

1. Statistic or parameter?

- A sample of Canada geese who mate is observed and the average number of offspring is 3.8. *statistic*
- In a study of all cloned sheep it is found that their average age is 2.7 years. *parameter*

2. Discrete or continuous?

- Length of broad-billed hummingbirds. *continuous*
- Number of manatees killed by boats each year. *discrete*

3. Which interval of measurement? Nominal, ordinal, interval, or ratio?

- Ratings of excellent, good, average, or poor for the racing ability of thoroughbred horses. *ordinal*
- Systolic blood pressure. *ratio*
- Years in which snowfall was below 20 inches. *interval*

4. What kind of sampling? (random, systematic, convenience, stratified, cluster)

- A dietitian has partitioned people into age categories of under 18, 18-49, 50-69, and over 69. She is surveying 200 in each category. *stratified*
- A farmer has 5267 orange trees. She randomly selects 20 trees, then picks all of the oranges on those trees and measures the sugar content in each orange. *cluster*

5. The weights (in kg) of a sample of orangutans are: 75.3, 75.6, 77.8, 81.3, 82.5, 82.6, 84.3, 85.0, 85.4, 87.5, 88.0, 88.3, 89.5, 90.1, 90.6, 92.3.

(a) Make a frequency distribution table (~~percent~~<sup>OK</sup>) using 6 classes (as shown in class).

range =  $92.3 - 75.3 = 17$ , class width =  $\frac{\text{range}}{6} = \frac{17}{6} \approx \frac{18}{6} = 3$

Class	freq
75-78	3
78-81	0
81-84	3
84-87	3
87-90	4
90-93	3

$\bar{x} = 84.7562 \approx 84.76$  kg

(b) What is the sample mean weight (Calculator OK, give units)? *84.76 kg*

(c) What is the sample variance (Calculator OK, give units)?  $S^2 = 27.783$  kg<sup>2</sup>

6. Heights of men have a bell-shaped distribution with a mean of 176 cm and standard deviation 7 cm. Think about the empirical rule...

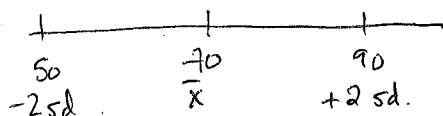
(a) Out of 1000 men, about how many would you expect to be between 162 cm and 190 cm?

95% of 1000 ~~or~~  $(.95)1000 = 950$  men

(b) Out of 1000 men, about how many would you expect to be above 190 cm?

2.5% of 1000 ~~or~~  $(.025)1000 = 25$  men

7. The teacher says that average on a test is 70 and the standard deviation is 10, furthermore more than 30% of the class got "A's" by scoring 91 or higher. Is there a math problem here? Explain.



$\Rightarrow$  by Chebyshev's theorem at least 75% of scores are  $\geq 50$  and  $\leq 90$ . So less than 25% of scores are outside that range!

(1)

(1)

(1.5)

(1)

(2)

(2)

(2)

(1.5)

(1.5)

(1.5)