proportion and check for extraneous solutions. No decimal answers. Integers, fractions, or mixed numbers only.

1) $\frac{2}{3} = \frac{3}{w}$

$2w = 9$

$w = \frac{9}{2}$ or $4\frac{1}{2}$

Solve the proportion and check for extraneous solutions. No decimal answers. Intergers, fractions, or mixed numbers only.

$$2) \quad \frac{4}{r} = \frac{16}{5}$$

Solve the proportion and check for extraneous solutions. No decimal answers. Intergers, fractions, or mixed numbers only.

2) $\frac{4}{r} = \frac{16}{5}$

$16r = 20$

$r = \frac{20}{16} = \frac{5}{4}$ or $1\frac{1}{4}$

Solve the proportion and check for extraneous solutions. No decimal answers. Intergers, fractions, or mixed numbers only.

3) $\frac{10}{x} = \frac{2x}{5}$

Solve the proportion and check for extraneous solutions. No decimal answers. Intergers, fractions, or mixed numbers only.

3) $\frac{10}{x} = \frac{2x}{5}$

$2x^2 = 50$

$x^2 = 25$

$x = \pm 5$

Solve the proportion and check for extraneous solutions. No decimal answers. Intergers, fractions, or mixed numbers only.

4) $\frac{-3}{x} = \frac{x - 3}{2x}$

Solve the proportion and check for extraneous solutions. No decimal answers. Intergers, fractions, or mixed numbers only.

4) $\frac{-3}{x} = \frac{x-3}{2x}$

$-6x = x^2 - 3x$

$+6x \qquad +6x$

$0 = x^2 + 3x$

$0 = x(x+3)$

$x = 0$ and -3

Note that 0 is an extraneous solution. Cannot have zero in the denominator of a fraction. Therefore, only -3 is a solution.

Solve the proportion and check for extraneous solutions. No decimal answers. Intergers, fractions, or mixed numbers only.

5) $\frac{x+3}{x+5} = \frac{x-3}{-5}$

Solve the proportion and check for extraneous solutions. No decimal answers. Intergers, fractions, or mixed numbers only.

5) $\frac{x+3}{x+5} = \frac{x-3}{-5}$

$(x+5)(x-3) = -5(x+3)$

$x^2 - 3x + 5x - 15 = -5x - 15$

$x^2 + 2x - 15 = -5x - 15$

$x^2 + 7x = 0$

$x(x+7) = 0$

$x = 0$ and -7

Both are solutions for this equation. Zero does not make the denominator zero in this case.