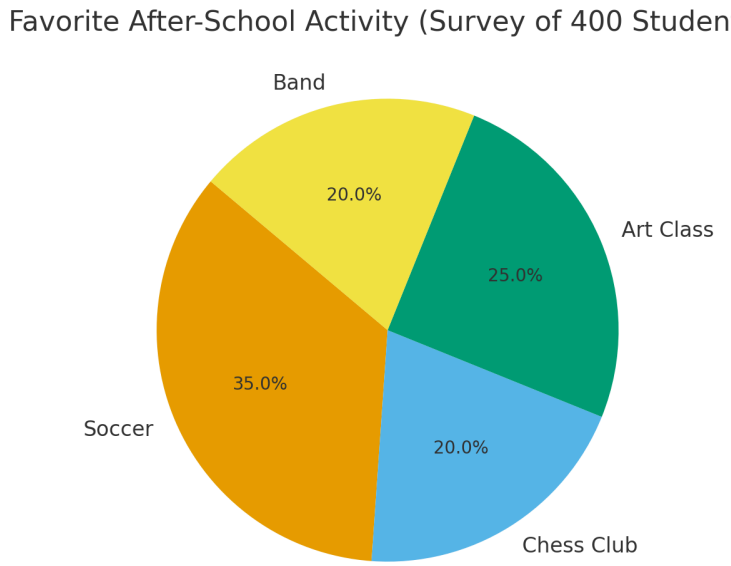
TEST PREP 1

1) A school surveyed 400 students about their favorite after-school activity and created the pie chart below.



How many students voted for **Art Class**?

2) In a cycling performance study, participants were tracked by their cyclist numbers, training categories, average speed (mph), and total race completion times (minutes). The table below shows their category, average speeds, and completion times for a 50-mile cycling race

Cyclist Number	Training Category	Avg Speed (mph)	Completion Time (minutes)
101	Beginner	15	200
102	Intermediate	17	176
103	Beginner	14	214
104	Advanced	20	150
105	Intermediate	16	188

106	Beginner	15	200
107	Advanced	21	143

a) Is the variable "Completion Time" qualitative/categorical or quantitative?

b) Is the variable "Training Category" qualitative/categorical or quantitative?

c) Is the variable "Cyclist Number" qualitative/categorical or quantitative?

d) What is the mode for the variable "Avg Speed (mph)"?

e) What is the class frequency for the Training Category of "Beginner"?

f) What is the range for the variable "Completion Time"?

3) Write the statistical symbol that matches

Sample standard deviation:

Population standard deviation:

Sample variance:

Population variance:

Sample mean:

Population mean:

4a) The mean monthly salary of 100 employees at a company is $5,500, while the median monthly salary is $4,800.

skewed to the right skewed to the left symmetrical

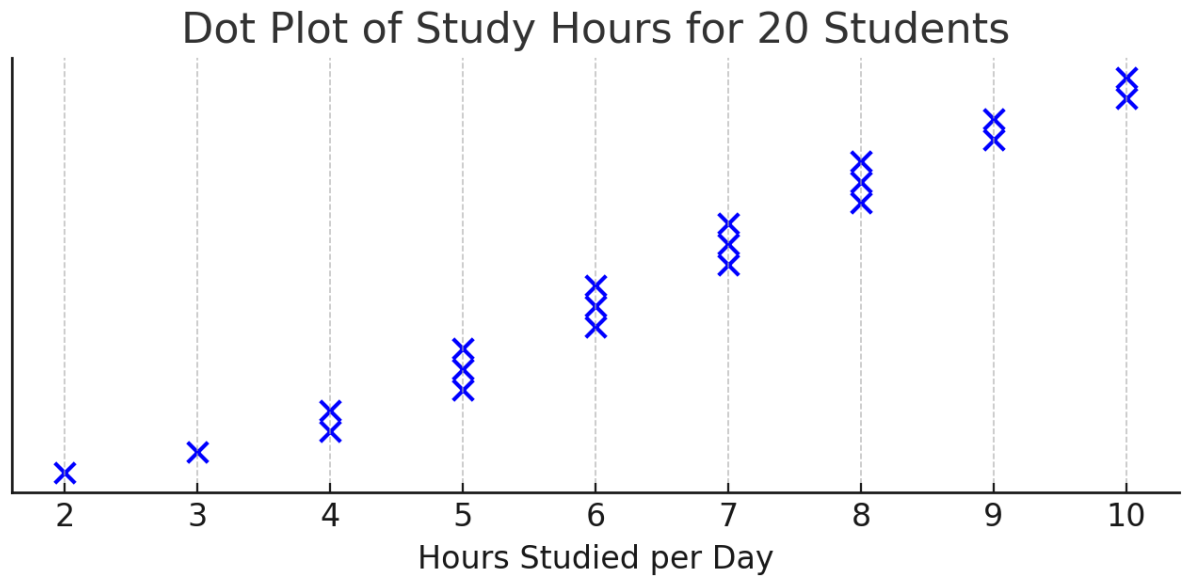
b)At a mid-sized tech firm, the median monthly bonus of 150 employees is $2,000, while the average monthly bonus is $1,500.

skewed to the right skewed to the left symmetrical

5) Answer whether the situation described refers to a population or a sample study.

a) A tech company wants to know how many of its employees use social media daily. It surveys all of its employees.
b) A local news station wants to know the public's opinion on a proposed city tax increase. They conduct a poll by calling 200 registered voters from a list of all voters in the city.

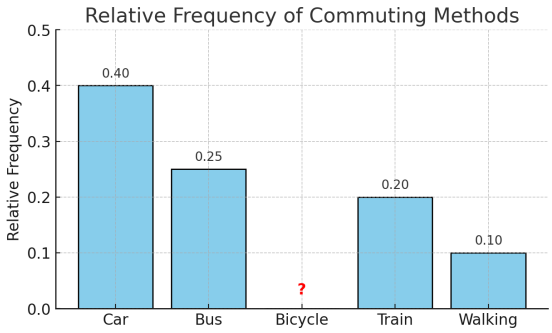
6) The dot plot below shows the number of hours 20 students spent **studying per day during exam week**. Use the graph to answer the following questions.



a) Report the mode(s) of study hours per day for this dataset.

b) Students who study at least 6 hours per day qualify for an honors recognition program. Calculate the relative frequency of these participants.

7) Look at the graph below, what is the **missing relative frequency** for the category of commuting **"Bicycle"**?



8) A researcher measured the heights (in centimeters) of 6 different pea plants after one week of growth. The recorded heights were: 3.5, 4.2, 3.8, 4.5, 3.9, 4.1. Compute the mean height of the pea plants.

9) Find the mean for the data represented in the frequency table below.

Number of Books	Frequency
0	4
1	6
2	8
3	7
4	3
5	2

10) Here is a TI-screen shot of a data set. Please note that the output is split into two screen captures.

1-Var Stats

```
Σx = 440
Σx^2 = 11422

n     = 18
x̄     = 24.444444
Sx    = 6.261199
σx    = 6.084792

STAT -> CALC -> 1-Var Stats
```

1-Var Stats (cont.)

```
minX = 12
Q1   = 21
Med  = 24
Q3   = 29
maxX = 36

Split into two screen captures to mimic TI-84 display
```

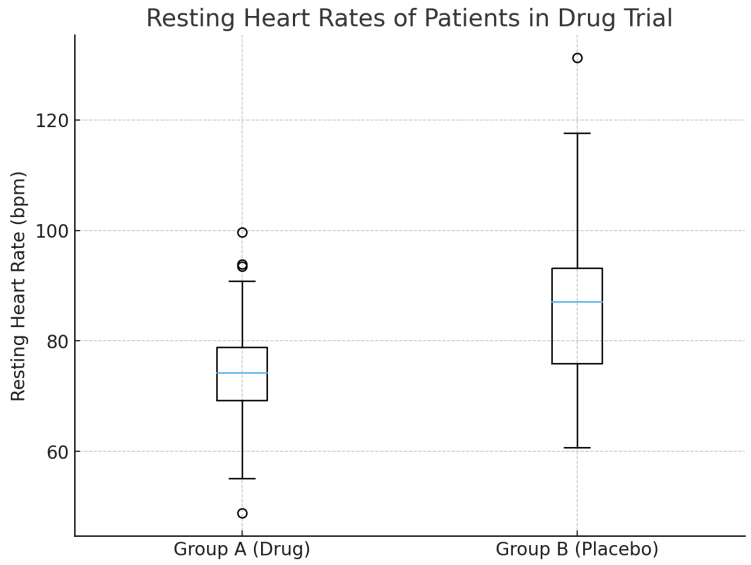
a) Determine the following values from the calculator output shown above.
Sample standard deviation:

Size of the sample:

Median of the sample:

b) Use the appropriate formulas to find the lower and upper fences using the TI-screen shot above. Show the calculations performed.

11) During a trial for a new drug, a pharmaceutical company separated patients into two groups. Group A received the drug to be tested, while Group B received a placebo pill. During the test, the company recorded each patient's resting heart rate, measured in beats per minute. Use the boxplot shown above to answer the following questions.



a) Which group has the most variability in its **top 50%**?

b) If there were **120 people in Group B**, how many students in Group A had a heart rate higher than 60?

c) What is the **five-number summary** for Group A (give your best estimate)?

Minimum:
Q1:
Q2 (median):
Q3:
Maximum:

12) The following values were taken from a dataset with a sample size of 8.

- $\Sigma x=64$
- $\Sigma x2=544$

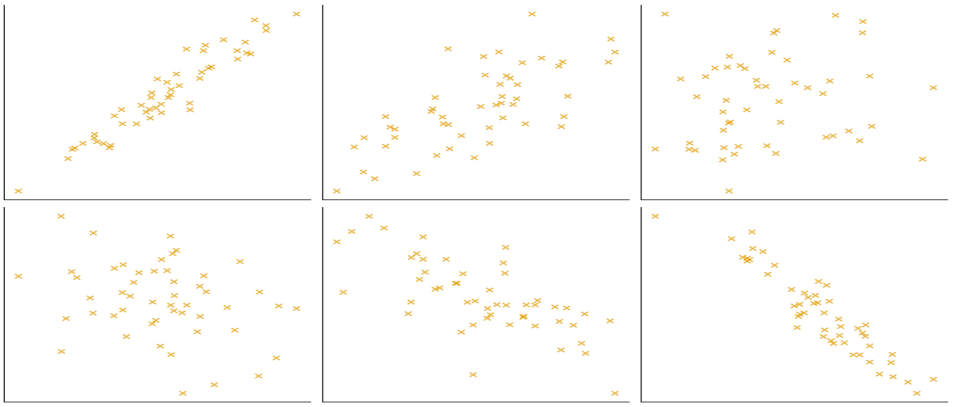
Use the appropriate formula to find the sample variance and the sample standard deviation. Show the calculations.

13) The least squares line for a student's final exam grade, y, given the number of hours they studied, x, is given by the equation:
y=52.8+5.5x

Using the least squares line, what is the predicted final exam grade for a student who studied for 8 hours?

Using the least squares line, what would be the number of hours a student studied if their predicted final exam grade was 91?

14) A list of correlation coefficient values, r, is given below. Match each scatterplot with the value of r that describes the graph best by writing the correct letter in the blank. Each paragraph is drawn on the same scale to help you with your comparisons.
r=0.95r
r=0.70r
r=0.20r
r=−0.30r
r=−0.75r
r=−0.95r



15) Consider the following data set. Using your technology, find the least squares line for the data.

6) Consider the following dataset. Using your technology, find the least squares line for the data.(second decimal point)

x	1	2	3	4	5	6	7	8	9	10
y	11.4	13.1	15.2	19.3	20.7	23.6	25	28.1	30.3	32.5

$\hat{y}$=

Using technology with the data set provided, report both the coefficients of correlation and determination. (third decimal point)

a) the coefficient of correlation is r=

b) the coefficient of determination is r2=