Correlation Assignment

Name _____

Part 1 ---- Can one's success in Algebra 1 predict one's success in Geometry?

Students	Algebra	Geometry
A	34	32
B	67	39
C	56	59
D	78	71
E	44	70
F	82	79
G	91	85

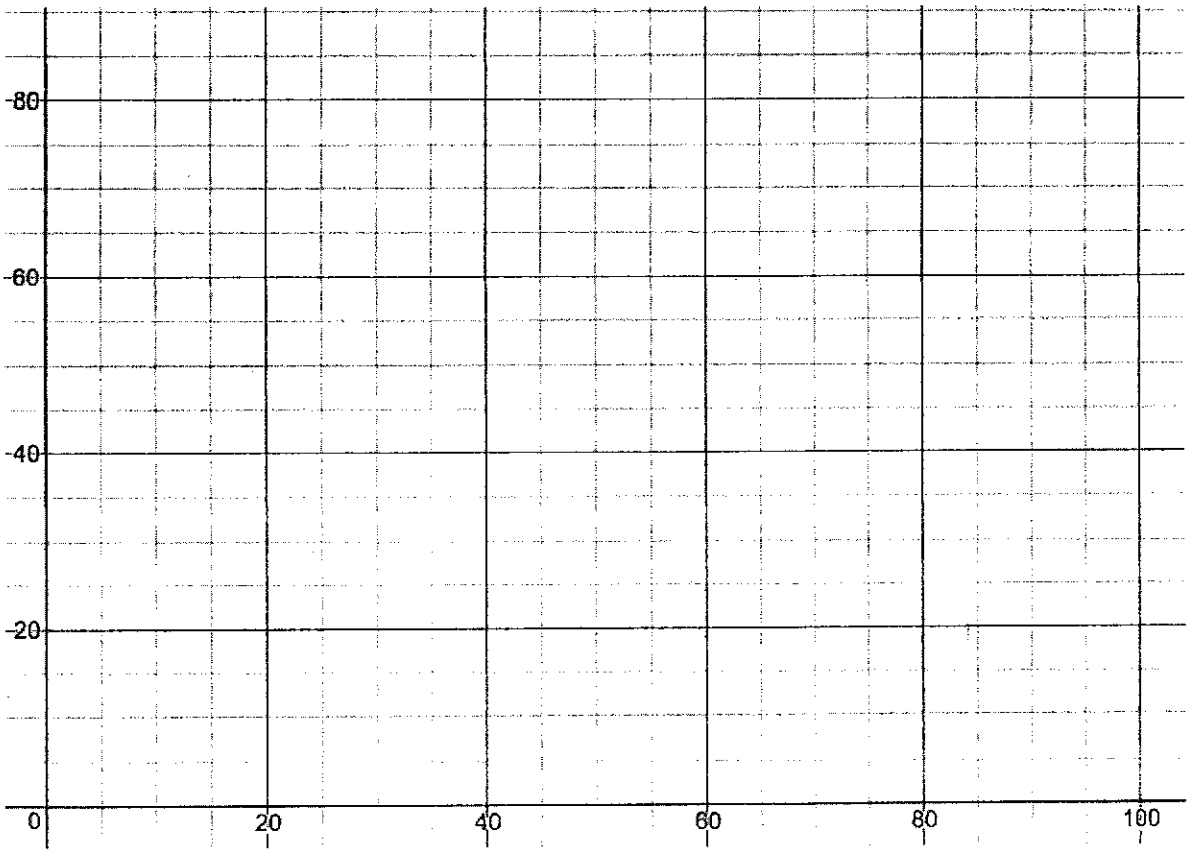
- ✓ Plot the data shown on a scatter plot with "Algebra" as the independent variable (x-axis). LABEL each axis.
- ✓ Calculate the mean Algebra score, $\bar{x}$ = _____ and the Mean Geometry score, $\bar{y}$ = _____
- ✓ Plot the mean point, $(\bar{x}, \bar{y})$ on the graph and Mark with "M".
- ✓ Calculate the Pearson's Correlation Coefficient, r = _____
- ✓ Based on both the scatter plot and the correlation coefficient, comment on the correlation.:

There is a _____ *correlation between* _____ *and* _____. *Therefore, as* _____ *increases, the* _____ *score rises.*

- ✓ Calculate the LSRL (least squares regression line equation, with y on x)

y = _____

- ✓ Using the LSRL, what geometry test score would be predicted from an algebra test score of 80 ?



Part 2 -- Linear Review

Find the equation of the line that passes through the given points $(18, -6)$ *and* $(9, 1)$

Using **slope intercept** format

$y = mx + b$

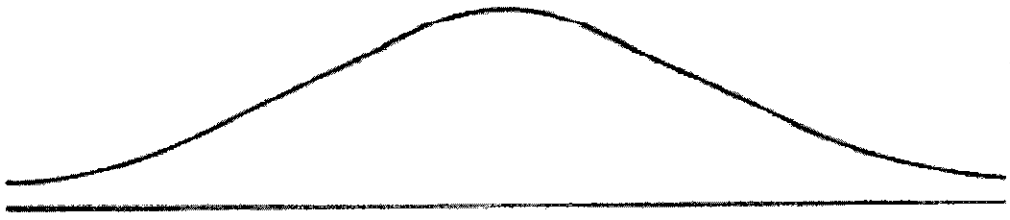
Using **Point-Slope** format

$y - y_1 = m(x - x_1)$

Part 3 -- Normal Distribution Practice

A. The weights of pandas are normally distributed with a mean of 160 kg and a standard deviation of 15 kg.

(a) Show this information on the diagram below.



(b) Write down the probability that a randomly selected panda is greater than 160 kg.

(c) Write down the probability that a randomly selected panda is less than 130 kg.

(d) The probability that a particular panda is less than *x* kg is 0.2. Find the value of *x*.

B. The IQs of IB students are normally distributed with a mean of 110 and a standard deviation of 15.

(a) Write down the probability that a randomly chosen student has an IQ within 2 standard deviations of the mean.

(b) Write down the probability that a randomly selected IB student has an IQ greater than 125.

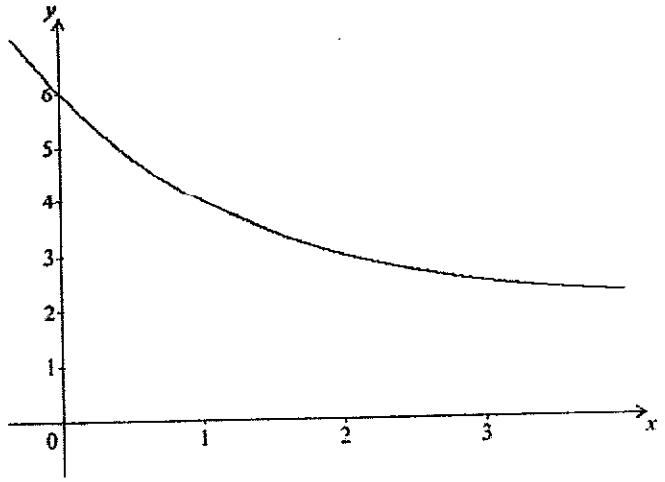
(c) Calculate the probability that a randomly selected IB student has an IQ between 100 and 120.

A particular province has 1200 students taking the IB.

(d) Calculate an estimate for the number of students with an IQ greater than 100.

Part 4 An exponential situation

Consider the function $f(x) = p(0.5)^x + q$ where p and q are constants. The graph of $f(x)$ passes through the points (0, 6) and (1, 4) and is shown below.



(a) Write down two equations relating p and q. **(2)**

(b) Find the value of p and of q. **(2)**

(c) Write down the equation of the horizontal asymptote to the graph of $f(x)$. **(2)**

(Total 6 marks)