

5.8: Fractional Coefficients

1) Take out HW to be checked
- HW problems you would like done out?

2) Do Now

3) Notes:

5.8 Objective: To solve equations having fractional coefficients

3) Practice- Level 1 and 2

***HW: Finish Level 1 and 2
(solutions on my website)***

Do NOW

Factor. Then solve for x:

$$x^2 - 2x - 8 = 0$$

Do NOW

Factor. Then solve for x:

$$x^2 - 2x - 8 = 0$$

$$(x - 4)(x + 2) = 0$$

$$\text{So.... } x - 4 = 0 \text{ or } x + 2 = 0$$

$$x = 4 \text{ or } x = -2$$

***HW: Study Guide Worksheet 5-8
#1, 2, 5, 9, 10, 11, 12
(optional challenge problems on back)***

5.8: Fractional Coefficients

Objective: To solve equations having fractional coefficients

1) Solve:

$$\frac{x^2}{2} = \frac{2x}{15} + \frac{1}{10}$$

Steps:

5.8: Fractional Coefficients

Objective: To solve equations having fractional coefficients

<p>1) Solve:</p> $\frac{x^2}{2} = \frac{2x}{15} + \frac{1}{10}$ $30 \cdot \frac{x^2}{2} = 30 \left(\frac{2x}{15} + \frac{1}{10} \right)$ $15x^2 = 4x + 3$ $15x^2 - 4x - 3 = 0$ $15x^2 + 5x - 9x - 3 = 0$ $5x(3x + 1) - 3(3x + 1) = 0$ $(3x + 1)(5x - 3) = 0$ $3x - 1 = 0 \text{ or } 5x - 3 = 0$ $3x = 1 \text{ or } 5x = 3$ $x = \frac{1}{3} \text{ or } x = \frac{3}{5}$	<p>Steps:</p> <p>a) Calculate the Lowest Common Multiple of 2, 15 and 10. LCM = 30</p> <p>b) Multiply both sides by 30. Use distributive property.</p> <p>c) Rearrange equation to set = 0.</p> <p>d) Factor.</p> <p>e) Use zero product property to solve for x.</p>
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Practice Level 1

Practice Problems: (From Textbook p 245)

1) $\frac{x}{9} + \frac{1}{6} = \frac{2}{3}$

3) $\frac{2t - 1}{6} = \frac{t + 2}{4} + \frac{1}{3}$

4) $\frac{s - 2}{2} - \frac{s - 1}{5} = \frac{1}{4}$

9) $\frac{y^2}{4} - \frac{3y}{2} + 2 = 0$

Practice Level 1

Practice Problems: (From Textbook p 245)

$$1) \quad \frac{x}{9} + \frac{1}{6} = \frac{2}{3}$$

LCM: = 18

$$18 \left(\frac{x}{9} + \frac{1}{6} \right) = 18 \left(\frac{2}{3} \right)$$

$$2x + 3 = 12$$

$$2x = 9$$

$$x = \frac{9}{2} = 4.5$$

$$3) \quad \frac{2t-1}{6} = \frac{t+2}{4} + \frac{1}{3}$$

LCM: = 12

$$12 \left(\frac{2t-1}{6} \right) = 12 \left(\frac{t+2}{4} + \frac{1}{3} \right)$$

$$2(2t-1) = 3(t+2) + 4$$

$$4t - 2 = 3t + 6 + 4$$

$$4t - 2 = 3t + 10$$

$$t = 12$$

$$4) \quad \frac{s-2}{2} - \frac{s-1}{5} = \frac{1}{4}$$

LCM: = 20

$$20 \left(\frac{s-2}{2} - \frac{s-1}{5} \right) = 20 \left(\frac{1}{4} \right)$$

$$10(s-2) - 4(s-1) = 5$$

$$10s - 20 - 4s + 4 = 5$$

$$6s - 16 = 5$$

$$6s = 21$$

$$s = \frac{21}{6} = 3.5$$

$$9) \quad \frac{y^2}{4} - \frac{3y}{2} + 2 = 0$$

LCM= 8

$$8 \left(\frac{y^2}{4} - \frac{3y}{2} + 2 \right) = 8(0)$$

$$2(y^2) - 4(3y) + 16 = 0$$

$$2y^2 - 12y + 16 = 0$$

GCF = 2

$$2(y^2 - 6y + 8) = 0$$

$$2(y-4)(y-2) = 0$$

$$\text{so ... } y - 4 = 0 \text{ or } y - 2 = 0$$

$$y = 4 \text{ or } y = 2$$

Practice Level 2

$$2) \quad \frac{3u}{5} - \frac{5}{6} = \frac{u}{10}$$

$$10) \quad \frac{t^2}{6} - \frac{t}{2} - \frac{2}{3} = 0$$

$$11) \quad \frac{z^2}{3} - \frac{z}{6} = 1$$

$$16) \quad \frac{w(w-1)}{3} + \frac{1}{2} = \frac{w+1}{4}$$

Practice Level 2

$$2) \quad \frac{3u}{5} - \frac{5}{6} = \frac{u}{10}$$

LCM: = 30

$$30 \left(\frac{3u}{5} - \frac{5}{6} \right) = 30 \left(\frac{u}{10} \right)$$

$$18u - 25 = 3u$$

$$15u = 25$$

$$u = \frac{25}{15}$$

$$u = \frac{5}{3} \approx 1.67$$

$$10) \quad \frac{t^2}{6} - \frac{t}{2} - \frac{2}{3} = 0$$

LCM: = 6

$$6 \left(\frac{t^2}{6} - \frac{t}{2} - \frac{2}{3} \right) = 6(0)$$

$$t^2 - 3t - 4 = 0$$

$$(t - 4)(t + 1) = 0$$

$$\text{so ... } t - 4 = 0 \text{ or } t + 1 = 0$$

$$t = 4 \text{ or } t = -1$$

$$11) \quad \frac{z^2}{3} - \frac{z}{6} = 1$$

LCM: = 6

$$6 \left(\frac{z^2}{3} - \frac{z}{6} \right) = 6(1)$$

$$2z^2 - z = 6$$

$$2z^2 - z - 6 = 0$$

$$2z^2 - 4z + 3z - 6 = 0$$

$$2z(z - 2) + 3(z - 2) = 0$$

$$(2z + 3)(z - 2) = 0$$

$$\text{so ... } 2z + 3 = 0 \text{ or } z - 2 = 0$$

$$2z = -3 \text{ or } z = 2$$

$$z = \frac{-3}{2} \text{ or } z = 2$$

$$16) \quad \frac{w(w - 1)}{3} + \frac{1}{2} = \frac{w + 1}{4}$$

LCM: = 12

$$12 \left(\frac{w(w - 1)}{3} + \frac{1}{2} \right) = 12 \left(\frac{w + 1}{4} \right)$$

$$4(w(w - 1)) + 6 = 3(w + 1)$$

$$4(w^2 - w) + 6 = 3w + 3$$

$$4w^2 - 4w + 6 = 3w + 3$$

$$4w^2 - 7w - 3 = 0$$

$$4w^2 - 4w - 3w - 3 = 0$$

$$4w(w - 1) + 3(w - 1) = 0$$

$$(4w + 3)(w - 1) = 0$$

$$\text{so ... } 4w + 3 = 0 \text{ or } w - 1 = 0$$

$$w = \frac{-3}{4} \text{ or } w = 1$$