Panel 1

Last time:

- Mean, Median, Mode incl. Frequency Distr / Histograms
- Shapes of Distributions
- Who is better, mean, median, or mode?

1

Panel 2

Table:

	count	cum. count	rel. %	cum. %
1	3	3	0.15	0.15
2	4	8	0.2	0.35
3	8	24	0.4	0.75
4	5	20	0.25	1.0
	20	55	1.0	

Mean: 55/20

Mode: cat 3

Median: cat 3

Data: Chessboard (1) light (2) normal (3) low

1, 3, 2, 3, 3, 1, 1, 2, 2, 3, 1, 3, 2 Mean: 25/13 = 2

1 1 1 2 2 2 2 2 3 3 3 3

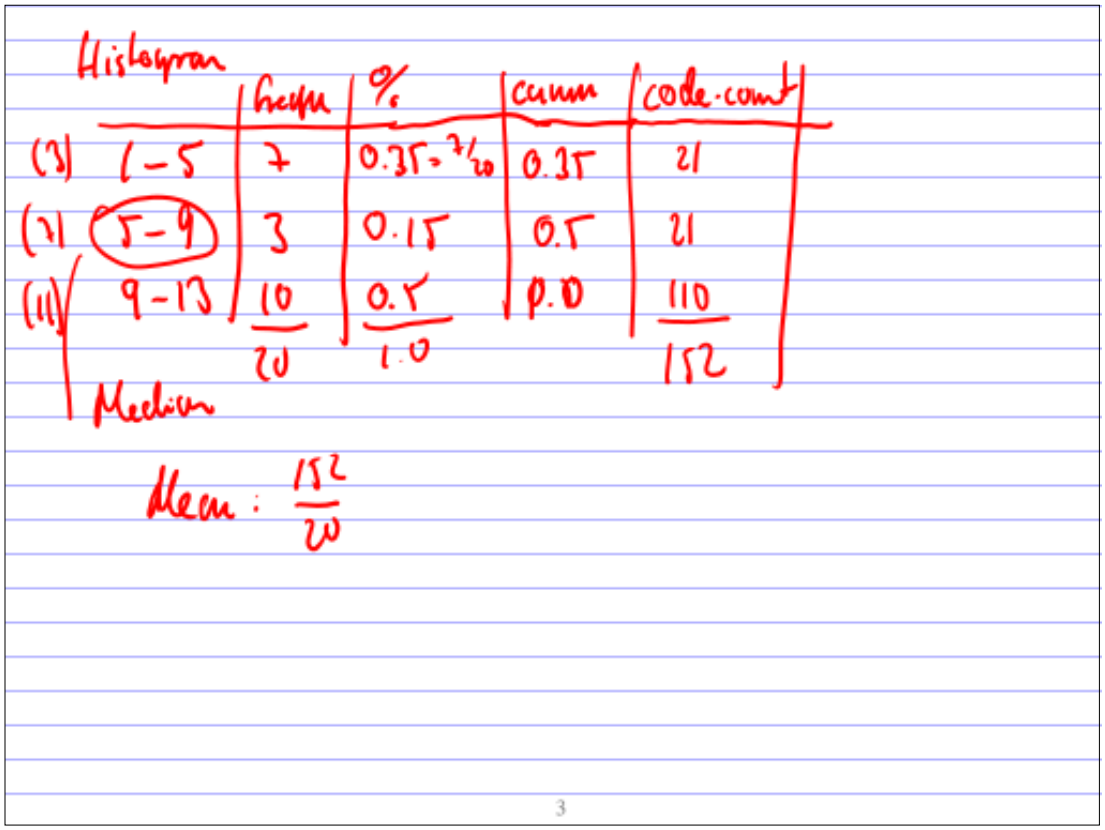
Median 2

Mode 2

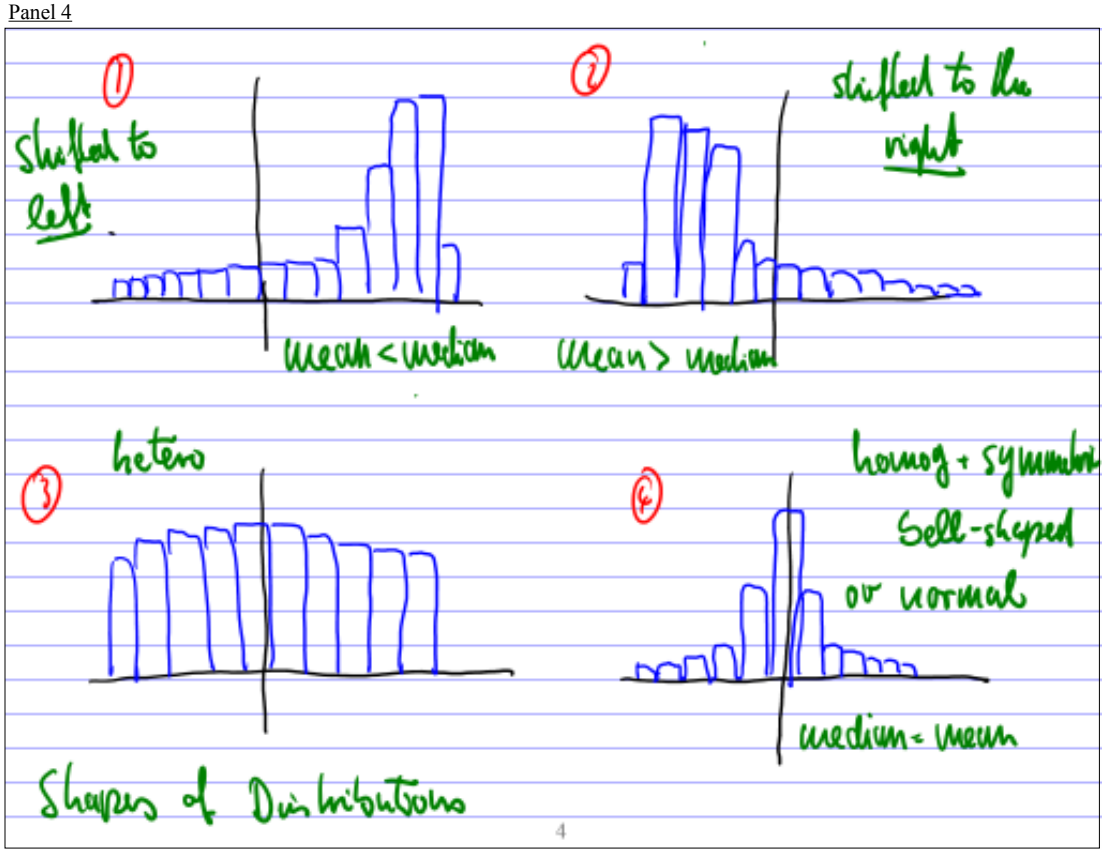
	count
1	4
2	5
3	4

2

Panel 3



Panel 4



Panel 5

Measures of Variability (Dispersion)

Ex: Need to purchase a machine to make 10 inch rods

A: 8, 9, 10, 11, 12 inches → $\bar{x} = 10$

B: 2, 3, 10, 17, 18 inches → $\bar{x} = 10$

Machine A is "better" because rods have less variability

① Range: largest - smallest:

A-range: 12 - 8 = 4 blue: 16

B-range: 18 - 2 = 16

5

Panel 6

Variance: average distance of all data to the mean.

$$\text{variance} = \frac{1}{n-1}\sum (x_i - \bar{x})^2$$

2 symbols: s^2 = sample variance

σ^2 = pop. variance

σ = sigma

Ex:

x	$x_i - \bar{x}$	$(x_i - \bar{x})^2$
2	-8	64
9	-1	1
10	0	0
11	1	1
18	8	64
		130

$\bar{x} = 10$

$s^2 = \frac{1}{5-1} \cdot 130 = \frac{130}{4} = 32.5$

machine A

6

Panel 7

Machine B:

x	$x_i - \bar{x}$	$(x_i - \bar{x})^2$
2	-8	64
3	-7	49
10	0	0
17	7	49
18	8	64
50	0	226

Σ

$\bar{x} = 50/5 = 10$

$s^2 = \frac{1}{4} 226 = 56.5$

Machine A has less variability