

1) Consider the data below which represents the number of public libraries in select states.

{53, 60, 84, 85, 97, 121, 128, 140, 230, 267, 297}

a) (3 points) Find the mean of the data:

$$\bar{x} = \frac{53 + 60 + 84 + \dots + 297}{11}$$
$$= \boxed{142}$$

b) (2 points) Find the median of the data:

$$\boxed{121}$$

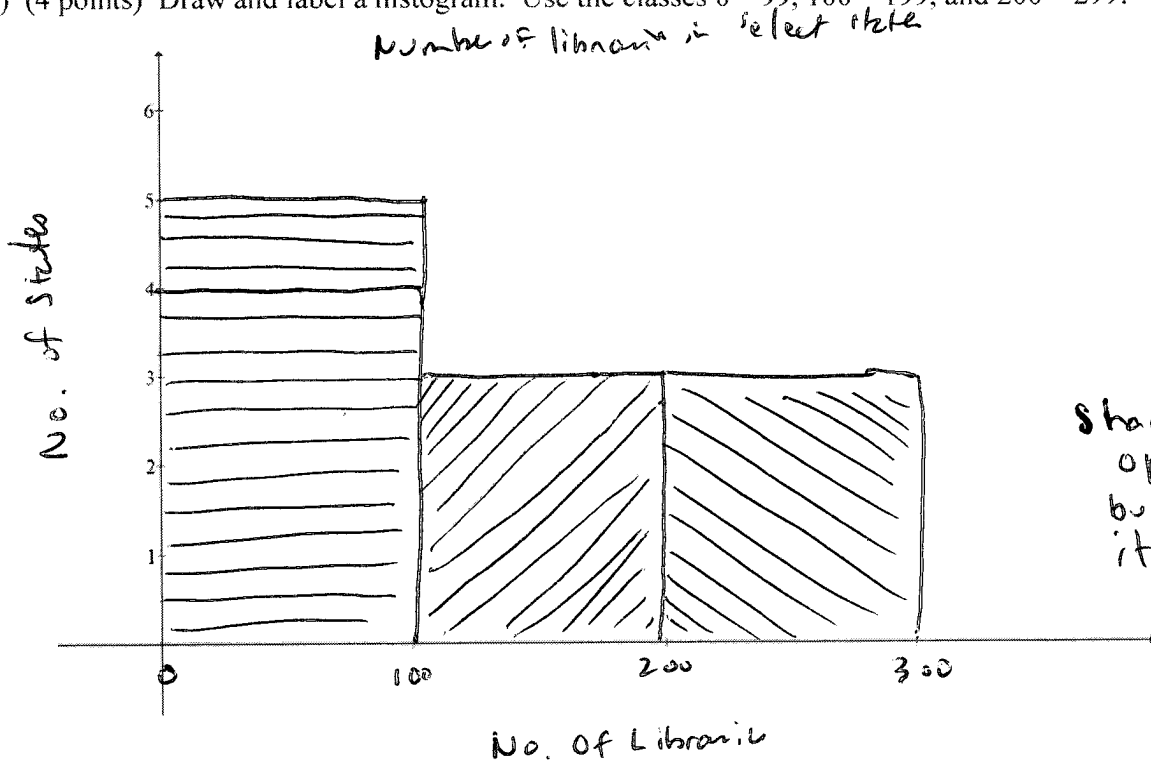
c) (3 points) Find the mode of the data:

$\boxed{\text{None!}}$

d) (2 points) Find the range of the data:

$$297 - 53 = \boxed{244}$$

e) (4 points) Draw and label a histogram. Use the classes 0 – 99, 100 – 199, and 200 – 299:



2) (2 points) Short Answer: Explain how to find the median of the set of numbers:

I get mine on Amazon.com.

3) (3 points) Alice Student is taking 5 courses this semester:

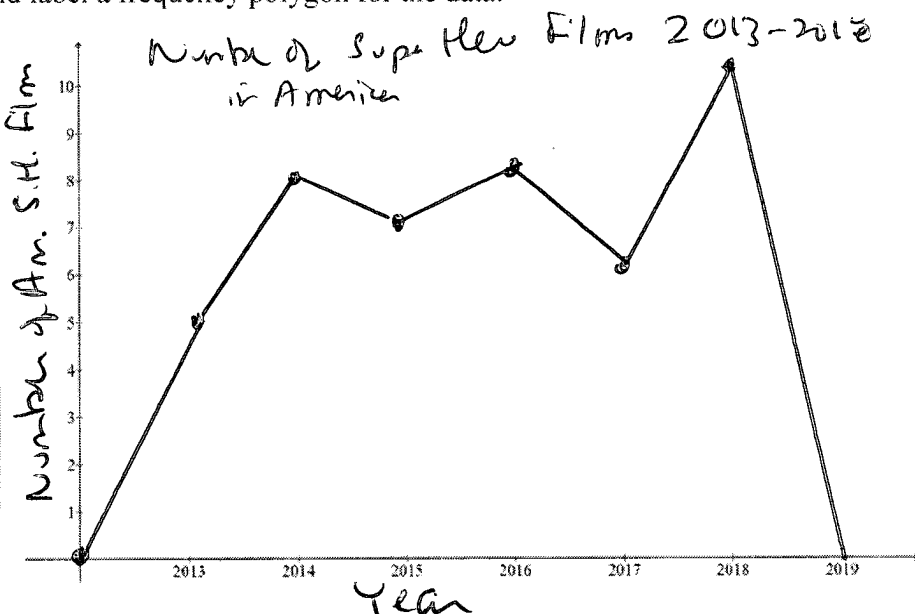
*Running Underwater*—2 credit hours—Grade: A    *Quiet Tap Dance*—3 credit hour—Grade: C  
*Who Really Let the Dogs Out*—4 credit hours—Grade: B    *Tag*—2 credit hours—Grade: A  
*Defense Against the Dark Arts*—3 credit hours—Grade: A

Assuming that a grade of an 'A' is worth 4 point, grade of a 'B' is worth 3 points, and a grade of a 'C' is worth 2 points, determine Alice's grade point average for the semester rounded to two decimal places:

$$\frac{2.4 + 3.2 + 4.3 + 2.4 + 3.4}{2 + 3 + 4 + 2 + 3} = \frac{46}{14} \approx 3.29$$

4) (4 points) The following chart shows number of American super hero movies that arrived in a theater near you. Draw and label a frequency polygon for the data.

Year	Number of American Super Hero Films
2013	5
2014	8
2015	7
2016	8
2017	6
2018	10



5) (3 points each) Suppose there are 3,500 people at a concert and the ages of the people are normally distributed with a mean of 42 years and a standard deviation of 8 years.

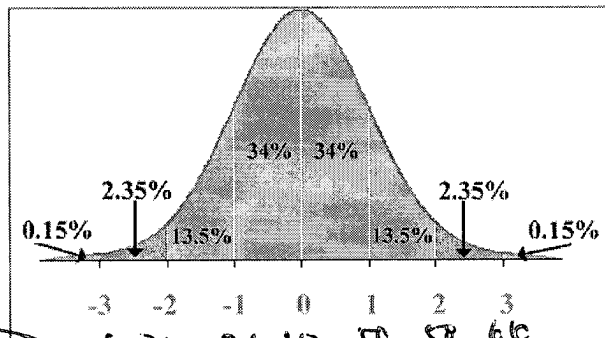
a) What percent of people are younger than 34 years?  
 63/95/99.7% rule → 13.5 + 2.35 + 0.15% = 16%

z-score z = -1.00 → 15.87% (either answer is acceptable)

b) What number of people are older than 58 years?

Rule: 2.35% + 0.15% = 2.5%.  
 2.5% of 3500 = 87.5 people

z-score z = 2.00 → 100% - 97.72% = 2.28%.  
 2.28% of 3500 = 79.8 people



3 / 13

5 pts each.

6) (4 points each) The average number of books a child reads over the summer is 8.7 books with a standard deviation of 1.3 books. Suppose a child was randomly picked. What is the probability that they had read:

a) Less than 6 books?

$$z = \frac{6 - 8.7}{1.3} \approx -2.08$$

1.88%

b) At least 10 books?

$$z = \frac{10 - 8.7}{1.3} \approx 1$$

$$100 - 84.13\% = 15.87\%$$

Can use Rule & get 16%

c) Less than 5 books or more than 11 books?

$$z = \frac{5 - 8.7}{1.3} \approx -2.85 \rightarrow 0.22\%$$

$$z = \frac{11 - 8.7}{1.3} \approx 1.77 \rightarrow (100 - 96.16\%)$$

$$0.22 + 3.84\% = 4.06\%$$

d) Between 7 and 10 books?

$$z = \frac{10 - 8.7}{1.3} = 1 \rightarrow 84.13\%$$
$$z = \frac{7 - 8.7}{1.3} \approx -1.31 \rightarrow 9.51\%$$

subtract 74.62%

7) (2 points each) Short answer:

a) When should you use a histogram instead of a bar graph when graphically representing data?

When the moon is in the Seventh House  
And Jupiter aligns with Mars

b) When is it not correct to use the 68-95-99.7% Rule?

When your elbows are on the table.