Vacation assignment for class-10

1. $\sqrt{2}$ *and* **2 are two real numbers.**
   a) What is rational number?   2
   b) Find the two irrational number between $\sqrt{2}$ and 2   4
   (a) Prove that $\sqrt{2}$ is an irrational number   4

2.Logarithm is used to find the values of exponential expressions. Logarithm is written in brief as 'Log'. Product, quotient etc. of large numbers of quantities can easily be determined by the help of log.

   a) Define logarithm with examples.   2
   b) Simplify $7log_{10}\frac{10}{9} - 2log_{10}\frac{25}{24} + 3log_{10}\frac{81}{80}$ 4
   c) Solve $\left(\sqrt{3}\right)^{x+1} = \left(\sqrt[3]{3}\right)^{2x-1}$ 4

3. "The sum of $\sqrt{10x-4}$ and 4 times of its multiplicative inverse is 5"

   a. Now according to the data given, form an equation.
   b. Find the solution set of the given equation.
   c. Find the solution set, $\frac{ax+b}{a+bx} = \frac{cx+d}{c+dx}$

4. Sum of the digits of a number consisting of two digits is 7. If the place of the digits is interchanged, the number so formed is 9 more than the given number.

   a. Write down the give number & the number obtained by interchanging their places in terms of variable of a.
   b. Find the given number
   c. If the digits of the original number indicate the length and breadth of a rectangle, find the length of its diagonal .Assuming the diagonal as the side of a square, find the length of the diagonal of the square.

5. The area of a rectangular room is 192 sq meters. Its length is 4 meter more than its breadth "X".

   a. Now express the statement mathematically.
   b. Find the perimeter of the region.
   c. Show that, if the length is decreased by 4 meters and breadth is increased by 4 meters; the area remains unchanged.