Common Mistakes & How to avoid them
Class X - Math

Unit: Algebra

Chapter: Pair of Linear Equations in Two Variables		
Types of Question	**Common Mistakes**	**Points to be emphasised**
Solving the system of equations graphically	(i) Error in plotting points (ii) Error in marking axes (iii) Not mentioning the point of intersection as the solution (iv) Not mentioning the equation of the line along with the line in the graph v) Not using the pencil and scale to draw the graph	(i) Always take three points on each line and as far as possible choose points as whole numbers or terminating decimal. Avoid 1/3 ,2/3 1/7 etc. Tabulate the x and y values for each line. (ii) Point of intersection of two lines is the solution. Write x = ----and y =…. As the solution of the system of equations. (iii) Practice the questions based on this topic using the graph sheet and try answering the questions in the same way as you will do in actual examination. i.e practice must be real time

Questions based on Consistency Conditions i.e to find the value of unknown constant for which the system of equations has (i) unique solution (ii) No solution (iii) Infinite solution	(i) Error in finding the value of constant . For example in the system of equations kx+3y-(k-3) =0 12x+ky-k =0 Gives k =0,6,-6 and students stop at this step (ii) Error in interpreting the answer . In case of unique solution when the answer is k≠6 Students write value of unknown k = 6 (iii) In case of consistent system only unique solution is considered by students	Always put back the value of constant in the III equations and eliminate those values of constant which do not satisfy the equations. For example $$\frac{k}{12} = \frac{3}{k} \quad\ldots\ldots\ldots\ldots \text{ (i)}$$ $$\text{and } \frac{3}{k} = \frac{k-3}{k} \quad\ldots\ldots\ldots \text{ (ii)}$$ $$\text{and } \frac{k}{12} = \frac{k-3}{k} \quad\ldots\ldots\ldots \text{ (iii)}$$ The value of k =0 does not satisfy (i) and (ii) and -6 does not satisfy equation (ii) and only 6 satisfies all the three equations hence the answer is k=6. (ii) Always write the interpretation of k≠6 as system of equations has unique solution for all values of k except 6.
Questions based on elimination and substitution method	(i) In elimination method while subtracting the II equation from the I equation not changing the signs . (ii) Not writing final answers	Always change the signs of the II equation. It is always better to verify the answer by substituting the values of variables in the system of equations
Questions based on Cross Multiplication Method	Error in applying the formula.	Remember for the system of equations of the form $a_1 x + b_1 y + c_1 = 0$ $a_2 x + b_2 y + c_2 = 0$ Solution is given by $$\frac{x}{\begin{matrix} b_1 & c_1 \\ b_2 & c_2 \end{matrix}} =$$

$$\frac{y}{\begin{vmatrix} c_1 & a_1 \\ c_2 & a_2 \end{vmatrix}} = \frac{1}{\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix}}$$

While for

$$a_1x + b_1y = c_1$$

$$a_2x + b_2y = c_2$$

Solution is

$$\frac{x}{\begin{vmatrix} b_1 & c_1 \\ b_2 & c_2 \end{vmatrix}} =$$

$$\frac{y}{\begin{vmatrix} c_1 & a_1 \\ c_2 & a_2 \end{vmatrix}} = \frac{-1}{\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix}}$$

To avoid confusion it is better to adopt one of the formula and always convert the system of equations to that form

Reducible Equations	**(i)** Often students write answer in terms of substituted variables	In the questions based on equations reducible to linear form like $\dfrac{2}{\sqrt{x}} + \dfrac{3}{\sqrt{y}} = 2$ - (1) $\dfrac{4}{\sqrt{x}} - \dfrac{9}{\sqrt{y}} = -1$ - (2) Let $\dfrac{1}{\sqrt{x}} = A$ and $\dfrac{1}{\sqrt{y}} = B$ Solving 2A+3B =2 And 4A -9B = -1 Gives A= ½ and B = 1/3 but Solutions will be complete when the value of variables x and y is calculated. Keep this point in mind
Word Problems	Students often Misinterpret the problem and are unable to form the equation.	Practice a lot of situation based problems and formation of equations generally the quantities to be determined are taken

TOPPER

Log on to www.topperlearning.com: Get Instant Access to Sure-Shot Sample Papers, Exam Special Series, Video Lessons, Online Tests, Tips 'n' Tricks & MORE!

		as unknowns x and y
		(i) If age of Ram and his father is asked take the ages as x and y and then apply the condition (ii) In case of a two digit number take units place and tens place digit as x and y the number will be 10y+x and then apply the conditions of problem . Also, keep in mind that when the digits of this two-digit number are reversed, then the new number becomes 10x+y and not x+10y (iii) In questions that involve the movement of a boat upstream and downstream, remember that the speed in the 2 cases is: Upstream = Speed of boat – speed of river Downstream = Speed of boat + speed of river.
Chapter: Polynomials		
Questions based on Zeroes of a polynomial	• Error in interpretation students interpret that number 0is a zero of every	• Zero of the polynomial is the real number at which polynomial becomes zero it may or may not be

	polynomial. • Graph of polynomial intersects the axes at the zero	number 0. For example x+1 vanishes at x =-1 and not at 0 • Graph of the polynomial P(X) intersects or touch x axis at its zeroes and not y axis
Chapter: Quadratic Equations		
Questions based on Quadratic formula	Error in the use of radicals	While applying the quadratic formula be careful in applying the rules of radicals for example $\sqrt{a^2 + b^2} \neq a + b$ $\sqrt{-k} \neq -\sqrt{k}$
Questions based on completing the square	Not able to identify the term to be added and subtracted.	Before completing the square of any quadratic equation make sure to make the coefficient of square term x^2 or y^2 unity by dividing the whole equation appropriate real number. Once this is done add and subtract the square of half the coefficient of x or y.