Quiz 6A, MTH 2010 - No Calculators

Dr. Graham-Squire, Fall 2014

Name: _____

1. (3 points) Here is a number trick:

   1) Pick a whole number

   2) Double your number.

   3) Add 20 to the above result.

   4) Multiply the above by 5

   5) Subtract 100

   6) Divide by 10

   The result is always the number that you started with! Suppose you start by picking N. Which of the equations below best demonstrates that the result after Step 6 is also N?

   (A) $N \times 2 + 20 \times 5 - 100 \div 10 = N$

   (B) $((2 \times N + 20) \times 5 - 100) \div 10 = N$

   (C) $(N + N + 20) \times 5 - 100 \div 10 = N$

   (D) $(((N \div 10) - 100) \times 5 + 20) \times 2 = N$

2. (2 points) Bob bought a bunch of cookies. $\frac{1}{6}$ were chocolate chip, $\frac{1}{3}$ were snickerdoodles, and $\frac{5}{6}$ of the remainder were oatmeal raisin cookies. If Bob bought 20 oatmeal raisin cookies, how many did he buy in all?

3. (3 points) Use the diagram below to answer the question that follows.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40

Which of the following algebraic equations could best be used to explain why, for any three-by-three cross like the one shown above, the sum of the numbers in the vertical rectangle is equal to the sum of the numbers in the horizontal rectangle?

(A) $9x + 14x + 19x = 13x + 14x + 15x$

(B) $5[x + (x + 1) + (x + 2)] = 5x + (5x + 5) + (5x + 10)$

(C) $x + 9 + 14 + 19 = x + 13 + 14 + 15$

(D) $(x - 1) + x + (x + 1) = (x - 5) + x + (x + 5)$

4. (2 points) Write an expression (with fractions, multiplication and addition and/or subtraction) that represents what fraction of the area in the square is shaded. You can assume that all parts that appear to be the same size are the same size. Explain why your expression represents the correct fraction of the area in the square that is shaded.