

**Math 103**  
**Exam #1**  
**Spring 2011**

**Name:**

1. 10 pts. each Solve each equation.
  - (a)  $-4t + 5t - 8 + 4 = 6t - 4$
  - (b)  $2x + 3(x - 4) = 2(x - 3)$
2. 15 pts. each Solve each inequality, then state the solution set in interval notation and make a number line graph.
  - (a)  $4x + 1 \leq -31$
  - (b)  $-16 < 3t + 2 \leq -10$
3. 10 pts. Solve for  $L$ :  $P = 2L + 2W$ .
4. 10 pts. Translate into a mathematical expression: *17 decreased by six times a number*.
5. 10 pts. each Solve each compound inequality, then state the solution set in interval notation and make a number line graph.
  - (a)  $x + 5 \leq 11$  and  $x - 3 \geq -1$
  - (b)  $3x < x + 16$  or  $x + 1 > 15$
6. 10 pts. each Consider the line given by the equation  $x - 3y = 6$ .
  - (a) Find the  $x$ - and  $y$ -intercepts of the line.
  - (b) Graph the line.
7. 10 pts. Find the midpoint of the segment with the endpoints  $\left(-\frac{1}{2}, \frac{1}{3}\right)$  and  $\left(\frac{3}{2}, \frac{5}{3}\right)$ .
8. 10 pts. Find the slope of the line containing the points  $(9, -3)$  and  $(5, 2)$ .
9. 15 pts. The Bermuda Triangle has a perimeter of 3075 miles. The shortest side measures 75 miles less than the middle side, and the longest side measures 375 miles more than the middle side. Find the lengths of the three sides.
10. 15 pts. Carter McNammaninin earned \$12,000 last year by giving fizzbin lessons. He invested part of the money at 3% simple interest and the rest at 5%. In one year, he earned a total of \$440 in interest. How much did he invest at each rate? (Round to the nearest cent.)
11. 15 pts. How many liters of a 14% alcohol solution must be mixed with 20 L of a 50% solution to get a 30% solution?