**Senior Math Applications**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Hr\_\_\_\_

*Scatterplots & Correlation Review*

Directions: Please be sure to include a title and to label your x/y-axis on all of your graphs. Also, show all work when necessary.

1. **Is there a correlation between Study Time and GPA for 12th Graders?**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| # of hours studying per night | 1 | 3 | 2.5 | 0.5 | 0 | 3.5 | 1 | 4.5 | 2 | 3 | 0.5 | 5 | 3.5 | 2.5 |
| GPA | 2.7 | 3.2 | 3.6 | 2.5 | 1.7 | 3.8 | 3.0 | 3.6 | 3.2 | 3.5 | 0.9 | 3.9 | 4.0 | 3.3 |

a) Create the scatterplot for the data. Be sure to create a title and label x/y-axis.

[http://www.antisocialmediallc.com/wp-content/uploads/2012/02/Black-Right-Arrow.png](http://www.google.com/url?sa=i&rct=j&q=&esrc=s&frm=1&source=images&cd=&cad=rja&docid=NYqs8o7QYL92FM&tbnid=-IrtejAPGII8fM:&ved=0CAUQjRw&url=http://www.antisocialmediallc.com/2012/02/arrow-icons-right-left-up-and-down/&ei=ZDRvUc3hHrOp4APwxoGYBQ&bvm=bv.45368065,d.dmg&psig=AFQjCNGT3aLIGww9N8Mhq97QJd_yKci_Vg&ust=1366328764174773)

4

[http://www.antisocialmediallc.com/wp-content/uploads/2012/02/Black-Right-Arrow.png](http://www.google.com/url?sa=i&rct=j&q=&esrc=s&frm=1&source=images&cd=&cad=rja&docid=NYqs8o7QYL92FM&tbnid=-IrtejAPGII8fM:&ved=0CAUQjRw&url=http://www.antisocialmediallc.com/2012/02/arrow-icons-right-left-up-and-down/&ei=ZDRvUc3hHrOp4APwxoGYBQ&bvm=bv.45368065,d.dmg&psig=AFQjCNGT3aLIGww9N8Mhq97QJd_yKci_Vg&ust=1366328764174773)

0.5

[https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcTs1eMjnrbEbiVJHTWXyI6uIAU1pYNToNM5bGnqqjUXkM7uf40mTAhttps://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcTs1eMjnrbEbiVJHTWXyI6uIAU1pYNToNM5bGnqqjUXkM7uf40mTA](http://www.google.com/imgres?start=199&sa=X&hl=en&biw=1600&bih=753&tbm=isch&tbnid=z3oNw3EyLhqckM:&imgrefurl=http://www.polyvore.com/up_arrow/thing?id=371685&docid=V2r1vqV3K-ktSM&imgurl=http://www.polyvore.com/cgi/img-thing?.out=jpg&size=l&tid=371685&w=300&h=300&ei=ozNvUeuVGYW64AOP1oHYCw&zoom=1&ved=1t:3588,r:27,s:200,i:85&iact=rc&dur=463&page=8&tbnh=182&tbnw=182&ndsp=34&tx=100&ty=105)

0.5

6

b) Use you calculator to determine the equation of the line of best fit\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) Use you calculator to determine the correlation coefficient(r)\_\_\_\_\_\_\_\_\_\_

d) What does the slope mean in the context of this problem?

e) What does the y-intercept mean in the context of the problem?

f) What would you predict the GPA to be for a senior that studies 1.5 hours per night? Interpolation or Extrapolation? (circle)

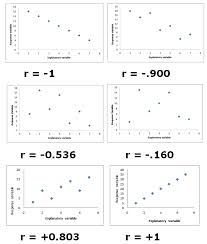
Can you be confident in your prediction?\_\_\_\_\_

g) What would you predict the GPA to be for a senior that studies 5.2 hours per night? Interpolation or Extrapolation? (circle)

Can you be confident in your prediction?\_\_\_\_\_

For #2-7, match each scatterplot with the correct correlation coefficient. After describe the strength and direction of the correlation.

2. 3.

````````` Answer Bank of Correlation Coefficients:

6. 7.

4. 5.

[Type a quote from the document or the summary of an interesting point. You can position the text box anywhere in the document. Use the Drawing Tools tab to change the formatting of the pull quote text box.]

[Type a quote from the document or the summary of an interesting point. You can position the text box anywhere in the document. Use the Drawing Tools tab to change the formatting of the pull quote text box.]

a. r = -0.16 b. r = -1

c. r = -0.536 d. r = 1

e. r = 0.803 f. -0.9

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe Strength and Direction:

2. 3.

4. 5.

6. 7.

For #8-12, for each pair of variables would you expect a negative correlation, positive correlation, or no correlation?

8. Time Spent brushing Teeth vs. Amount of Tooth Decay

9. Blood Pressure vs. Height

10. Time Spent Shopping at the Mall vs. Amount of Money in Wallet

11. Age vs. Amount of Gray Hair

12. Amount of Time Spent on the Beach during Spring Break Trip vs. Shade of Skin Tone