Common mistakes & How to avoid
X-Math

Chapter: Statistics & Probability

Types of Question	Common Mistakes	Points to be emphasised
Questions based on calculation of Mean	- Error in formula - Forgot to write formula - Calculation mistakes in finding f_ix_i & sum of f_ix_i - Not using the specified method	- Remember and write the correct formula while answering the questions on arithmetic mean. - Use the method specified in the question or otherwise choose the appropriate method by carefully observing the figures given. - If the values are large and all d_i's have a common factor, use step deviation method. - Calculate upto two decimal places
	- Calculation mistake while finding the missing frequencies - Add the value of 'p' along with the data e.g. 250+10p = 260p - Multiply f while finding the sum of frequency(fi) & fixi	- Remember that only like terms can be combined. - While finding the sum you should add the unknown frequency with known frequency. - Calculate upto two decimal places
Question based on mode	- Forget to write the formula - Error in writing the formula - Substituting wrong values of f_0, f_1, f_2	Remember the correct formula - For grouped frequency distribution $$\text{Mode} = \ell + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) \times h$$ f_0: frequency of the class preceding the modal class f_1: frequency of modal class f_2: frequency of class succeeding the modal class ℓ: Lower limit of modal class h: class size Now remember that f1 is the frequency of the modal class 0 comes before 1 so fo is the frequency of previous class and 2 comes after 1

		so the frequency of next class
Questions based on Median	▪ Forget to write the formula ▪ Error in identification of median class ▪ Substitute the cumulative frequency of median class in place of cumulative frequency of preceding class. Substitute incorrect frequency in place of frequency of median class ▪ Error in converting less than and more than data types to standard frequency tables	▪ Identifying the median class is of prime importance to these questions as the whole formula depends on that. ▪ Convert less than and more than type distribution carefully ▪ Remember the formula and the terminologies correctly For grouped data Now find median class by locating the class whose cumulative frequency is greater than (and nearest to) $\dfrac{n}{2}$ $$\text{Median} = \ell + \left(\dfrac{\dfrac{n}{2} - cf}{f}\right) \times h$$ cf: cumulative frequency of class preceding the median class f: frequency of the median class ℓ: lower limit of median class h: class size
Questions based on representing the cumulative frequency distribution graphically	Error in representation of curve ▪ Join the points of the curve with ruler (scale) ▪ Forget to write the quantities represented on the horizontal & vertical axis. ▪ Error while plotting the respective points.	▪ Join all the points of the curve with free hand (smooth curve). ▪ Mark the upper limit/ lower limit of the class interval on the horizontal (x axis) & their corresponding cumulative frequencies on the vertical axis (y axis) ▪ Plot the lower/upper limit with their corresponding frequencies ▪ Quick points to determine whether the curve is less than ogive or more than ogive || Less than ogive	More than ogive | |---|---| | 1. Upper limit represented on x axis 2. Rising curve 3. Values of | 1. Lower limit represented on y axis 2. Fall in curve 3. Values of |

Less than ogive	More than ogive
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		cumulative frequency would decrease with increasing values of upper limit	cumulative frequency would increase with increasing values of lower limit.
		▪ The median of grouped data is the x coordinate of the point of intersection of less than & more than ogive ▪ Practise questions	
	▪ Forget to compute the cumulative frequency ▪ Calculation mistake	▪ The first step is to compute the cumulative frequency then only you can comment on nature of curve. ▪ Double check after finding the corresponding cumulative frequency. ▪ Practise questions	

Questions based finding the Probability	▪ Don't write the total outcomes of the event ▪ Forget to write the formula ▪ Error while counting of outcomes in case of cards e.g. in case of cards numbered from 15 to 30, they count it as 15 instead of 16	▪ write total outcomes, favourable outcomes, the formula and then calculate the probability ▪ For card questions remember the card type split up.

Deck of cards (52)			
Heart (13)	**Spade (13)**	**Diamond (13)**	**Club (13)**
Ace-1	**A**ce-1	**A**ce-1	**A**ce-1
King-1	**K**ing-1	**K**ing-1	**K**ing-1
Queen-1	**Q**ueen-1	**Q**ueen-1	**Q**ueen-1
Jack-1	**J**ack-1	**J**ack-1	**J**ack-1
(2-10) Number cards -9	(2-10) Number cards -9	(2-10) Number cards -9	(2-10) Number cards -9

➢ Heart & Diamond are red coloured cards while spade & club are black coloured cards
➢ King, Queen & Joker are face cards