Mth 95 Solving Equations *Franz Helfenstein* **NAME**

In your own words, write your solution procedure for Linear Equations. Consider applying DFOOFD

Solve for x:

1) $3(5x + 4) - 15 = 2x - 3$

2) $4x - 3(3x + 2) = 7 - 5x$

3) $4x + 2(3x + 2) = 2(7 + 5x) - 10$

4) $3(ax + b) = 7ax - c$

5) $\frac{2x}{3} + \frac{3}{4} = \frac{5x}{2} + 3$

6) $\frac{3 - x}{2} + \frac{3}{4} = 2x - 5\frac{2x - 5}{6}$

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

8) $\frac{x + y}{x - y} = 2y - 1$

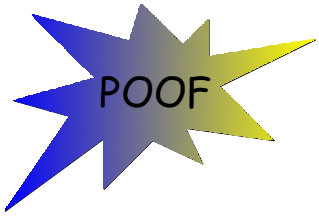
On Halloween, Buddy had obtained a huge stash of candy and was heading home when he met with an unfortunate event.

A monster accosted him and stole half his stash plus one more just for good measure.

Buddy quickly ate one of his candies then hurried for home at a rush. Dang, he was accosted by another monster; bigger and uglier than the first one. This monster stole half his remaining stash and then one more for good measure.

Buddy quickly downed another one of his candies to fortify himself and ran for home. A big cloud of thick, dark, foul, smelling smoke appeared from nowhere and then the smoke coalesced into a hideous witch. The witch cackled as she took half his rapidly shrinking stash plus one more for good measure. Buddy was now beside himself. He stuffed one of his few remaining candies in his mouth and sprinted for his house. He was almost home when he ran smack into another candy-stealing creature.

Like before, this monster stole half his puny stash and one more for good measure. When Buddy dug into his bag to check, all that remained were 3 candies. Buddy headed home in deep despair when amazingly. . .



the beautiful, sweet, glowing Good-Fairy-God-Mother-of-All appeared and said she could return all the candies if Buddy could tell her the number he had started with and how many were stolen. But he must do it by beginning with "x" candies and writing an equation that corresponds to his bad luck.

Can you help Buddy?

Let x = Buddy's Stash and write an equation that corresponds to his bad luck. Then solve the equation to determine how many candies Buddy had at the outset.

Mth 111 Solving Equations *Franz Helfenstein* **NAME** **ANSWER KEY**

In your own words, write your solution procedure for Linear Equations. Consider applying DFOOFD

(D) Distribute. Be especially mindful a – (b) or a – b(c) expressions.

(F) Remove all Fractions: *Bracket each term [ ] then multiply all terms by LCD and simplify*

(O) Shift variable term(s) to One side *(Additive Property)*

(O) Shift everything else to the Other side *(Additive Property)*

(F) Form (coefficient) · (variable). *(Factor out variable)*

i.e. $\sqrt{2}\,x + 4x = (\sqrt{2} + 4)x$ or $\pi\,x + ax = (\pi + a)x$

(D) Divide both sides by the variable's coefficient *(Multiplicative property)*

(C) Check the answer

Solve for x:

1) $3(5x + 4) - 15 = 2x - 3$

$x = 0$

2) $4x - 3(3x + 2) = 7 - 5x$

$x =$ No Solution

3) $4x + 2(3x + 2) = 2(7 + 5x) - 10$

$x =$ All Real Numbers

4) $3(ax + b) = 7ax - c$

$x = \dfrac{3b + c}{4a}$

5) $\dfrac{2x}{3} + \dfrac{3}{4} = \dfrac{5x}{2} + 3$

$x = \dfrac{-27}{22}$

6) $\dfrac{3 - x}{2} + \dfrac{3}{4} = 2x - 5\dfrac{2x - 5}{6}$

$x = \dfrac{-23}{10}$

7) $7 - \dfrac{3(x - 5)}{2} = 5x - \dfrac{6x - 5}{3}$

$x = \dfrac{77}{27}$

8) $\dfrac{x + y}{x - y} = 2y - 1$

$x = \dfrac{y^2}{y - 1}$

Buddy's Candy:

Let x = original stash	Monster steals half	Monster steals 1	Buddy eats 1	Monster steals half	Monster steals 1	Buddy eats 1	Monster steals half	Monster steals 1	Buddy eats 1	Monster steals half	Monster steals 1	3 remain
x	$\frac{1}{2}x$	$\frac{1}{2}x - 1$	$(\frac{1}{2}x - 2)$	$\frac{1}{2}(\ \ )$	$\frac{1}{2}(\ ) - 1$	$[\frac{1}{2}(\ ) - 2]$	$\frac{1}{2}[\ \ ]$	$\frac{1}{2}[\ ] - 1$	$\{\frac{1}{2}[\ ] - 2\}$	$\frac{1}{2}\{\ \ \}$	$\frac{1}{2}\{\ \} - 1$	= 3

$\frac{1}{2}\{\frac{1}{2}[\frac{1}{2}(\frac{1}{2}x - 2) - 2] - 2\} - 1 = 3$

$x = 92$