Lesson Notes 7-2 **Measures of Central Tendency**

Four common ways of measuring the average of a set of data:

1. Mode – the data point that occurs most often
   a. If no two outcomes occur most often, then there is no unique mode and the data is described as non modal.
   b. If more than two outcomes occur most often, then the data is called bimodal.
2. Median – when the points are listed from smallest to largest it is the middle number
   a. If there is an even number of outcomes, then the average of the middle two outcomes is considered the median.
3. Mean – add up all the numbers and divide by how many numbers we have.
4. Range – highest minus the lowest numbers

Example: Find the mean, median, mode, and range of the following data.

a) ~~22.7~~, ~~20.0~~, ~~22.7~~, ~~23.7~~, ~~23.8~~, ~~20.6~~, ~~22.1~~, ~~21.2~~, ~~19.4~~, ~~20.7~~

19.4, 20.0, 20.6, 20.7, 21.2, 22.1, 22.7, 22.7, 23.7, 23.8

mode: 22.7

range: $23.8 - 19.4 = 4.4$

mean: $\frac{19.4 + 20 + \ldots + 23.7 + 23.8}{10} = 21.69$

median: $\frac{21.2 + 22.1}{2} = 21.65$

b)

Passengers	0-4	5-9	10-14	15-19	20-24	25-29
Frequency	9	9	13	8	10	1

2 7 12 17 22 27

$9 + 9 + 13 + 8 + 10 + 1 = 50$

mode: 10-14

range: $29 - 0 = 29$

median: 25th number

$9 + 9 + 13 = 31$

10-14

mean: $\frac{(9)(2) + (9)(7) + (13)(12) + (8)(17) + (10)(22) + (1)(27)}{50}$

$\frac{18 + 63 + 156 + 136 + 220 + 27}{50}$

$= 12.4$