AMS 102, Section 3 **January 25, 2002**

Lecture 2 Summary (Chapter 2)

(C) Frequency Distributions

Steps:

1. Find the minimum and the maximum values in the data set.
2. Class intervals: intervals or cells of equal length that cover the range between the minimum and the maximum without overlapping
3. Frequencies: number of observations in the data that belong to each class interval $(f_1,\ f_2, \cdots)$
4. Relative frequency: Class frequency / Total number of observations $(f_1/n,\ f_2/n, \cdots)$

Example 3 Humidity readings (rounded to the nearest %):

29	44	12	53	21	34	39	25	48	23
17	24	27	32	34	15	42	21	28	37

Table 1

Class interval	Frequency	Relative frequency
$10-19$	3	$3/20 = .15$
$20-29$	8	$8/20 = .40$
$30-39$	5	$5/20 = .25$
$40-49$	3	$3/20 = .15$
$50-59$	1	$1/20 = .05$
Total	20	1.00

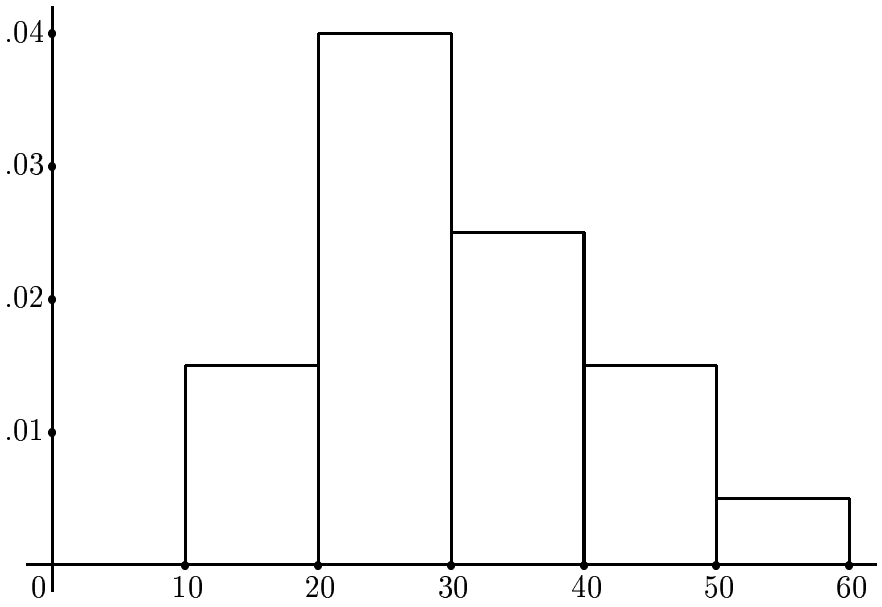
(D) Histogram: a pictorial representation of a frequency distribution

The total area of a histogram is 1.

Refer to Table 1.

$$\text{height} = \frac{\text{relative frequency}}{\text{width of the interval}} = \frac{.15}{10} = .015 \text{ for } [10, 20)$$
$$= \frac{.40}{10} = .040 \text{ for } [20, 30)$$
$$= \frac{.25}{10} = .025 \text{ for } [30, 40)$$
$$= \frac{.15}{10} = .015 \text{ for } [40, 50)$$
$$= \frac{.05}{10} = .005 \text{ for } [50, 60)$$

Histogram:



Quantitative (Categorical) data

Example 4 Frequency distribution of histogram for enrollment

Table 2

Grade	Frequency	Relative frequency
Freshmen	33	.33
Sophomore	28	.28
Junior	21	.21
Senior	17	.17
Total	99	.99

Possible round-off error

- **Pareto diagram**: a graph displaying events according to their frequency