MATH 6: HANDOUT 0
REVIEW PROBLEMS

<small>CLASSWORK</small>

1. Rewrite each of the expressions below in the simplest possible form, by collecting the like terms if possible.
  (a) $2a(a - 2) - a(a - 1)$
  (b) $(2x - 1)(x + 1)$
  (c) $5(x - 1) - 3(2x + 1)$

2. An apple cost 9 cents, and an orange 15 cents. Elena bought some apples and oranges, 20 fruit in all, and paid \$2.64. How many apples and how many oranges did she buy?

3. Convert the following decimal numbers to binary, base-3, and base-5 system:
  (a) 53
  (b) 100

<small>HOMEWORK</small>

1. Simplify the following expressions

  (a) $2x + 7 + 5x + 2 + 3x$ (c) $3(2x - 1) + x$ (e) $2 + 5x - 4(3 - x)$
  (b) $3x + 9 + 5xy + 2xy + 3$ (d) $x + 4(1 - x)$ (f) $(1 - 3x)(4x + 1)$

2. A boy had a bag of apples. He gave $1/2$ of them to his parents, $1/5$ to his brother, $1/4$ to his sister and the last apple he ate himself. How many apples did he originally have?

3. If you take half my age and add 7, you get my age 13 years ago. How old am I?

4. Two secretaries, Barbara and Mary, need to type a 100 page document. Barbara can type it in 4 hours; Mary types slower, so it would take her 5 hours to do this. How fast can they type it together if they divide the work between two of them in the most efficient way?

5. Convert the decimal numbers to binary, base-3, and base-5 systems:
    9, 12, 24, 38, 45

6. Convert the following binary numbers to decimal:
    101, 1001, 10110, 11011, 10101

7. If, in a right triangle, one leg has length 1 and the hypotenuse has length 2, what is the other leg?

8. Solve equations:

(a) $\dfrac{3}{8}x = \dfrac{1}{3}$ (b) $|x + 1| = 1$ (c) $\dfrac{x - 2}{x - 1} = 3$