

VASANT VALLEY SCHOOL
MATHEMATICS
Class X

Instructions:

- . All 5 assignments have to be done in the Mathematics Question Bank register.
- . These assignments are based on concepts done in the first term.
- . Each assignment should take you approximately 30 minutes.
- . These will be graded towards July grades.
- . Date of submission : 08-07-09

Assignment 1

1. Solve for x and y

$$\frac{2}{x+y} + \frac{3}{x-y} = 1 \quad ; \quad \frac{8}{x+y} - \frac{9}{x-y} = \frac{5}{6}$$

2. Solve for x and y

$$Ax + by = 1 \quad ; \quad bx + ay = \frac{(a+b)^2}{a^2 + b^2} - 1$$

3. For what value of k, will the following system of equations have infinite number of solutions.

$$\begin{aligned} (k-1)x + (k+2)y &= k \\ 2x + 5y &= 3 \end{aligned}$$

4. A part of monthly hostel charges in a college are fixed and the remaining depend on the number of days one has taken food in the mess. When a student A takes food for 20 days, he has to pay Rs.1000 as hostel charges where as a student B takes food for 26 days, pays Rs.1180 as hostel charge. Find the fixed charge and the cost of food per day.

5. Two years ago, a father was five times as old as his son. Two years later, his age will be 8 more than three times the age of the son. Find the present ages of father and son.

6. Solve $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$

7. Which term of the AP 64,60,56, 52, ----- is zero

8. Find 10th term from end of the A.P 4, 9, 14,254

Assignment 2.

1. Solve for x and y:
 $2(ax - by) + (a + 4b) = 0$: $2(bx + ay) + (b - 4a) = 0$
2. $47x + 31y = 63$: $31x + 47y = 15$
3. A person invested some amount at the value of 12% simple interest and some other amount at the rate of 10% simple interest. He received yearly interest of Rs. 130 but if he had inter changed the amounts invested he would have received Rs. 4 more as interest. How much amount did he invest at different rates.
4. The speed of a boat in still water is 15 km/hr it can go 30 km upstream and return downstream to the original point in 4hr 30min. Find the speed of the stream
5. The 6th term of an A.P is -10 and the 10th term is -26.
Determine the 15th term of the A.P.
6. Find the sum of all 3 digit numbers less than 200 which are divisible by 5.

Assignment 3

1. Two years ago, a father was five times as old as his son. Two years later, his age will be 8 more than three times the age of the son. Find the present ages of father and son.
2. A man travels a distance of 300 km at a uniform speed. If the speed of the train is increased by 5 km an hour, the journey would have taken 2 hours less. Find the original speed of the train.
3. Solve for x $\frac{x}{x+1} + \frac{x+1}{x} = \frac{34}{15}$
4. Two trains leave a railway station at the same time. The first train travels due West and the second train due North. The first train travels 5 km/hr faster than the second train. If after 2 hours they are 50 km apart find the average speed of each train.
5. Solve for x

$$2\left(\frac{x-1}{x+3}\right) - 7\left(\frac{x+3}{x-1}\right) = 5 \quad \text{given that } x \neq 3, 1$$

6. Find the sum of all natural numbers that lie between 250 and 1000 exactly divisible by 3
7. The ninth term of an AP is zero, show that 29th is double the 19th term

Assignment 4

1. Solve graphically the system $4x-y=5$ and $x+y=5$. Write the vertices of the triangle formed by the lines and the Y axis.
2. Find the sum of $(x-y)^2, (x^2+y^2), (x+y)^2, \dots$ to n terms.
3. If the points $(-1,3), (1,-1)$ and $(5,1)$ are the vertices of a triangle, find the length of the median through the first vertex.
4. If the coordinates of the mid points of the sides of a triangle are $(1,2), (0,-1)$ and $(2,-1)$. Find the coordinates of its vertices.
5. From your pocket money you save Rs 1 on day 1, Rs 2 on day 2, Rs 3 on day 3 and so on. How much money will you save in the month of March 2008?
6. Solve using completing the square method:
 - a) $2x^2 + 4x - 8 = 0$
 - b) $x^2 + 5x + 5 = 0$
 - c) $9x^2 - 12x + 4 = 0$
7. The sixth term of an A.P is -10 and the 10th term is -26. Determine the 15th term of the A.P.

Assignment 5

1. A piece of cloth costs Rs.200. If the piece was 5m longer and each meter of cloth costs Rs.2 less, the cost of the piece would be unchanged. How long is the piece and what is the original cost of the cloth.
2. Solve for x

$$2\left(\frac{2x-1}{x+3}\right) - 3\left(\frac{x+3}{2x-1}\right) = 5 \quad \text{given that } x \neq -3, \frac{1}{2}$$

3. Solve graphically $2y-x=7$ and $6y-3x=2$.

4. The sum of three numbers in A.P is 27 and their product is 405. Find the numbers.

5. If two zeroes of the polynomial $f(x) = x^4 - 6x^3 - 26x^2 + 138x - 35$ are $2 + \sqrt{3}$ and $2 - \sqrt{3}$, find other zeroes.

6. If two zeroes of the polynomial $f(x) = 2x^4 + x^3 - 14x^2 - 19x - 6$ are -2 and -1 , find other zeroes.

7. Solve for x

a. $3x^2 + 2\sqrt{5}x - 5 = 0$

b. $6x^2 + x - 2 = 0$

8. Solve for x

$$\frac{x-7}{x+7} - \frac{x+7}{x-7} = 1\frac{1}{2} \quad x \neq 7, x \neq -7$$