

1) Consider the data below which represents the number of board games Mike and his friends have in their collection.

{3, 6, 7, 9, 12, 18, 18, 24, 29, 35, 37}

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

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

$$\frac{3+6+7+\dots+37}{11} = 18$$

18

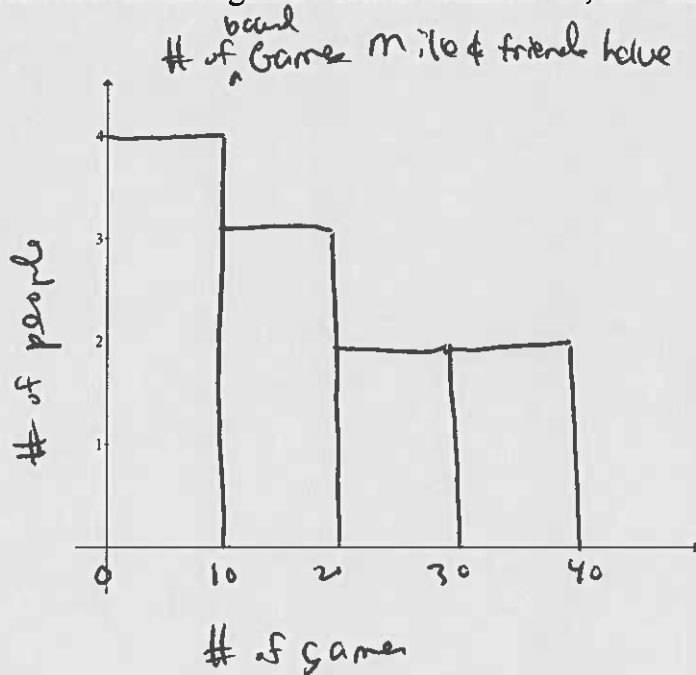
c) (3 points) Find the mode of the data:

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

18

$$37 - 3 = 34$$

e) (4 points) Draw and label a histogram. Use the classes 0 - 9, 10 - 19, 20 - 29, and 30 - 39:



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

words!

110

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

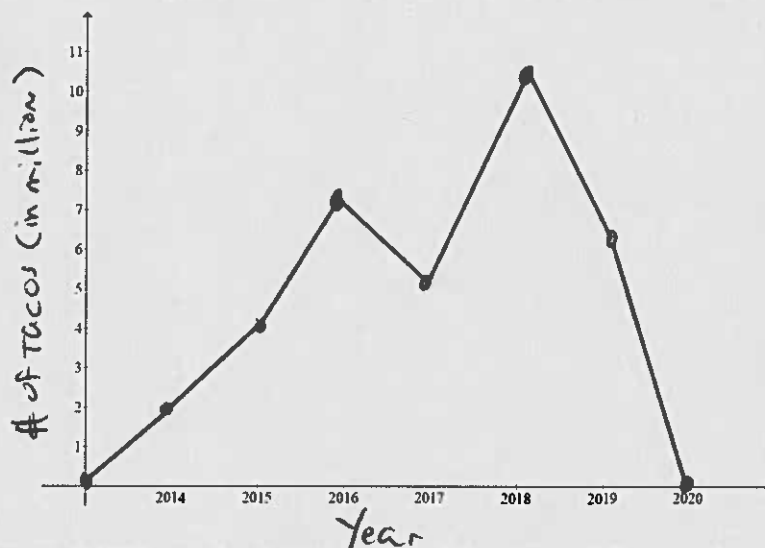
Assuming that a grade of an 'A' is worth 4 point, grade of a 'B' is worth 3 points, and a grade of a 'C' is worth 2 points, determine Alice's grade point average for the semester rounded to two decimal places:

$$\frac{2 \cdot 4 + 3 \cdot 2 + 3 \cdot 4 + 2 \cdot 4 + 3 \cdot 4}{2 + 3 + 4 + 2 + 3} = \frac{46}{14} \approx 3.29$$

4) (4 points) Mike really loves Taco Tuesday. Really, really loves it. The following chart shows number of tacos that Mike ate over the past several years. Draw and label a frequency polygon for the data.

Number of Tacos Mike Ate 2014-2019

| Year | Number of Tacos Mike Ate (in millions) |
|------|--|
| 2014 | 2                                      |
| 2015 | 4                                      |
| 2016 | 7                                      |
| 2017 | 5                                      |
| 2018 | 10                                     |
| 2019 | 6                                      |



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?

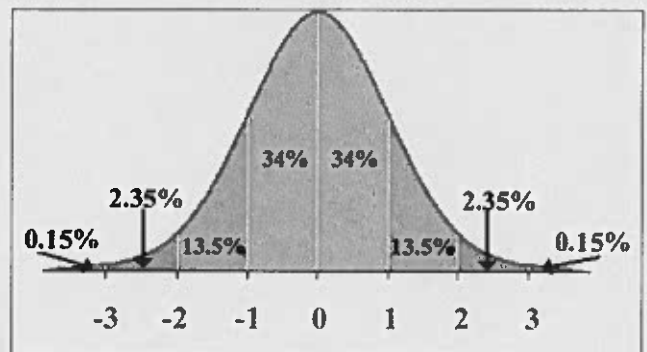
68/95/99.7% Rule  $13.5 + 2.35 + 0.15\% = 16\%$

z-score:  $z = -1 \rightarrow 15.87\%$  either

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

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

z-score:  $z = 2$   $100\% - 97.72\% = 2.28\%$   
 $2.28\%$  of 3500 = 79.8 people



18 26 34 42 50 58 66

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. Recall that  $z = \frac{x - \mu}{\sigma}$ .

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%

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

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

$$z = \frac{11 - 8.7}{1.3} \approx 1.77 \rightarrow 100 - 96.16\% = 3.84\%$$

0.22% + 3.84% = 4.06%

d) Between 7 and 10 books?

$$z = \frac{10 - 8.7}{1.3} = 1 \rightarrow 84.13\%$$

$$z = \frac{7 - 8.7}{1.3} = -1.31 \rightarrow 9.51\%$$

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?

I got my taxes done.

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

goodbye monas!  
hello games!  
woo!

20  
4