MATH 1010, Summer 2018 **Dr. S. Cooper**

Tutorial Worksheet #1
Tuesday, May 8

Name: _____

Student Number: _____

Write your solutions to the following exercises on the provided paper. *Show all of your work.* Remember to use good notation and full sentences.

1. For each of the following equations:
   - Solve for the unknown.
   - Determine if the equation is linear or not.
   - Determine the number of solutions to the equation.

   (a) $\frac{2}{5} = \frac{2}{3} + \frac{t}{5}$

   (b) $\frac{3x+2}{3} = \frac{2x-1}{4}$

   (c) $2(x+2)+7 = 4x+1-2(5+x)$

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

   (e) $\frac{y}{2} - 1 = \frac{1}{2}(y-5) + \frac{1}{2}$

   (f) $\frac{z-1}{5} + 4 = \frac{2}{5} - \frac{4z+3}{10}$

2. For each of the following inequalities:
   - Find all solutions.
   - Determine if the inequality is linear.

   (a) $2 - 3x \leq 11$

   (b) $\frac{x-1}{6} \geq \frac{2}{3} - \frac{x+3}{6}$

   (c) $\frac{x-1}{3} + 1 < \frac{x+2}{7} - 4$

   (d) $7 - 2x \geq 15$

   (e) $\frac{y}{2} - \frac{4}{5} \geq \frac{1}{2}(y-5) + \frac{3}{10}$

   (f) $2(x+2)+1 < 4x+15-2(5+x)$

   (g) $3x - 7 \geq 7x - 3$

Brief Answers:

1. (a) Linear; $t = -\frac{4}{3}$

   (b) Linear; $x = -\frac{11}{6}$

   (c) Not linear; no solutions

   (d) Not linear; infinitely many solutions

   (e) Not linear; no solutions

   (f) Linear; $z = -\frac{37}{6}$

2. (a) Linear; $x \geq -3$

   (b) Linear; $x \geq 1$

   (c) Linear; $x < -23$

   (d) Linear; $x \leq -4$

   (e) Not linear; infinitely many solutions (i.e., all real values of y make the inequality true)

   (f) Not linear; no solutions

   (g) Linear; $x \leq -1$