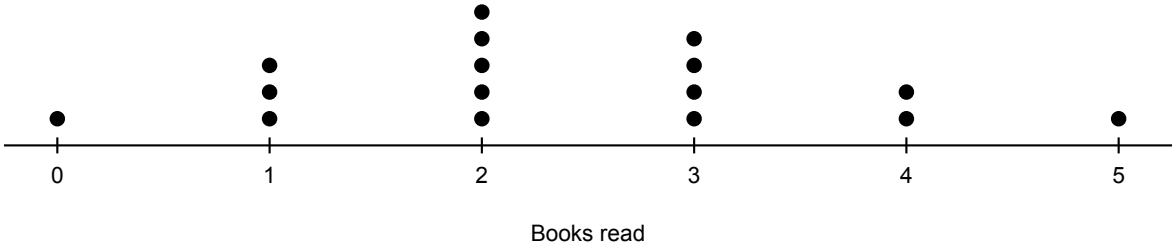
Name: _____ Date: _____

Use the repeated values

The plot records books read last month by a group of students. Each dot represents one student.



(a) How many students are represented? How many read exactly 2 books?

(b) Find the mean and median number of books. Round the mean to three decimal places.

(c) What fraction of these students read at least 2 books? Give a decimal rounded to four places and a percent rounded to two places.

(d) Describe the clusters or gaps. Can you read the exact number of students at each value from this plot?

One unusually long wait

A sample of five waiting times, in minutes: 2, 4, 6, 8, 10.

(a) Find the mean and median. State the units.

(b) Find the mode and range.

(c) Find the sample standard deviation, rounded to three decimal places. Explain which calculator output applies.

(d) Replace 10 minutes with 30 minutes. Recalculate the mean and median. Which measure changes less, and why?

Waiting time set 2

Waiting times have been grouped into equal width classes. Each lower boundary is included; each upper boundary is excluded.

Time (minutes)	Frequency	Relative frequency
20 <= x < 30	15	
30 <= x < 40	8	
40 <= x < 50	4	
50 <= x < 60	2	
60 <= x < 70	1	

(a) Complete the relative frequency column as decimals rounded to four places. State the exact and rounded totals.

(b) Draw a frequency histogram with touching bars. Label both axes.



(c) Describe the shape. Which class contains a waiting time of 40 minutes?

(d) Estimate the mean with class midpoints. Can you recover the exact raw mean or exact median from this table alone?

A zero in the table

Participants attended a workshop at one of four centers. Use the same table for every part. Select one participant at random from the group named in each prompt.

Center	Completed	Did not complete	Total
North	8	0	8
South	3	7	10
East	4	6	10
West	5	7	12
Total	20	20	40

(a) A participant is chosen from ALL 40 participants. What is the probability that the participant is from North AND completed the workshop? Round to four decimal places.

(b) A participant is chosen ONLY from North. What is the probability that the participant completed the workshop? Round to four decimal places.

(c) A participant is chosen ONLY from those who completed. What is the probability that the participant is from North? Round to four decimal places.

(d) A participant is chosen from ALL 40 participants. What is the probability that the participant is from North OR completed, or both? Round to four decimal places.

Across class sections

A college has 900 introductory statistics students in 30 class sections of 30 students each. Researchers randomly select 3 students from EVERY section and record each selected student's usual study method and next quiz score. Researchers do not assign study methods. Some invited students do not respond.

(a) Classify the study and identify the population, intended sample size, explanatory variable and response.

(b) Is the sampling method stratified, cluster, or a simple random sample of all students? Explain.

(c) What bias could nonresponse create? Can the results prove that a method caused higher scores?