1. Simplify:

a) $x + 4(1 - x)$

b) $2 + 5x - 4(3 - x)$

c) $3\left(4x - 3\frac{2}{9} + 4y - 3\frac{2}{3}y\right) - \left(-3\frac{1}{4}x\right)$

d) $-\frac{1}{5}\left(10x - 2\frac{2}{10}y - 3\frac{6}{15}y + 8 - [-4\frac{7}{15}y]\right)$

e) $\frac{3(x-5)}{4} - \frac{-2x-9}{16} + \frac{3(-x-1)}{8}$

f) $\frac{-7(a-2)}{9} + \frac{x-9}{27} - \frac{-2(5x-8)}{3} - 2x$

2. Find the multiplicative inverse (reciprocal) for each of the numbers below:

a) 5

b) $\frac{4}{13}$

c) $5\frac{6}{7}$

d) 1.02

e) $3\frac{4}{9}$

f) 10.77

3. Solve to find the value of each variable:

a) $14a + 8 = 12 - 10a$

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

c) $3(3y - 1) = 2(2y + 11)$

d) $5(m - 2) = 3m - 20$

Write an equation to solve each of the following word problems:

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

5. Alex bought a large bag of red, green, and blue candies for Halloween, 74 candies in all. The number of red candies is one less than the number of green candies, and there are as many blue candies as red and green together. How many pieces of each color are there?

6. A hot-water tap fills the bath in 5 minutes. The cold-water tap fills the bath in 3 minutes. With both taps open, how long will it take to fill the bath?

7. * The numbers 1, 2, …, 10 are written in a row. Is it possible to put operations + and – between them so that the result is equal to zero?