**ST. THOMAS SCHOOL ,INDIRAPURAM**
**CLASS – X , SUBJECT – MATHEMATICS**
**HOLIDAY HOMEWORK (2020-21)**
**TOPICS : PAIR OF LINEAR EQUATIONS IN TWO VARIABLES**
**& QUADRATIC EQUATIONS**

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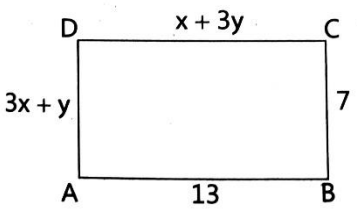
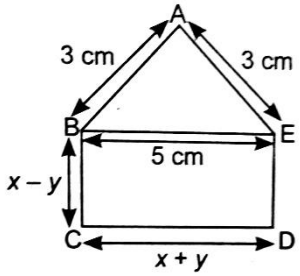
| **1.** | If the system of equations $6x - 2y = 3$ and $kx - y = 2$ has a unique solution , find the value of k. |
| **2.** | For which values of p and q , will the following pair of linear equations have infinitely many solutions ?<br>$4x + 5y = 2$ ; $(2p + 7q)x + (p + 8q)y = 2q - p + 1$ |
| **3.** | Write an equation of a line passing through the point representing solution of the pair of linear equations $x + y = 2$, and $2x - y = 1$ . How many such lines can be find? |
| **4.** | Draw the graph of the pair of equations $2x + y = 4$ and $2x - y = 4$ . Write the vertices of the triangle formed by these lines and the y-axis. Also, find the area of this triangle. |
| **5.** | Find the values of x and y in the given rectangle.<br>  |
| **6.** | Two numbers are in the ratio 5:6 .If 8 is subtracted from each of the numbers , the ratio becomes 4:5 . Find the numbers. |
| **7.** | Solve the following pair of equations :<br>(i) $ax + by = 1$ ; $bx + ay = \frac{2ab}{a^2 + b^2}$ (ii) $21x + 47y = 110$ ; $47x + 21y = 162$<br>$(iii)\ \frac{x+1}{2} + \frac{y-1}{3} = 8$ ; $\frac{x-1}{3} + \frac{y+1}{2} = 9$ (iv) $\frac{10}{x+y} + \frac{4}{y-x} = -2$ ; $\frac{15}{x+y} - \frac{7}{y-x} = 10$ |
| **8.** | It can take 12 hours to fill a swimming pool using two pipes. If the pipe of larger diameter is used for 4hours and the pipe of smaller diameter for 9hours, only half the pool can be filled . How long would it take for each pipe to fill the tank separately ? |
| **9.** | Solve for x and y : $4x + \frac{6}{y} = 15$ ; $x - \frac{4}{y} = 7$ , $y \neq 0$ . Hence find the value of p, if $2y = 3px + 7$. |
| **10.** | In the given figure, ABCDE is a pentagon with BE ‖ CD and BC ‖ DE .BC is perpendicular to CD. If the perimeter of ABCDE is 21 cm, find the value of x and y.<br>  |
| **11.** | There are two examinations rooms A and B. If 10 candidates are sent from A to B, the number of students in each room is the same . If 20 candidates are sent from B to A , the number of students in A is double the number of students in B . Find the number of students in each room . |

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| **12.** | If one root of the quadratic equation $2x^2 + kx - 6 = 0$ is 2, find the value of k. Also, find the other root. |
| **13.** | Determine the nature of the roots of the following quadratic equations:<br>(i) $(x - 2a)(x - 2b) = 4ab$<br>(ii) $(b + c)x^2 - (a + b + c)x + a = 0$ |
| **14.** | Solve for x :<br>(i) $\frac{1}{x+1} + \frac{2}{x+2} = \frac{4}{x+4}$ ; $x \neq 1, -2, -4$<br>(ii) $\frac{x-4}{x-5} + \frac{x-6}{x-7} = \frac{10}{3}$ ; $x \neq 5, 7$<br>(iii) $\sqrt{3}x^2 - 2\sqrt{2}x - 2\sqrt{3} = 0$<br>(iv) $3x^2 + 2\sqrt{5}x - 5 = 0$ |
| **15.** | A plane left 40 minutes late due to bad weather and in order to reach its destination, 1600km away in time ,it had to increase its speed by 400km/hrfrom its usual speed . Find the usual speed of the train. |
| **16.** | Find the values of k for which the quadratic equation $(3k + 1)x^2 + 2(k + 1)x + 1 = 0$ has equal roots Also , find the roots. |
| **17.** | Some students planned a picnic. The total budget for school was ₹2000. Due to confusion five students failed to attend the picnic and thus the cost of food for each member increased by ₹ 20. How many students attended the picnic and how much each student pay for the food ? |
| **18.** | A motor boat whose speed is 9km/hr in still water takes 1 hour more to go 12 km upstream than to return downstream to the same spot . Find the speed of the stream. |
| **19.** | Three consecutive positive integers are such that the sum of the square of the first and the product of the other two is 46, find the integers. |
| **20.** | If twice the area of a smaller square is subtracted from the area of a larger square , the result is $14cm^2$ . However , if twice the area of the larger square is added to three times the area of the smaller square, the result is $203cm^2$ .Determine the sides of the square. |

**NOTE : All questions to be done in A4 size ruled sheets.**