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
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| 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

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| 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
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| 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
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| 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
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| End of chapter exercises | * + Guide the students through challenging problems
 | * + Complete exercise problems
	+ Clear doubts
 | * + Misc ex 1
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| Test |   |   |   |