Chapter 9 Exercise Set A

11a Use Figure 1. New York looks warmer overall because Boston had some hot days and some cool days.

11b First it's summer so 45° days even for minimums are very rare if they happen at all.

12 No. Because the product of the Standard Units will be the same as will be their average.

13 No. Same idea as SD, the Standard Units will stay the same.

14 No. Although the SD changes the Standard Units will not. Try it!

15 This will change the correlation because the data changed overall. Not just a shift or stretch.

16 a) Up (Positive)
b) Down Becomes Negative.
c) Becomes Negative as well

17a 1.00 because if no mistakes are made one equals the other.

17b Goes down because an error makes a point not on the line.

17c r will most likely go down because of chance error.

18 It would go down because the relationship between grandfathers & grandsons is not as strong.

19 Overall fewer points have the chance to be more spread out. More points will probably fill in some gaps and create a larger correlation.

20 i) .8571
ii) .7857
iii) .7857 (switched x & y from ii)
iv) .8571 (shifted x to x+1 from i)
v) .8571 (doubled y from i)
vi) .7857 (shifted x to x-1, tripled y from ii)

} See #2-4

Chapter 9 Exercise Set B

1. .9 because they are pretty close to a line overall.

2. More than .67 because the older kids probably have a stronger correlation which would drive .67 up. (More linear)

3. Yes 2 is shifting x & y
   3 is stretching x & y.

4. Yes, because as long as scaling makes sense for the tick marks, the correlation is not affected.

Chapter 9 Exercise Set C

1. 1 and 2 can be summarized by r cause they are somewhat linear, 3 is not. BUT 2 has an outlier so we shouldn't even use r on it!

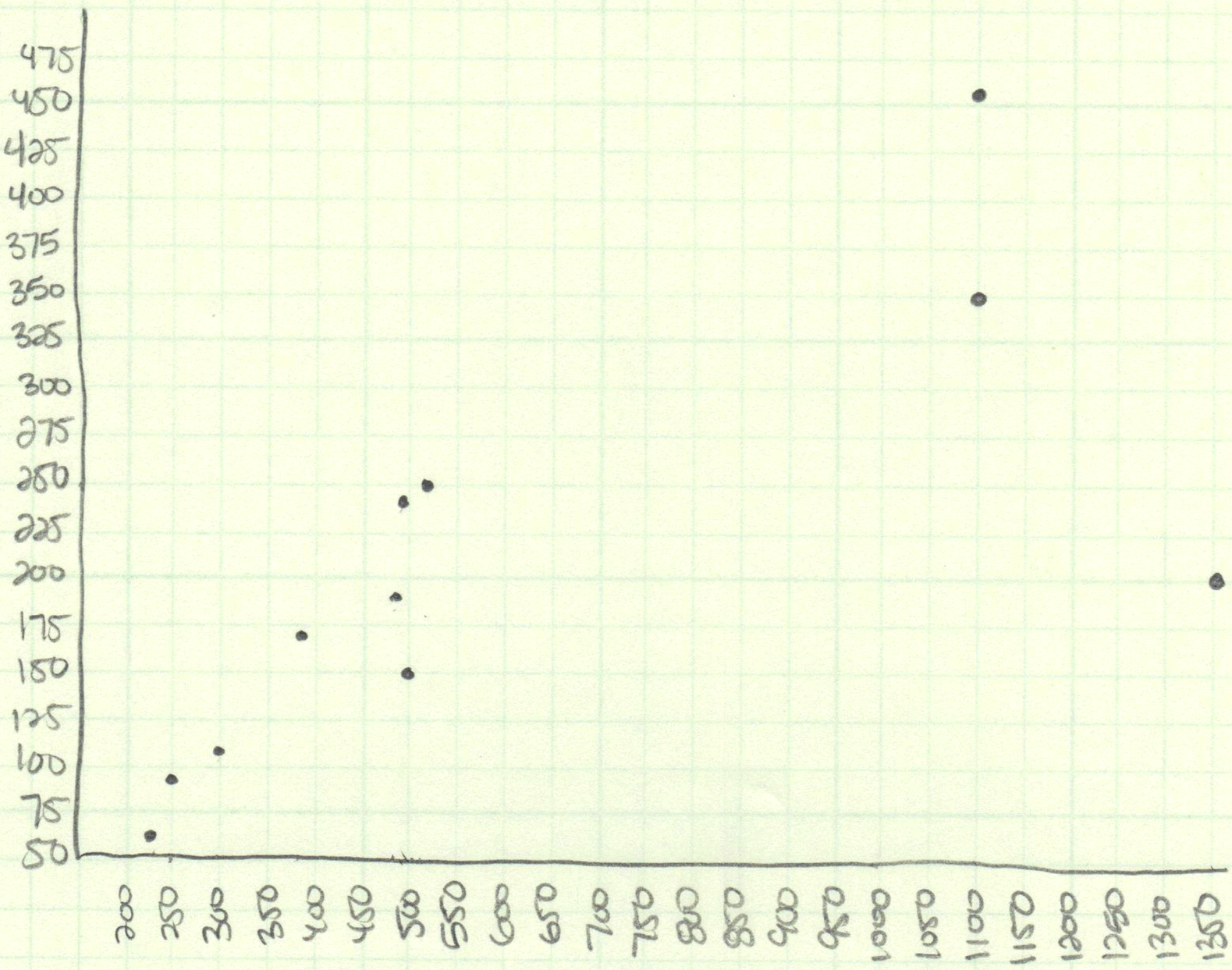
2. False. The Basketball players will probably make the scatter plot have two groups.

3. Nearly 1 but it does not make sense to use r because this data is not linear.

4. False on both, you can't tell without seeing the scatter plot. ANY information can have r computed but that doesn't mean it is appropriate!

Chapter 9 Exercise Set D

1a



1b True. There is definitely a positive association!

1c False, association is not causation, there could be confounding factors. Also ecological correlation is a BIG problem

2 Since it is based on percentages and rates r is NOT appropriate so it is not a good estimate.

Chapter 9 Exercise Set E

1. Because the duration of species life was rounded to the 2 millions years.

2. Yes, there is one dot for each country. This makes the correlation seem to high.

3. a) True (Positive association)
   b) True (Changing x & y does not change r)
   c) True. (Positive association)
   d) False (Association is not causation)

4. Association is not causation. So we can't conclude this from the data. There could be a confounding factor.

5. No! ADNEC. Maybe smoking causes people to crave coffee and smoking causes cancer so it's a confounding factor.

6. Observational Study: You can't force unemployment. We can't know but they probably vary a lot so I'll say no.

Chapter 9 Review Exercises

1. Histogram; Scatter plot

2. a) False, what is described is decrease (-) with decrease (-) which is a positive correlation.

   b) False as x increases y can increase too, this is a positive association.

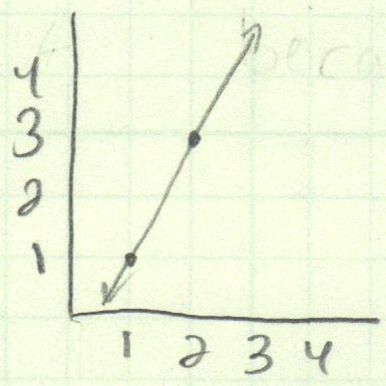
3a. 16 & 18 less variability because heights average out.

3b. Height. Weight is affected by many things and has more variability.

3c. Age 4: By 18 other things could cause more variability.

4. Somewhat higher because we have a longer spread for both variables the overall picture will look more linear.

5. a)



4 = 7 if the pattern continued.

b)

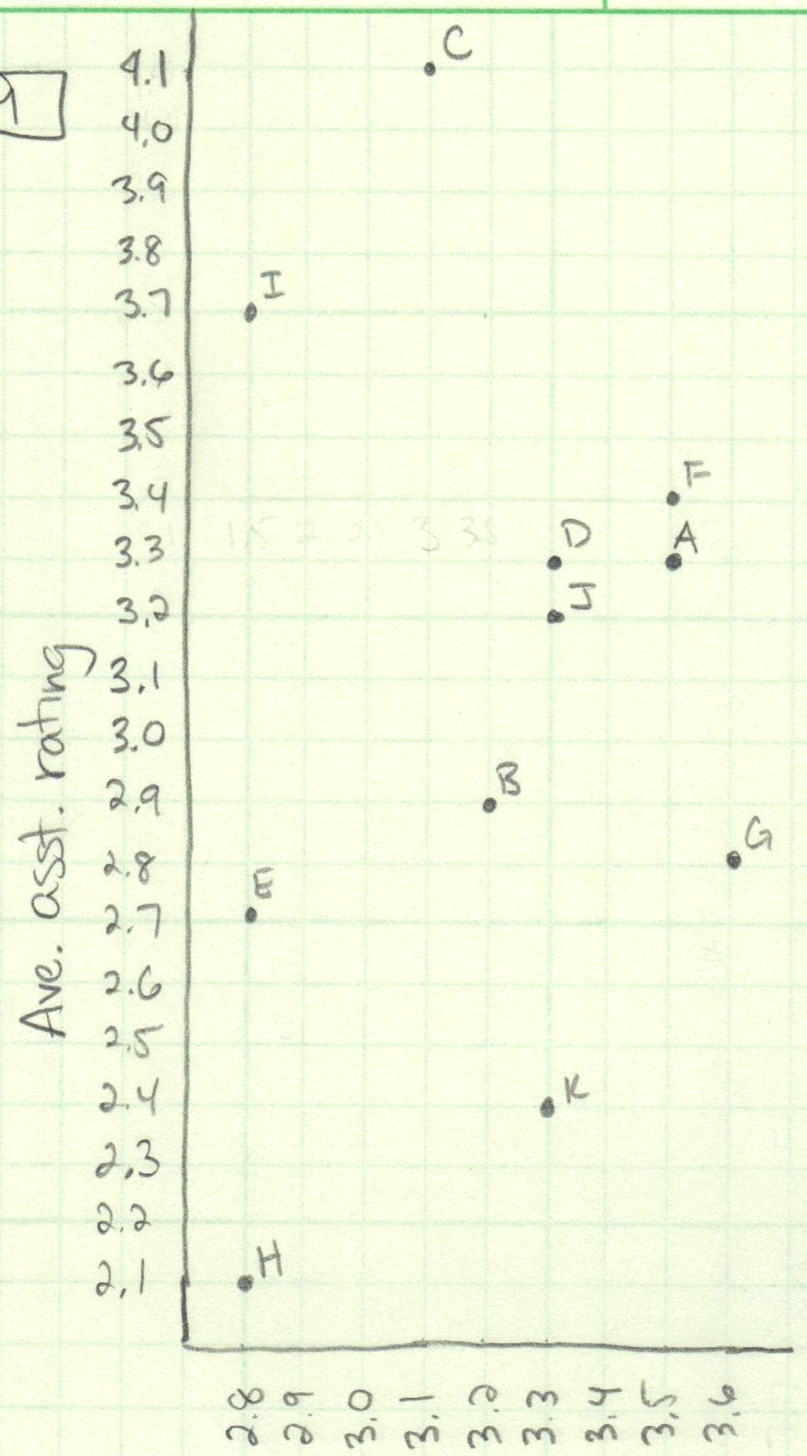
It's not possible, it's not a line.

6. No, in ii y was shifted up by 3 which should not change r.

7. No because it's using percentages, so the correlation is not appropriate.

8. Fake! Association does not equal causation. This study was cross-sectional and does not take the cohort effect into account

9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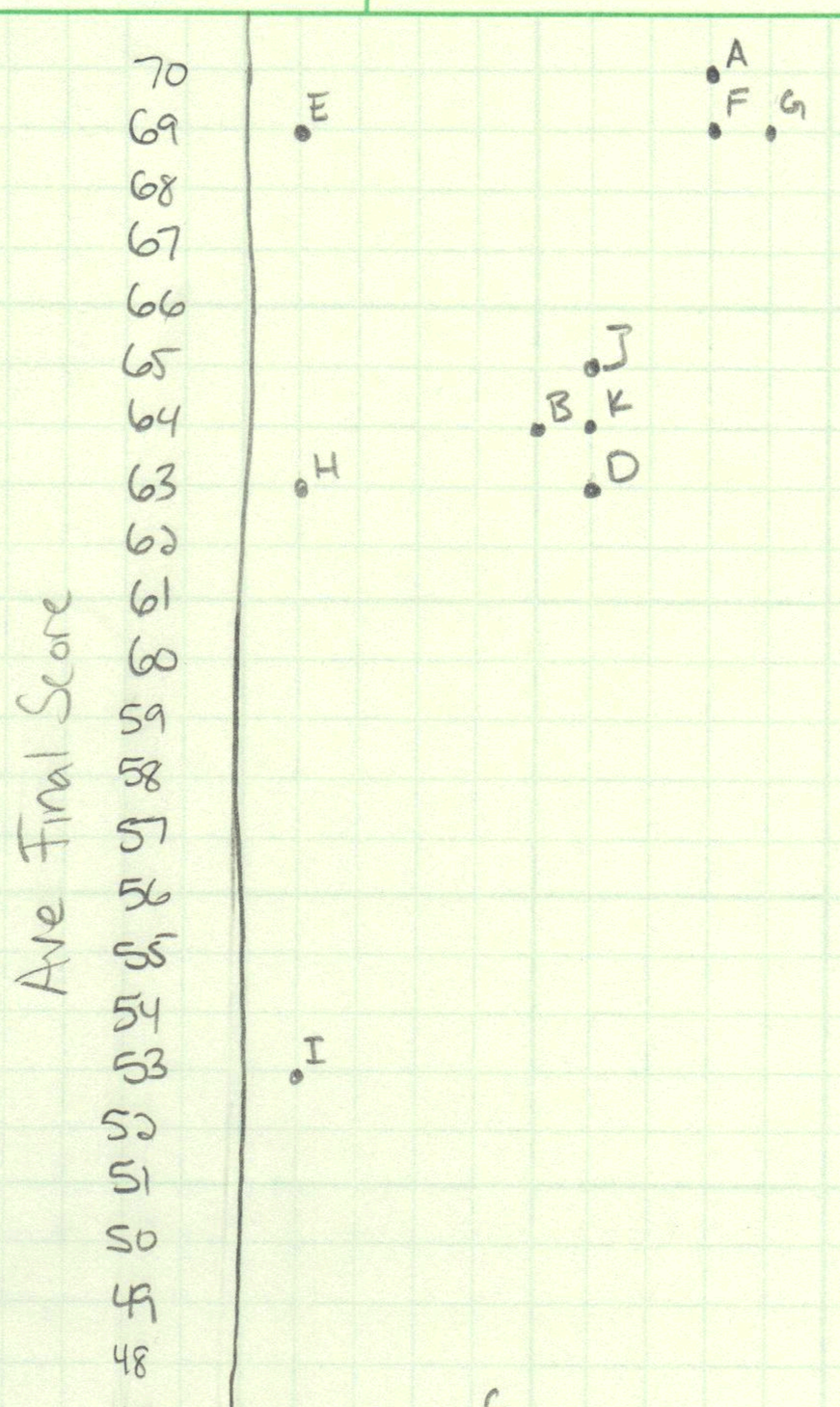
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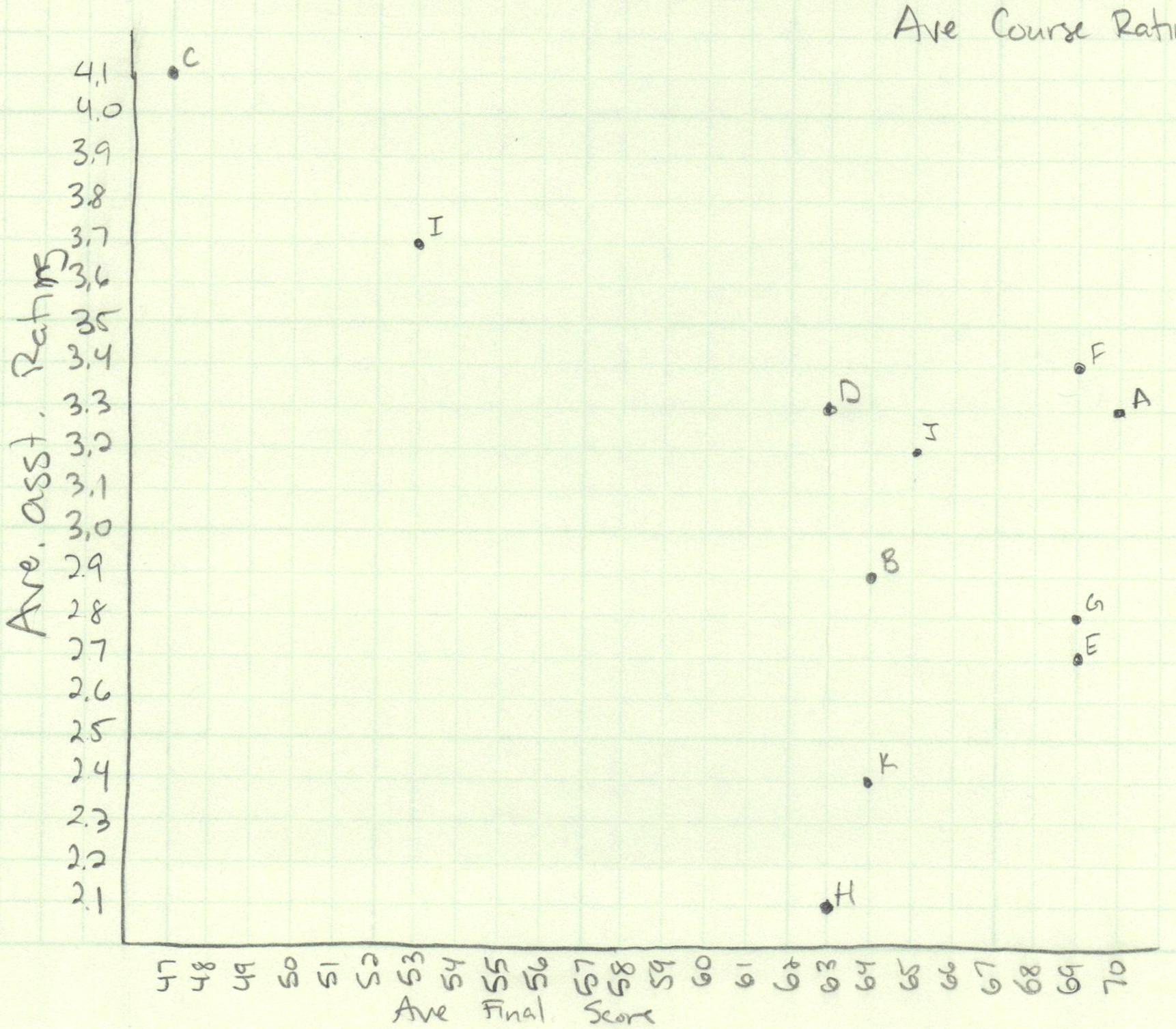
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Ave Final Score

9a Fake. Sections I & C liked their TA's but did FAR worse on the final.

9b False. I think there is a slight positive trend as I drew it. But it is very slight.

9c Fake. There is definitely a positive association.

10a True. The SAT is taken in the East as the college admittance test. Everyone takes it. If a student in the west wants to go to school back east they must take the SAT. These students tend to be high achievers because they want the Ivy league.

10b Association is not Causation! False. Confounding Factor of student choice to take the test or not.

11 Less than .97. The .97 is taken from an ecological correlation which are artificially strong. The individuals will have more spread causing r to be less.

12 a) It is years completed of school. This is a discrete variable

b) Some dots must count for more than one couple.

c) i) C
ii) No graph
iii) B
iv) A.