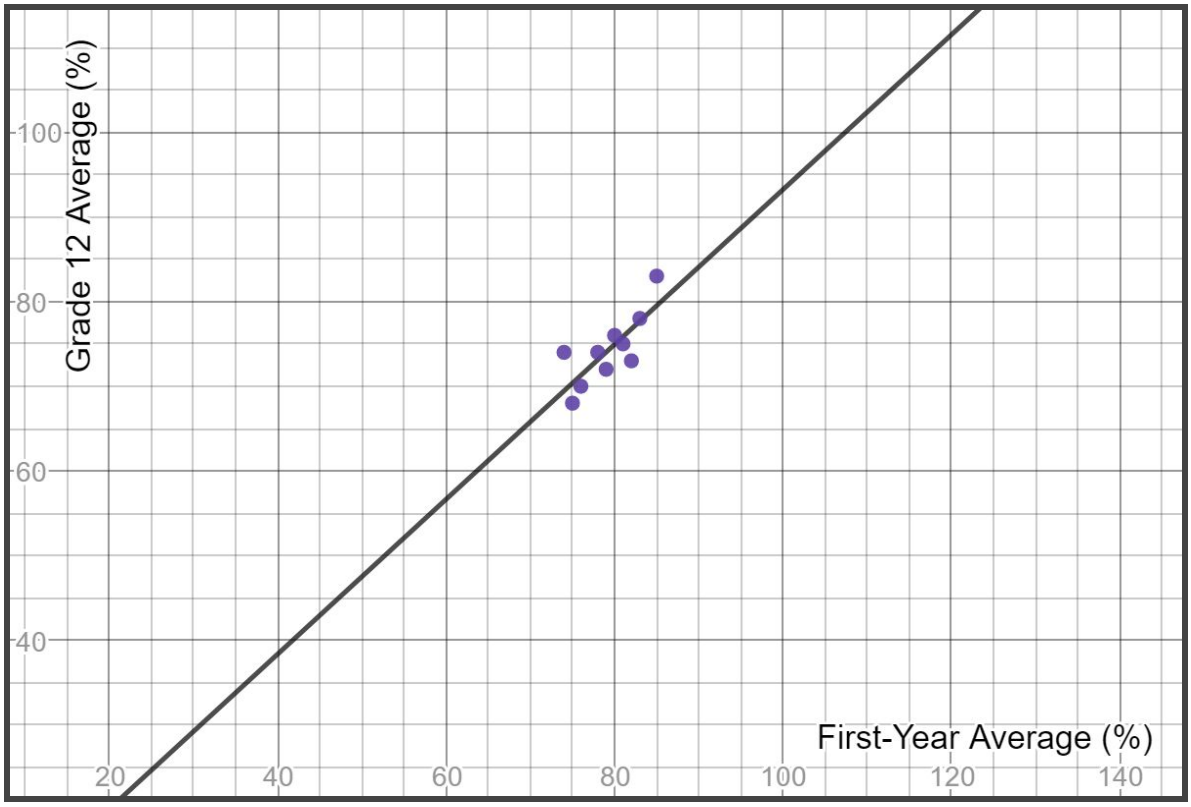
Part 1

Grade 12 Average (%)	78	85	75	76	81	79	82	74	80	83
First-Year Average (%)	74	83	68	70	75	72	73	74	76	78



1. Create a scatter plot for these data. Which variable should be placed on the x-axis?
↳ The first-year average should be placed on the x-axis, because that is the average we will want to predict.

2. Describe the correlation for the data, based on the scatter plot. Is there no correlation, positive correlation, or negative correlation? If there is a correlation, is it strong or weak?
↳ The correlation between the data is positive, the plots all gradually get higher. It is strong, all of the plots are close to one another and the data range is 17 (68 to 85).

3. Add a line-of-best-fit to the scatter plot and write the equation.
↳ $y_1 \sim 0.9139 \cdot x_1 + 1.8303$

4. How well does the line-of-best-fit fit the in the scatter plot? Justify.

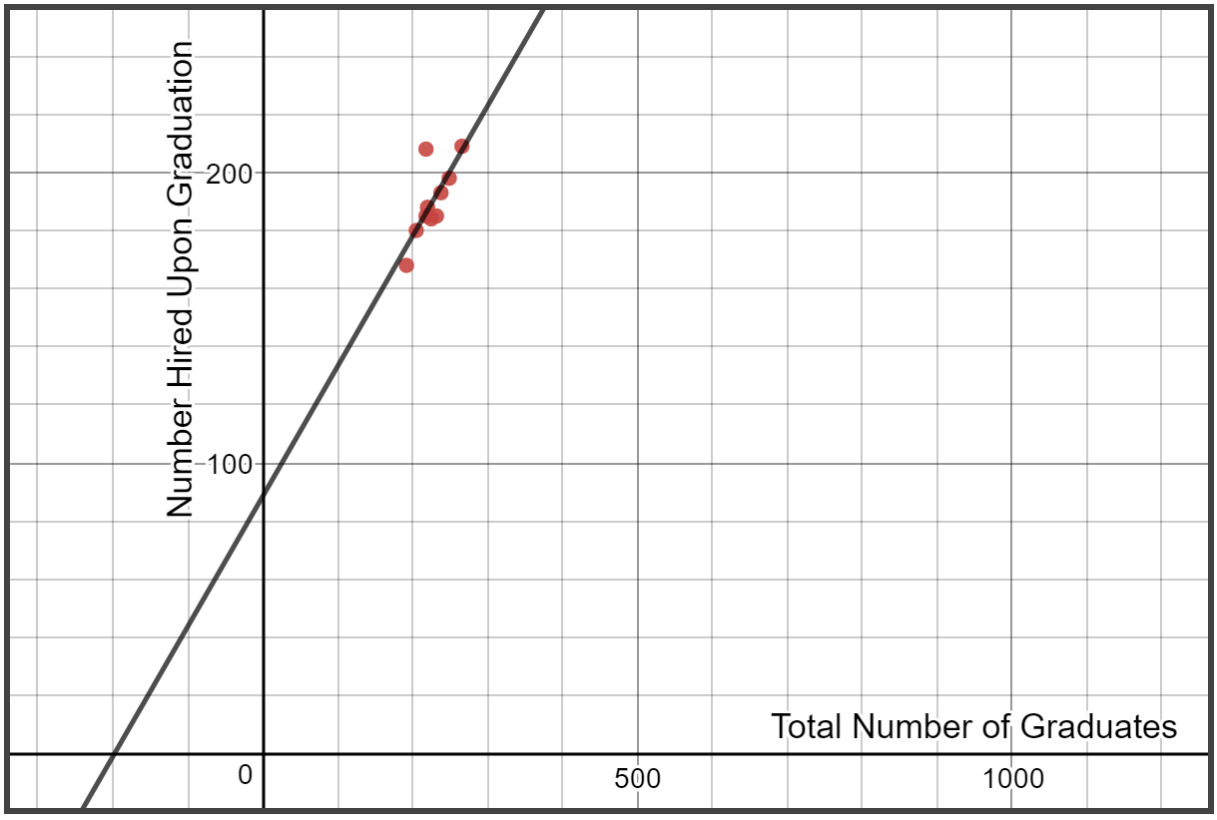
↳ The line fits very well, one point rests pretty much on the line, the rest are very close, and there are five points on each side of the line.

5. Identify outliers, if any.
↳ (85,83) could be considered an outlier, as it is further from the main group of points than any of the other points are.

6. Use the equation of the line-of-best-fit to predict the first-year average of a student with a grade 12 average of 81%.
↳ $y_1 \sim 0.9139 \cdot x_1 + 1.8303$
$y_1 \sim 0.9139 \cdot 81 + 1.8303$
$y_1 \sim 75.8567$
∴ the student, whose average in grade 12 was 81%, will (most likely) have an average of 75.86%.

Part 2

Year	Total Number of Graduates	Number Hired Upon Graduation	Mean Starting Salary ($1000)
1997	218	185	28
1998	205	180	30.5
1999	192	168	30
2000	220	188	32
2001	218	208	33
2002	225	184	32.5
2003	232	185	34
2004	238	193	37
2005	249	198	38.5
2006	266	209	40



1. Model the relationship between the total number of graduates and the number hired by creating a scatter plot and line-of-best-fit. Write the equation.

↬ $y_1 = 0.4478 \cdot x_1 + 88.4623$

2. How well does the line-of-best-fit fit the data in the scatter plot? Justify.

↬ Not very well. One point is on the line, and the rest are unevenly on each side (three on one side, six on the other).

3. Use the equation of this line-of-best-fit to predict how many graduates will be hired in 2011 if there are 300 graduates.

↬ $y_1 = 0.4478 \cdot x_1 + 88.4623$

$y_1 = 0.4478 \cdot 300 + 88.4623$

$y_1 = 222.8023$

∴ If there are 300 graduates, roughly 223 of them will (most likely) be hired.

4. Identify any outliers in this scatter plot. List some reasons why the data could include an outlier. Do any of these reasons justify deleting the outlier from the scatter plot?

↬

5. Remove the outlier from the data. Create the new line-of-best-fit. Write the equation of this new line-of-best-fit.

6. Use this new equation to recalculate the number of graduates that will be hired in 2011 if there are 300 graduates.
↳

7. Compare the results using the original line-of-best-fit and the new line-of-best-fit. Which result seems more reliable? Why?
↳

8. Which of the two lines gives a more optimistic prediction for this number hired in 2011?
↳

9. Are your calculations of graduates hired in 2011 an interpolation or an extrapolation? How do you know?
↳

Part 3