NALANDA COLLEGE - COLOMBO 10

Grade 11

Mathematics

Second Term – Unit Test

14)   <u>**Equations**</u>

<u>**Part I**</u>

1. Solve. $3x + 1 = x - 7$

2. Solve $\frac{a}{3} + \frac{a}{2} = 10$

3. Solve. $\frac{x}{3} - 1 = 5$

4. Solve. $5(y - 3) = 2y - 3$

5. Solve. $5 - \frac{5a}{2} = 10$

6. Solve. $4 - 5(3 - x) = 2(x - 1)$

7. Solve. $\frac{(x-3)}{3} - 1 = 5$

8. Solve. $\frac{a+1}{a+3} = \frac{4}{5}$

9. $x^2 + 2x = 0$, Solve the equation.
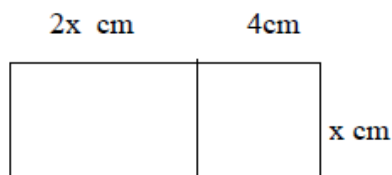
10. $2x^2 - 5x + 2 = 0$ Solve the equation.

<u>**Part II**</u>

1) a) Solve. . $\frac{1}{3}x + \frac{1}{4}y = 9$

   $\frac{1}{6}x - \frac{1}{5}y = -2$

b) A rectangular lamina has been constructed by welding two metal sheets together as shown in the figure.

2x cm   4cm

x cm

    i.   Write down the length of the whole lamina in terms of x.

    ii.   If the area of the whole lamina is 24cm²; show that x satisfies the quadratic equation
$x^2 + 2x - 12 = 0$.

    iii.   Solve the above quadratic equation by completing the square or by some other method.
(Take $\sqrt{13} = 3.61$)

2) a) Sum of the two digits in a number having two digits is 14. The number obtained when exchanging the two digits is 36 less than the previous number. By considering the digits in the tens place as a and the digit in the units place as b in the first number,

i.   Write the first number in terms of a and b.

ii.   Write a pair of simultaneous equations including a and b.

iii.   Solve the equations and find the values of a and b.

iv.   Hence find the first number.

   b) Solve. $2x^2 - 5x - 3 = 0$

3) a) The perimeter of a triangle with sides of length x, x+3 and 2x − 5 units is 38 units.

   i. Construct a simple equation based on this information.

   ii. Solve the equation and find x.

   iii. Find the length of the largest side of the triangle.

   c) Solve the quadratic equation $x^2 - 4x - 1 = 0$ by completing the square or by some other method.
(*Take* $\sqrt{5} = 2.236$)