



# To Be or Not To Be Social



It's tempting, isn't it? Those apps are RIGHT there on your phone...and with the tap of your thumb you can connect with hundreds, even thousands of people. But at what cost? Time you spend on social media is time you're NOT spending working, studying, exercising, etc. As a class we will be examining whether there is an association between time students spend on social media and students' GPA (Grade Point Average). Should you think before you click? Let's see!

What relationship, if any, do you think exists between time spent on social media and GPA?

State your hypothesis below:

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After completing a short survey, you will be placed in one of the following groups to manipulate and analyze the data we generate as a class!

Case 1: Time boys spend on social media vs. their GPA

Case 2: Time girls spend on social media vs. their GPA

Case 3: Time all students spend on social media vs. their GPA

Case 4: # of posts per week on social media vs. Time spent on social media

Case 5: Favorite social media platform: Boys vs. Girls

**Objective:** Students will collect data with a short survey about the number of minutes spent on social media and GPA. Using their data, they will write an equation predicting the GPA from the number of minutes on social media.

**Prior Knowledge:**

- How to determine the equation for and interpret line of best fit
- Meaning of the slope and y-intercept
- Relative frequency
- Segmented bar graph
- How to calculate percentages

**Materials:**

- ✓ Survey papers
- ✓ Group activity paper
- ✓ Poster paper
- ✓ Reflection paper

**Group size:** 4-5 students

**Procedure:**

1. Distribute and complete survey (10 min)
2. Students will put their completed surveys in a basket
3. With the help of two students, teacher records the results in a table on the board for the class to copy.
4. Break the class into at least 5 groups
5. Each group receives a different assignment
6. Students work in groups to investigate assigned relationships
7. Students create a poster/other means of presentation of their findings
8. Whole class writes a reflection about their findings as a class

**Survey:**

I am a (circle one):                      BOY                      GIRL

How much time (on average) do you spend every day on social media? \_\_\_\_\_

My GPA (Grade Point Average) is: \_\_\_\_\_ . \_\_\_\_\_ \_\_\_\_\_

My favorite social media is (circle one): Facebook Instagram Snapchat Twitter Youtube

# Class Data Collection Summary

Student	Gender	# min on social media/day	Favorite social media platform	# posts/week	GPA
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

**Case 1: Boys' time spent on social media versus their GPA**

Group members: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

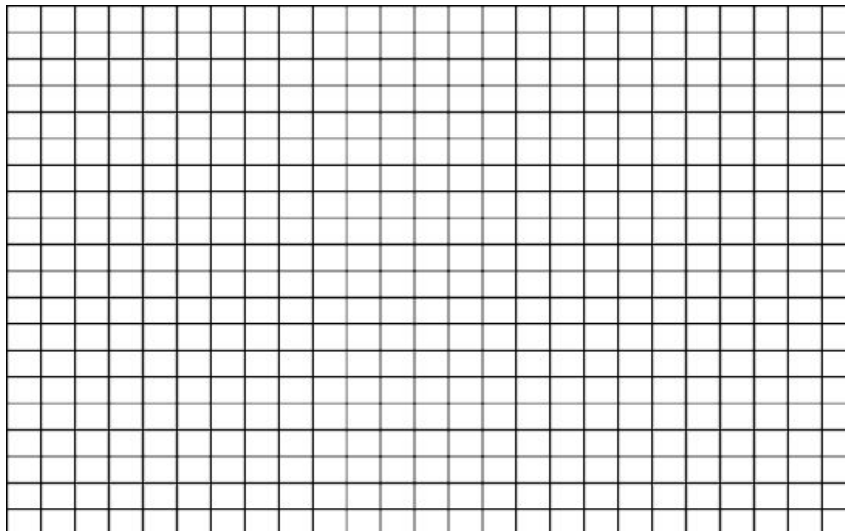
Your group will be analyzing the data and investigating the relationship between the time boys in your class spend on social media and their GPA.

Subjects	Time/day (in minutes)spent on social media (x)	GPA (y)
Boy #1		
Boy #2		
Boy #3		
Boy #4		
Boy #5		
Boy#6		
Boy #7		
Boy #8		
Boy #9		
Boy #10		
Boy #11		
Boy #12		
Boy #13		
Boy #14		
Boy #15		

Sort the data from the class survey results, and organize them in the given table

**Part I: To be completed individually**

1. Create a scatter plot using time on the x-axis and GPA on the y-axis. Please label the axes and decide on an appropriate and uniform scale.



2. Using a straightedge, draw a trend line on your data that you feel best fits the data.
3. Identify two grid points on your trend line (do NOT use data points). Write down their coordinates:  
Point 1: ( , )  
Point 2: ( , )
4. Find the slope of your trend line.
5. Write the equation of your trend line.
6. What is the y-intercept of your trend line?
7. Do you get the same answer looking at the graph as you do using your equation? What does this number represent? Does this make sense?
8. Using your equation, predict the GPA of a boy who spends 400 minutes/day on social media.
9. What is the meaning of the slope of your trend line? Describe this rate of change in words.

**Part II. Work together as a group**

1. Each student in your group probably has a different slope and y-intercept for his/her equation of the trend line, and therefore, has made different predictions for the 400 minutes boys' GPA. Compare the slopes and y-intercepts each one of you got. Record them here:

$$\underline{m= \quad , b=}$$

$$\underline{m= \quad , b=}$$

$$\underline{m= \quad , b=}$$

$$\underline{m= \quad , b=}$$

2. Describe a way that you could combine the information of your team members to create a better trend line equation. Agree on a common equation of the line of best fit.

Final group equation: \_\_\_\_\_

3. Discuss the strength of the relationship between the number of hours boys spend on social media and their GPA.

4. Discuss the appropriateness of a linear model to represent this data.

**Case 2: Girls' time spent on social media versus their GPA**

Group members: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

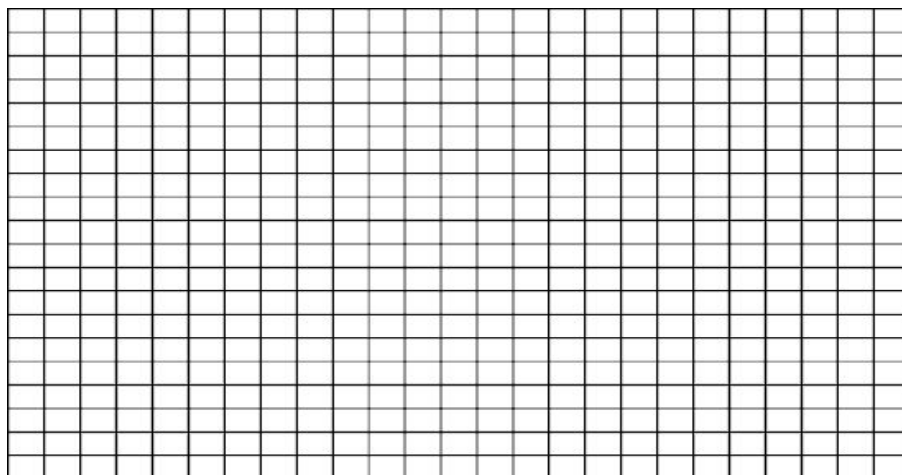
Your group will be analyzing the data and investigate the relationship between the time girls in your class spend on social media and their GPA.

Subjects	Time/day (in minutes)spent on social media (x)	GPA (y)
Girl #1		
Girl #2		
Girl #3		
Girl #4		
Girl #5		
Girl #6		
Girl #7		
Girl #8		
Girl #9		
Girl #10		
Girl #11		
Girl #12		
Girl #13		
Girl #14		
Girl #15		

Sort the data from the class survey results, and organize them in the given table

**Part I: To be completed individually**

1. Create a scatter plot using time on the x-axis and GPA on the y-axis. Please label the axes and decide on an appropriate and uniform scale.



2. Using a straightedge, draw a trend line on your data that you feel best fits the data.
3. Identify two grid points on your trend line (do NOT use data points). Write down their coordinates:  
Point 1: ( , )  
Point 2: ( , )
4. Find the slope of your trend line.
5. Write the equation of your trend line.
6. What is the y-intercept of your trend line?
7. Do you get the same answer looking at the graph as you do using your equation? What does this number represent? Does this make sense?
8. Using your equation, predict the GPA of a girl who spends 400 minutes/day on social media.
9. What is the meaning of the slope of your trend line? Describe this rate of change in words.

**Part II. Work together as a group**

1. Each student in your group probably has a different slope and y-intercept for his/her equation of the trend line, and therefore, has made different predictions for the 400 minutes girls' GPA. Compare the slopes and y-intercepts each one of you got. Record them here:



$$\underline{m= \quad , b=}$$

$$\underline{m= \quad , b=}$$

$$\underline{m= \quad , b=}$$

$$\underline{m= \quad , b=}$$

2. Describe a way that you could combine the information of your team members to create a better trend line equation. Agree on a common equation of the line of best fit.

Final group equation: \_\_\_\_\_

3. Discuss the strength of the relationship between the number of hours girls spend on social media and their GPA.

4. Discuss the appropriateness of a linear model to represent this data.

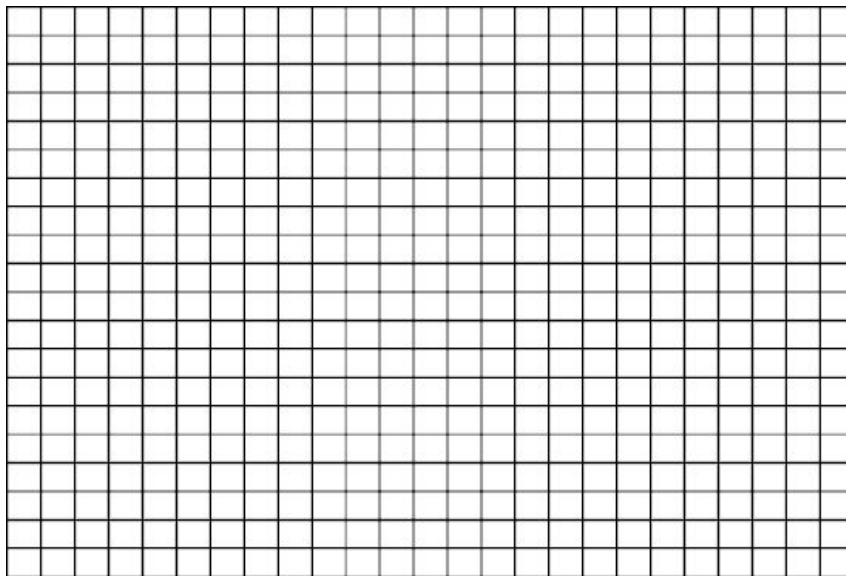
**Case 3: All students time spent on social media versus their GPA**

Group members: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Your group will be analyzing the data and investigate the relationship between the time students in your class spend on social media and their GPA.

**Part I: To be completed individually**

1. Create a scatter plot using time on the x-axis and GPA on the y-axis. Please label the axes and decide on an appropriate and uniform scale.



2. Using a straightedge, draw a trend line on your data that you feel best fits the data.
3. Identify two grid points on your trend line (do NOT use data points). Write down their coordinates:

Point 1: ( , )

Point 2: ( , )

4. Find the slope of your trend line.

5. Write the equation of your trend line.
  
6. What is the y-intercept of your trend line?
  
7. Do you get the same answer looking at the graph as you do using your equation? What does this number represent? Does this make sense?
  
8. Using your equation, predict the GPA of a student who spends 400 minutes/day on social media.
  
9. What is the meaning of the slope of your trend line? Describe this rate of change in words.

**Part II. Work together as a group**

1. Each student in your group probably has a different slope and y-intercept for his/her equation of the trend line, and therefore, has made different predictions for the 400 minutes students' GPA. Compare the slopes and y-intercepts each one of you got. Record them here:

          m=           , b=          

          m=           , b=          

m=           , b=

m=           , b=

2. Describe a way that you could combine the information of your team members to create a better trend line equation. Agree on a common equation of the line of best fit.

Final group equation: \_\_\_\_\_

3. Discuss the strength of the relationship between the number of hours all students spend on social media and their GPA.

4. Discuss the appropriateness of a linear model to represent this data.

**Case 4: Number of posts versus time spent on social media**

Group members: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

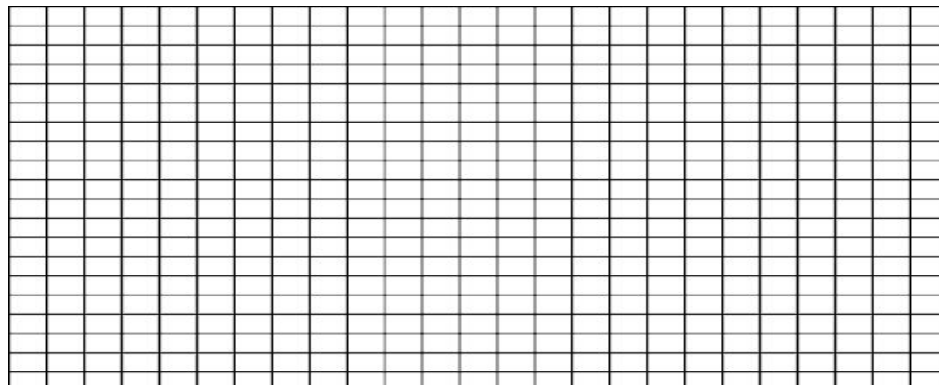
\_\_\_\_\_

Your group will be analyzing the data and investigate the relationship between the number of posts on social media and time these students spend on social media.

Subjects	Number of posts/week (x)	Time/day (in minutes)spent on social media (y)	Subjects	Number of posts/week (x)	Time/day (in minutes)spent on social media (y)
#1			#16		
#2			#17		
#3			#18		
#4			#19		
#5			#20		
#6			#21		
#7			#22		
#8			#23		
#9			#24		
#10			#25		
#11			#26		
#12			#27		
#13			#28		
#14			#29		
#15			#30		

**Part I: To be completed individually**

1. Create a scatter plot using time on the x-axis and GPA on the y-axis. Please label the axes and decide on an appropriate and uniform scale.





**Part II.** Work together as a group

1. Each student in your group probably has a different slope and y-intercept for his/her equation of the trend line, and therefore, has made different predictions of time on social media for the student who posts 40 postings/week. Compare the slopes and y-intercepts each one of you got. Record them here:

          m=           , b=          

          m=           , b=          

m=           , b=

m=           , b=

2. Describe a way that you could combine the information of your team members to create a better trend line equation. Agree on a common equation of the line of best fit.

Final group equation: \_\_\_\_\_

3. Discuss the strength of the relationship between the number of postings/week and the time spend on social media.

4. Discuss the appropriateness of a linear model to represent this data.

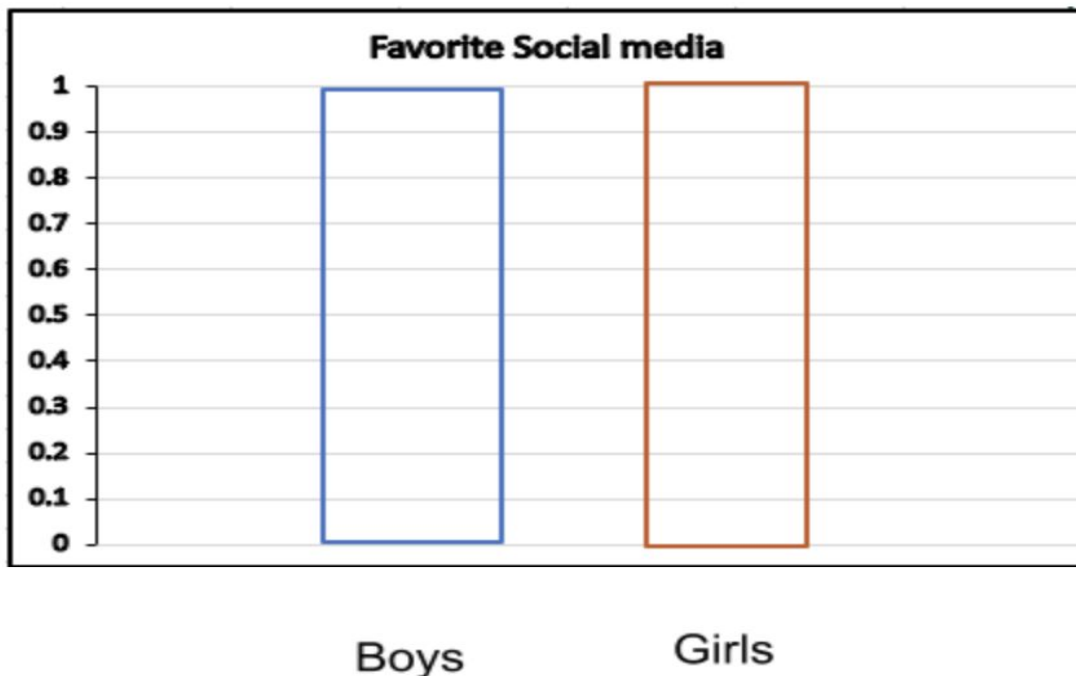
**Case 5: Favorite Social Media Platform of Boys and Girls**

Group members: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Your group is being asked to analyze data on social media preferences for a population of boys and girls. Compile your data in the conditional frequency table below. Your group will then create a stacked bar graph with the data and answer the following questions.

	Facebook	Twitter	Instagram	Snapchat	Totals
Boys					
Girls					
Totals					

Be sure to make a title, label axes properly, and create a legend corresponding to the given information!





1. Of all the students surveyed, how many students chose Instagram as their preferred social media platform?

2. Of all the girls surveyed, how many preferred Snapchat? (Remember, only girls!)

3. Of all the boys surveyed, what percent preferred Instagram? (Remember, only boys!)

4. If you were to randomly pick a student who was surveyed, what is the probability that they chose Facebook as their preferred social media platform?

5. Given that a randomly selected student was a boy, what is the probability he chose Twitter as his preferred social media platform?

6. From the data, write and describe, using full sentences, 3 trends you and your group are able to notice. Refer back to the questions above and write about similar (but not the same) ideas

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# End of Activity Reflection

*To be completed individually:*

1. What do you think the purpose of the survey was?

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2. What did you learn from this project?

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3. Why is it important to use the same unit (minutes) and the same scale on the graph? Explain.

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4. What conclusions can you draw from this activity?

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5. Can we use the results from our class to apply to the whole school population? Why or why not?

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