Tutorial 1 (Numbers)

1. Answer the following questions:

   a) The L.C.M of two numbers is 45 times their H.C.F. If one of the numbers is 125 & the sum of H.C.F & L.C.M is 1150, the other number is?

   b) The L.C.M of two numbers is 48. The numbers are in the ratio of 2: 3. The sum of the numbers is?

   c) The greatest number that exactly divides 105, 1001 & 2436 is?

2. Convert the following binary numbers into decimal form.

   (a) 10 (b) 101 (c) 111 (d) 110

   (e) 1011 (f) 1111 (g) 1001 (h) 1010

3. Convert the following decimal number into binary form

   (a) 10 (b) 101 (c) 111 (d) 110

   (e) 101101 (f) 111110 (g) 101101 (h) 101110

4. Solve the following system of linear equation using the substitution method

   (a) $x + y = 8, \quad 2x - y = 7$

   (b) $7x + 8y = 11, \quad 5x + 6y = 7$

   (c) $x + 4y = 3, \; 2x + 8y = 11$

   (d) $\frac{1}{4}x + y = 2, \quad x = 8 - 4y$

5. Solve the following equations by factoring:

   (a) $x^2 = 16$ (b) $x^2 - 5x = 0$ (c) $x^2 - 4 = 0$ (d) $3x^2 + x - 2$

6. Solve the following equations by completing the square:

   (a) $x^2 - 2x - 1 = 0$ (b) $x^2 - 8x + 24 = 0$ (c) $5x^2 - 6x = 8$

7. Solve the following equations by using the Quadratic Formula:

   (a) $x^2 + 4x + 0 = 0$ (b) $x^2 + 2x - 3 = 0$ (c) $4x^2 + 8x + 7 = 4$

   (d) $2x^2 - 7x - 13 = -10$

8. Solve the following inequalities:

a) $x + 2 < 4$

b) $\frac{x}{2} > 4$

c) $2x \leq 4$

d) $3 - 2x \geq 15$

e) $1-x > 0$

9. Solve the following system of inequalities

a) $x-2y>-12$
$4y + 8 \geq 2x - 4$

b) $y > -3x + 4$
$2x + 3y \geq 12$

c) $3x + 2y > 12$
$y \leq -\frac{3}{2}x - 2$