

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

{53, 60, 84, 85, 97, 119, 128, 140, 230, 267, 296}

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

b) (3 points) Find the median of the data:

$$\frac{53 + 60 + 84 + 85 + \dots + 296}{11}$$

$$\approx \boxed{141.73}$$

119

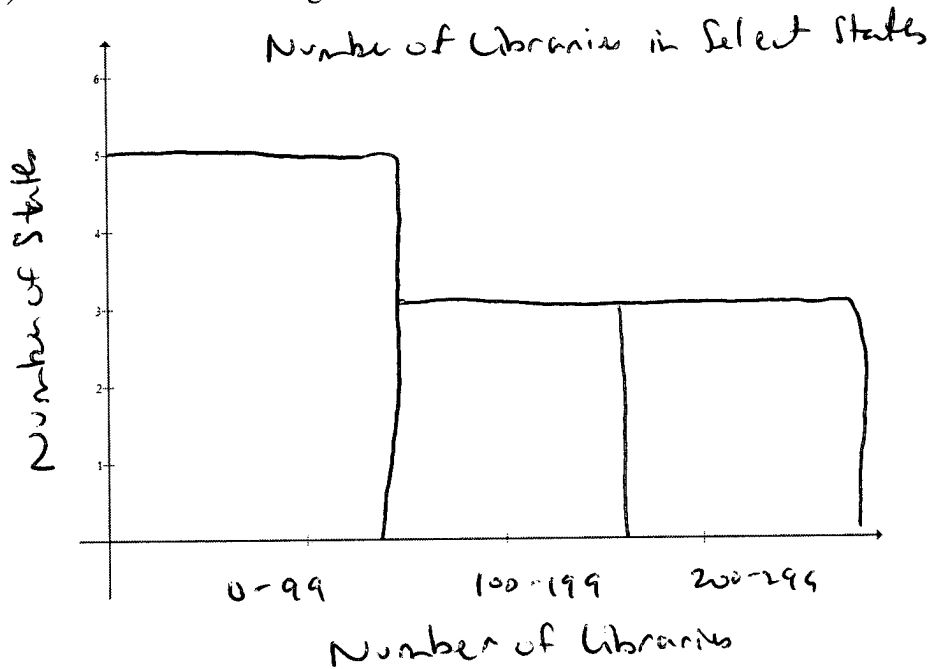
c) (3 points) Find the mode of the data:

d) (3 points) Find the range of the data:

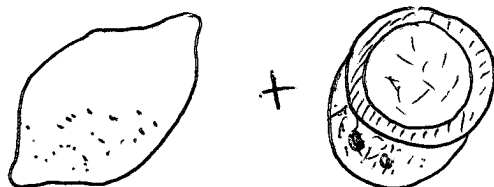
None!

$$296 - 53 = \boxed{243}$$

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:



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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

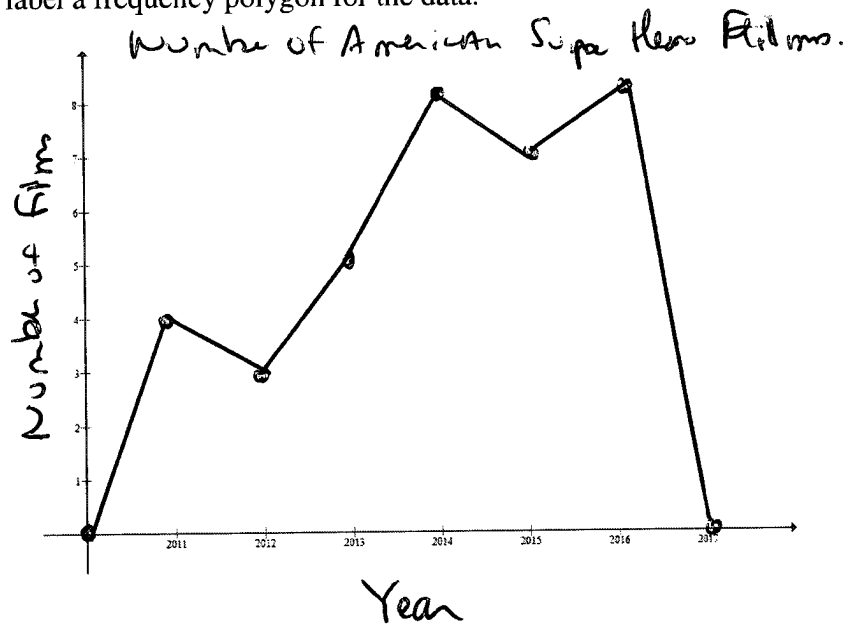
Assuming that a grade of an 'A' is worth 4 point, grade of a 'B' is worth 3 points, and a grade of a 'C' is worth 2 points, determine Alice's grade point average for the semester rounded to two decimal places:

$$46 \leftarrow \frac{2 \cdot 4 + 3 \cdot 2 + 4 \cdot 3 + 2 \cdot 4 + 3 \cdot 4}{2 + 3 + 4 + 2 + 3} \approx \boxed{3.29}$$

14 ✓

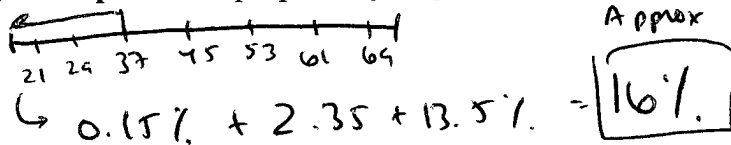
4) (4 points) The following chart shows number of American super hero movies that arrived in a theater near you. Draw and label a frequency polygon for the data.

Year	Number of American Super Hero Films
2011	4
2012	3
2013	5
2014	8
2015	7
2016	8



5) (3 points each) Suppose there are 2,000 people at a concert and the ages of the people are normally distributed with a mean of 45 years and a standard deviation of 8 years.

a) What **percent** of people are younger than 37 years?



Actual

$$z = \frac{37 - 45}{8} = -1.00 \quad \boxed{15.87\%}$$

b) What **number** of people are older than 61 years?

Approx: $2.35\% + 0.15\% = 2.5\%$
~~0.025~~
 $0.025 \cdot 2000 = \boxed{50 \text{ people}}$

Actual

$$z = \frac{61 - 45}{8} = 2.00 \quad 100 - 97.72\% = 2.28\%$$

$$0.0228 \cdot 2000 = \boxed{45.6 \text{ people}}$$

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6) (4 points each) The average lifespan of the You Light Up My Life light bulb is 34 years with a standard deviation of 6 years. Suppose a You Light Up My Life light bulb was randomly picked. What is the probability that it will work:

a) Less than 25 years?

$$z = \frac{25 - 34}{6} = -1.50$$

6.68%

b) At least 39 years?

$$z = \frac{39 - 34}{6} = 0.83$$

$100 - 79.67\% =$ 20.33%

c) Less than 30 years or more than 40 years?

$$z = \frac{40 - 34}{6} = 1.00$$

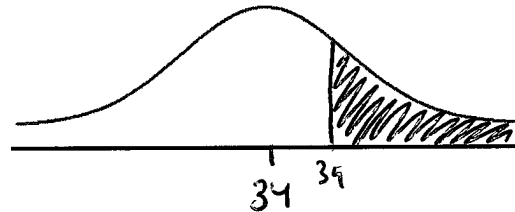
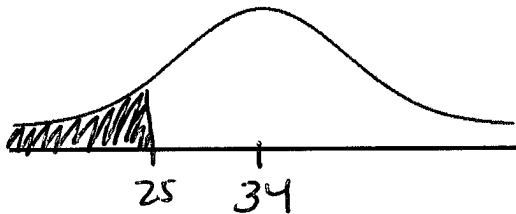
$$z = \frac{30 - 34}{6} = -0.67$$

$$84.13\% - 25.14\% =$$
58.99%

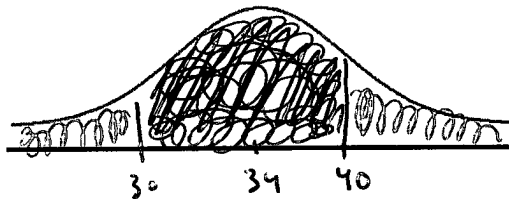
7) (2 points each) For each problem in 6 above, shade in the normal distribution curve. Be sure to label the x-axis with the appropriate numbers. Also, mark the mean on each graph:

a) Less than 25 years?

b) At least 39 years?



c) Less than 30 years or more than 40 years?



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