

How are your favorite classes related?



Is your favorite elective class associated with your favorite core class? Survey 20 individuals with the following two questions. Collect data to see if there is a relationship.

1. Ask each **individual** the following question: Which of the following is your favorite elective class? They must choose only one. Make tally marks in the boxes below. Be sure to include your answer, too!

Art	Music	Physical Education	Foreign Language	Technology

2. Then ask each individual their favorite Core Class: Math or English. Record the data in this two-way table in question 7.
3. Identify the individuals and variable in question 1?
4. Is the variable categorical (categories) or quantitative (measurable)?
5. Go to stapplet.com, select "1 Categorical Variable, Single Group", enter the data. Click Begin Analysis. Sketch Bar Graph Below:

Name: _____ Hour: _____ Date: _____

6. Change Plot Type to Pie Chart. Sketch Pie Chart Below:

7. Sometimes it is helpful to investigate more than one variable.

Find each of the following:

		Core Class		
		Math	English	
Elective	Art			% of all individuals who chose P.E.:
	Music			% of all individuals who chose Math and chose Art:
	P.E.			
	Foreign Lang.			% of the individuals who prefer math that chose Tech.
	Tech.			

8. How many variables does the table have? Are the variables categorical or quantitative?

9. Which variable would best explain or predict the other variable?

10. Go to stapplet.com, 2 categorical variables and enter the data. Make a segmented bar graph and a side-by-side bar graph. Sketch them below.

Name: _____ Hour: _____ Date: _____

11. How do the bars in the side-by-side-bar graph relate to the bars in the segmented bar graph?

12. Is there an association between favorite core subject and favorite elective? If so, describe it.

13. If there was not an association between favorite core subject and favorite elective, what would the graphs look like? Explain.

Name: _____ Hour: _____ Date: _____

How many pairs of shoes do you own?



1. How many pairs of shoes do you own?

2. Survey 20 individuals. Ask them how many pairs for shoes they own. Record the data below:

2. Is “Number of pairs of shoes” a categorical or quantitative variable?

3. Enter the data at www.stapplet.com. Select One Quantitative Variable, Single Group. Input data separated by comas. Click Begin Analysis. Make a dotplot, stemplot, and histogram and sketch each below.

Name: _____ Hour: _____ Date: _____

4. List the mean and median of the distribution. Which value do you think is a more appropriate measure of center? Explain.

5. Describe the distribution of the number of pairs of shoes for your class.

Look up the following and provide a definition for each:

Skewed left distribution

Skewed right distribution

Symmetric distribution

Uniform distribution

a) What **shape** is the distribution of pairs of shoes? Use one of the vocab words above.

b) **Outliers** – data values that deviate away from the rest of the data:

Are there any visual outliers?

c) **Center**: (mean or median)

d) **Variability** (spread):

6. Which of the three types of display do you prefer? Why?

Name: _____ Hour: _____ Date: _____

How many colleges are you applying to?



Survey 3 Seniors. Ask how many different colleges they are applying to? Find the total number of colleges for you and the three other seniors (combined) surveyed.

1. Here are data for 9 other groups of 4. Include your total number of colleges

10, 8, 20, 15, 14, 12, 16, 18, 20, _____

2. Calculate the mean and median for the set of data. Compare them.

3. What is the range of the data?

Finding Standard Deviation

4. Finding range is helpful but it does not tell us how spread out the data is between the minimum and maximum. How can we find the **average distance of the values from the mean?**

a. Complete the table.

b. The average you calculated is the average of the **squared distances** from the mean. How do we use this to find the **average distance from the mean?** Find it.

Value	Distance from mean	(Distance from mean) ²
10		
8		
20		
15		
14		
12		
16		
18		
20		

Total:		
Average (Distance from mean) ² :		

Name: _____ Hour: _____ Date: _____

5. Go to stapplet.com. Enter the classroom data and find the summary statistics. How does it compare?

Mean: _____

Med: _____

SD: _____

6. We forgot to add one group that applied to 40 colleges! Add this group to the data set. Calculate the new mean, median and standard deviation **using the applet**. How does it compare to the original measures? Why do you think this is?

Name: _____ Hour: _____ Date: _____



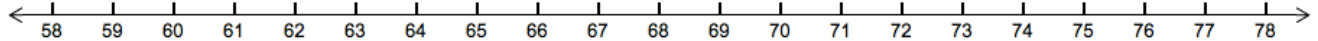
Where Do I Stand?



How does my height compare with the other AP Stats students in my class? In order to answer this question, Ms. Ennis, recorded the heights of everyone in her class. The heights (in inches) were:

68 72 61 62 63 63 64 64 59 62 61 60 65 62 57 77 62 71 65 62 70

1. Create a dotplot to display the class distribution of heights.



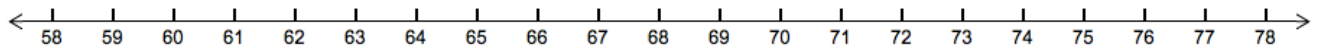
2. What is the median height? Describe how you found it.

3. Q_1 is the median of the first half of data and Q_3 is the median of the 2nd half of data. Find Q_1 and Q_3

Q_1 : _____ Q_3 : _____

4. Record the following values and then use them to make a boxplot. Draw small vertical lines at each of the 5 values. Create a box from Q_1 to Q_3 . Draw a horizontal line from the middle of vertical line at min to the middle of vertical line at Q_1 . Draw another horizontal line from the middle of vertical line at Q_3 to the middle of vertical line at Max.

Minimum: Q_1 : Median: Q_3 : Maximum:



4. The **interquartile range** (or *IQR*) is defined as $Q_3 - Q_1$. Find the *IQR*. Where do you see the *IQR* in the boxplot?

Name: _____ Hour: _____ Date: _____

5. An **outlier** is a data value that is way too small or way too big (using the rules below). Are there any outliers? Show your work.

$$\text{Way too small} < Q_1 - 1.5IQR$$

$$\text{Way too big} > Q_3 + 1.5IQR$$

6. What is your height in inches? How does your height compare with the rest of Ms. Ennis' AP STAT Class?