1 Representation of Data

# classes = 10

Objectives:

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| Understand the data-intensive nature of the current world and the need to interpret and use this data |
| Review the basic steps of data collection, representation and interpretation |
| Identify the difference between quantitative and qualitative data |
| Learn to construct stem-and leaf diagrams, histograms and cumulative frequency diagrams |
| Learn to interpret and compare sets of data using diagrams |

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| Content | Teacher's Activity | Student's Activity | Assignments |
| 1.1 Introduction | * + Explain the steady increase in data collection and storage since the advent of computers   + Visit a few real-life examples of data representation and interpretation (ref: Freakonomics, Ted Talk by Hans Rosling)   + Briefly present the rising trend in Analytics startups - abroad as well as at home | * + Understand the role of statistics in today's data intensive world   + Identify the stages of data collection, representation (descriptive statistics) and interpretation (inferential statistics) and the importance of each | * + Read and present chapter of interest from Freakonomics/other sources to highlight the importance of any stage of statistics |
| 1.1 Introduction | * + Define the terms statistics, data and variable and explain the concepts through examples   + Analyse the textbook example to help define qualitative and quantitative variables   + Explain the subcategories of quantitative data: continuous and discrete variables | * + Explain and identify the various types of variables | * + Textbook example - classify all variables |
| 1.2 Stem and leaf diagrams | * + Define raw data and explain the need to organise this data in a meaningful manner   + Explain the stem and leaf diagram as one method of representation, using examples   + Show how the stem and leaf diagram can be used to analyse raw data and answer questions | * + Organise raw data using a stem and leaf diagram   + Analyse the diagram and answer related questions   + Understand the usecases where the stem and leaf diagrams are useful | * + Ex 1A |
| 1.3 Histograms | * + Review frequency, tally marks, classes and grouped frequency distribution tables   + Explain the creation of a frequency distribution table using the textbook example   + Point out loss of data and multiple ways of defining classes in creating these tables   + Show how tabular data can be represented using a histogram | * + Organise raw data through a frequency distribution table   + Represent data graphically using a histogram   + Analyse represented data and answer questions   + Understand the usecases where the frequency distr table and histogram are useful | * + Textbook examples   + Ex 1B |
| 1.4 Cumulative Frequency Graphs | * + Explain the use of a cumulative frequency graph as an alternate way of representing continuous data   + Explain how to plot a graph using data from the textbook example   + Point out the kinds of information one can read off the graph | * + Understand the usecases where a cumulative frequency graph is relevant   + Plot graphs given continuous data | * + Ex 1C |
| End of chapter exercises | * + Guide the students through challenging problems | * + Complete exercise problems   + Clear doubts | * + Misc ex 1 |
| Test |  |  |  |