

1. (3 points) In an eye color study, 25 out of 50 people in the sample had brown eyes. In this situation, what does the number 0.50 represent?

a. A frequency
☒ b. A relative frequency
c. Class width

$$\frac{25}{50} = \frac{1}{2} = 0.5$$

2. (3 points) Which data about paintings is quantitative discrete?

a. Paint type
b. The artist
c. The value
☒ d. Number of colors used

can count it

3. (3 points) What number is missing from the table?

a. 0.07
☒ b. 0.28
c. 3.57
d. 0.7

Test Grades	Frequency	Relative Frequency
A	6	0.24
B	7	?
C	9	0.36
D	2	0.08
F	1	0.04

$$7/25 = 0.28$$

$$\text{total} = 25$$

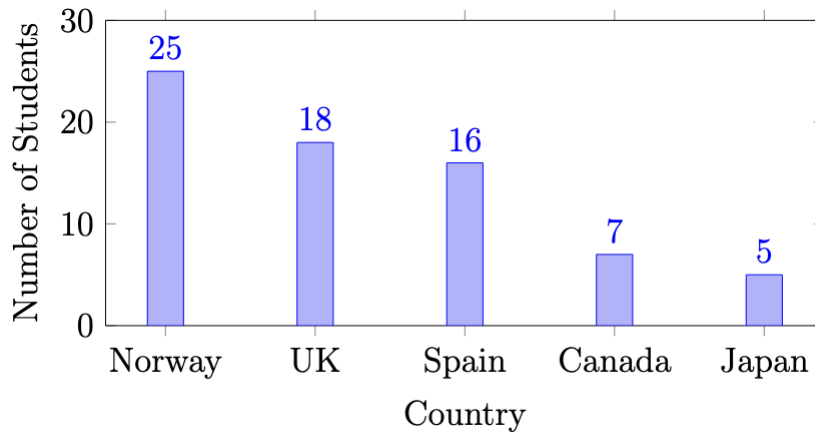
4. (3 points) Which of the graphical techniques below can be used to summarize the data from Question 3?

a. Ogive
b. Time Series Graph
c. Histogram
☒ d. Pareto Diagram

these are for quantitative

data is qualitative:
A, B, C, D, F

5. (3 points) The countries where students were from in Fall 2019 at CLC are shown in the figure below.



total: $\boxed{71}$
 $25 + 18 + 16 + 7 + 5$

- (a) (2 points) What type of data is collected?

Qualitative (home country)

- (b) (2 points) What type of graph is used to display the data?

Pareto chart

- (c) (3 points) What percentage of students are from Japan?

$5 / \text{total} = 5 / 71 = 0.07$ so $\boxed{7\%}$

6. (3 points) Which of the graphical techniques below is best to summarize large (100 and more d values) quantitative data?

- a. Pie Chart
- b. Stem-and-Leaf Plot
- c. Bar Graph
- ☒ d. Histogram

7. (3 points) In a distribution that is skewed to the left, what is the relationship of the mean and median?

- ☒ a. Mean < Median
- b. Mean = Median
- c. Mean > Median

count it a) or c)
correctly

8. (3 points) A shoe company reports the mode for the shoe sizes of men's shoes is 10. Interpret this result.

- a. Half of all men's shoe sizes are size 10
- ☒ b. The most frequently occurring shoe size for men is size 10
- c. Half of the shoes sold to men are larger than a size 10
- d. Most men have shoe sizes between 9 and 11

9. (3 points) The amount spent on textbooks for the fall term was recorded for a sample of five hundred university students. It was determined that the median was the value \$300. Which of the following interpretations of the median is correct?

- a. 50% of the students sampled had textbook costs equal to \$300
- b. The average of the 500 textbook costs was \$300
- counted for d)* ☒ c. 50% of the students sampled had textbook costs that were \$300 or less.
- ☒ d. 50% of the students sampled had textbook costs that exceeded \$300

10. (3 points) A club advisor orders t-shirts and wants to check some to make sure they were printed properly. She randomly selects two of the ten boxes of shirts and checks every shirt in those two boxes. What sampling method is being used?

- a. Stratified
- ☒ b. Cluster
- c. Systematic
- d. Convenience

11. (3 points) In a sample of 60 households, one house is worth \$2,500,000. Half of the rest are worth \$280,000, and all the others are worth \$315,000. Which is the better measure of the "center"?

- (a) Mean
- (b) Mode
- (c) Midrange
- ☒ (d) Median

mean is going to be high because of the \$2,500,000 house.

12. Parking at a university has become a problem. University administrators are interested in determining the average time it takes a student to find a parking spot. An administrator inconspicuously followed 220 students and recorded how long it took each of them to find a parking spot. Through statistical analysis, the university administrators determined that on average it takes any student (not just the ones in the sample) about 4 minutes to find a parking spot.

Describe the following:

- (a) (2 points) Population of interest: all students at univ.
- (b) (2 points) Variable of interest: amount of time to park
- (c) (2 points) Sample: 220 students
- (d) (2 points) What type of data was collected? quantitative
- (e) (2 points) Is 4 minutes a parameter or a statistic? parameter

13. The data below show the total number of medals (gold, silver, and bronze) won by each country winning at least one gold medal in the 2018 Winter Olympics. Treat data as a sample.

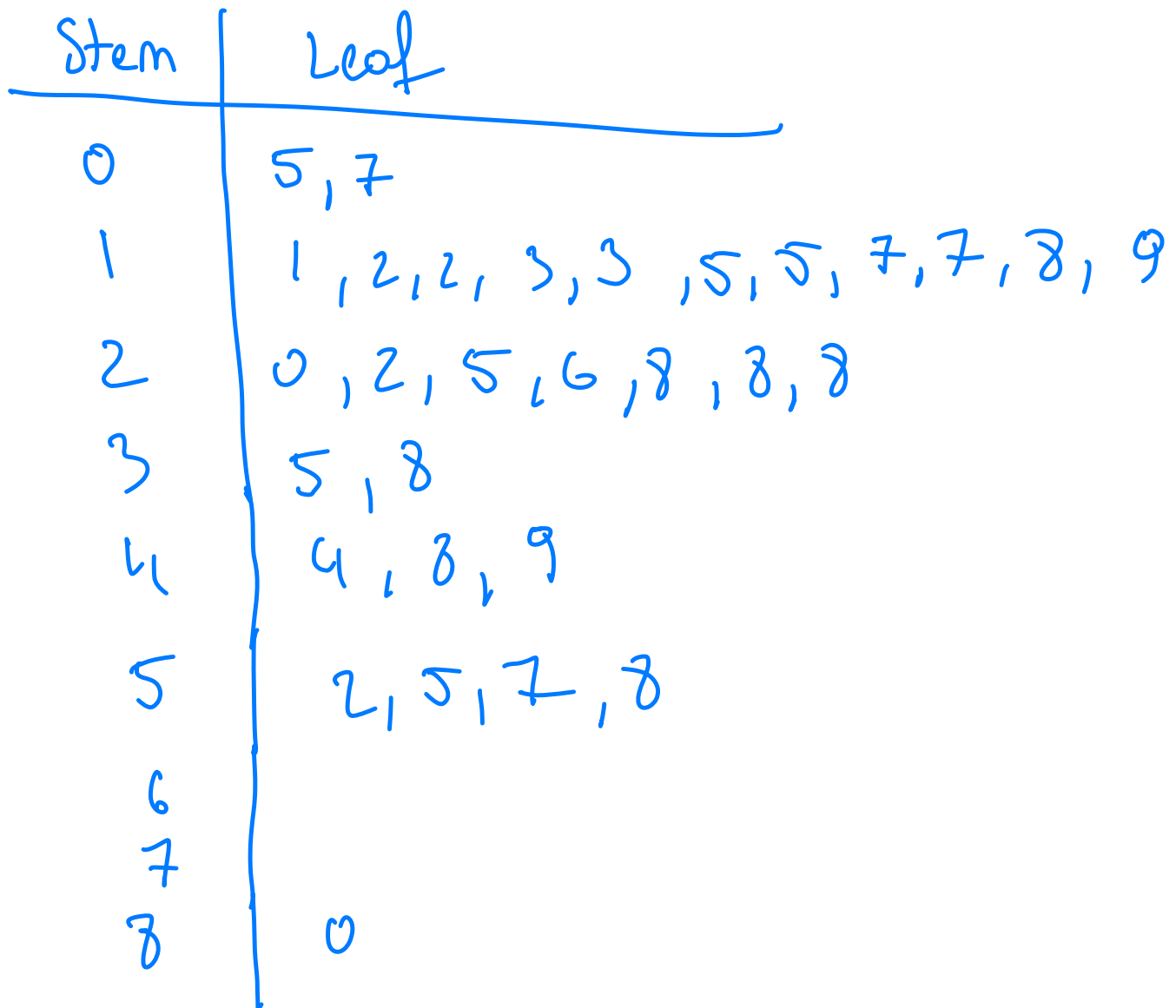
1, 2, 3, 3, 4, 9, 9, 11, 11, 11, 14, 14, 19, 22, 29

Find the following numerical measures:

- (a) (2 points) Mode = 11
- (b) (3 points) Median = 11
- (c) (3 points) Mean = ~~17.5~~ 10.8
- (d) (2 points) Midrange = $(1 + 29) / 2 = 15$
- (e) (2 points) Range = $29 - 1 = 28$

14. (8 points) The following data show the distances (in miles) from the homes of off-campus statistics students to the college. Create a stem plot using the data. Make sure to include the key.

0.5; 0.7; 1.1; 1.2; 1.2; 1.3; 1.3; 1.5; 1.5; 1.7; 1.7; 1.8; 1.9; 2.0; 2.2; 2.5; 2.6; 2.8; 2.8; 2.8; 3.5; 3.8; 4.4; 4.8; 4.9; 5.2; 5.5; 5.7; 5.8; 8.0



Stem : ones

leaf : tenths

15. (15 points) Twenty-eight students were asked how many hours they worked per week. Their responses, in hours, are as follows:

15; 26; 13; 33; 22; 14; 27; 15; 32; 23; 5; 26; 25; 14; 34; 13; 15; 22; 15; 28; 10; 18; 21; 24; 20; 18; 34; 20;

(a) Order the data (use calculator)

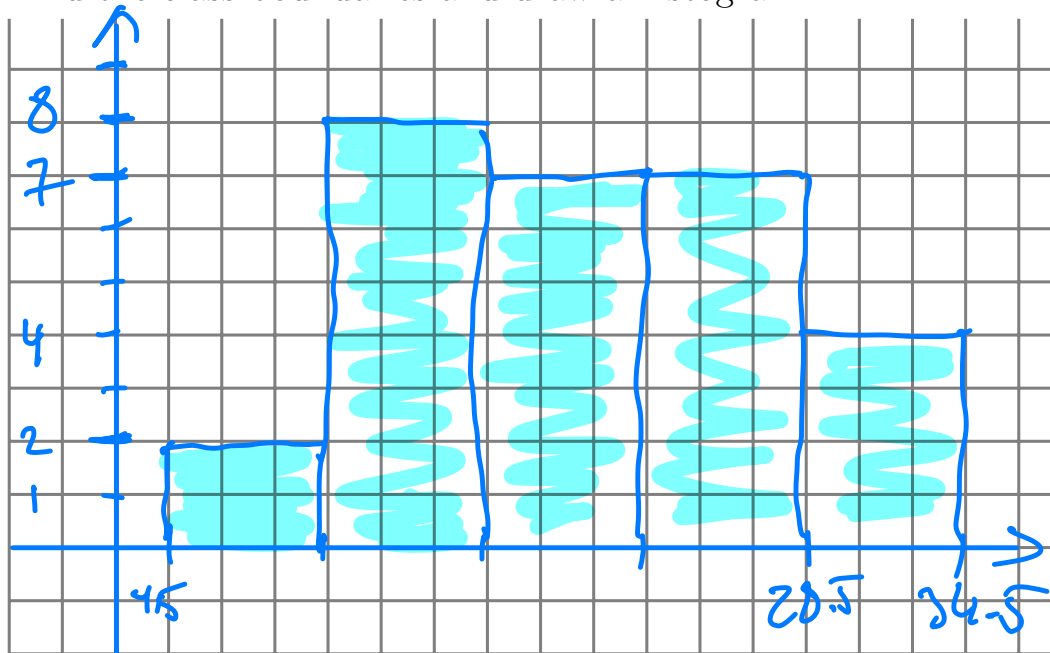
3p.
5, 10, 13, 13, 14, 14, 15, 15, 15, 15, 18, 18, 20, 20, 21, 22, 22, 23, 24, 25, 26, 26, 27, 28, 32, 33, 34, 34

(b) Construct a grouped frequency distribution using 5 classes.

$$c.w = \frac{34 - 5}{5} = 6$$

Classes	Frequency	Class Boundaries
5 - 10	2	4.5 - 10.5
11 - 16	8	10.5 - 16.5
17 - 22	7	16.5 - 22.5
23 - 28	7	22.5 - 28.5
29 - 34	4	28.5 - 34.5

(c) Find the class boundaries and draw a histogram.



16. (15 points) Consider the following grouped frequency distribution representing time in minutes it takes to complete the Biology MCAT exam.

Time (minutes)	Frequency
70 - 78	14
79 - 87	15
88 - 96	16
97 - 105	18
106 - 114	22
115 - 123	7
124 - 132	3

2

- (a) How many students were in the sample?

add all up

95

2

- (b) How many students take longer than two hours to complete the exam?

possibly 10

7 + 3 in the last two classes

3

- (c) Find the class midpoints.

midpoints

74

83

92

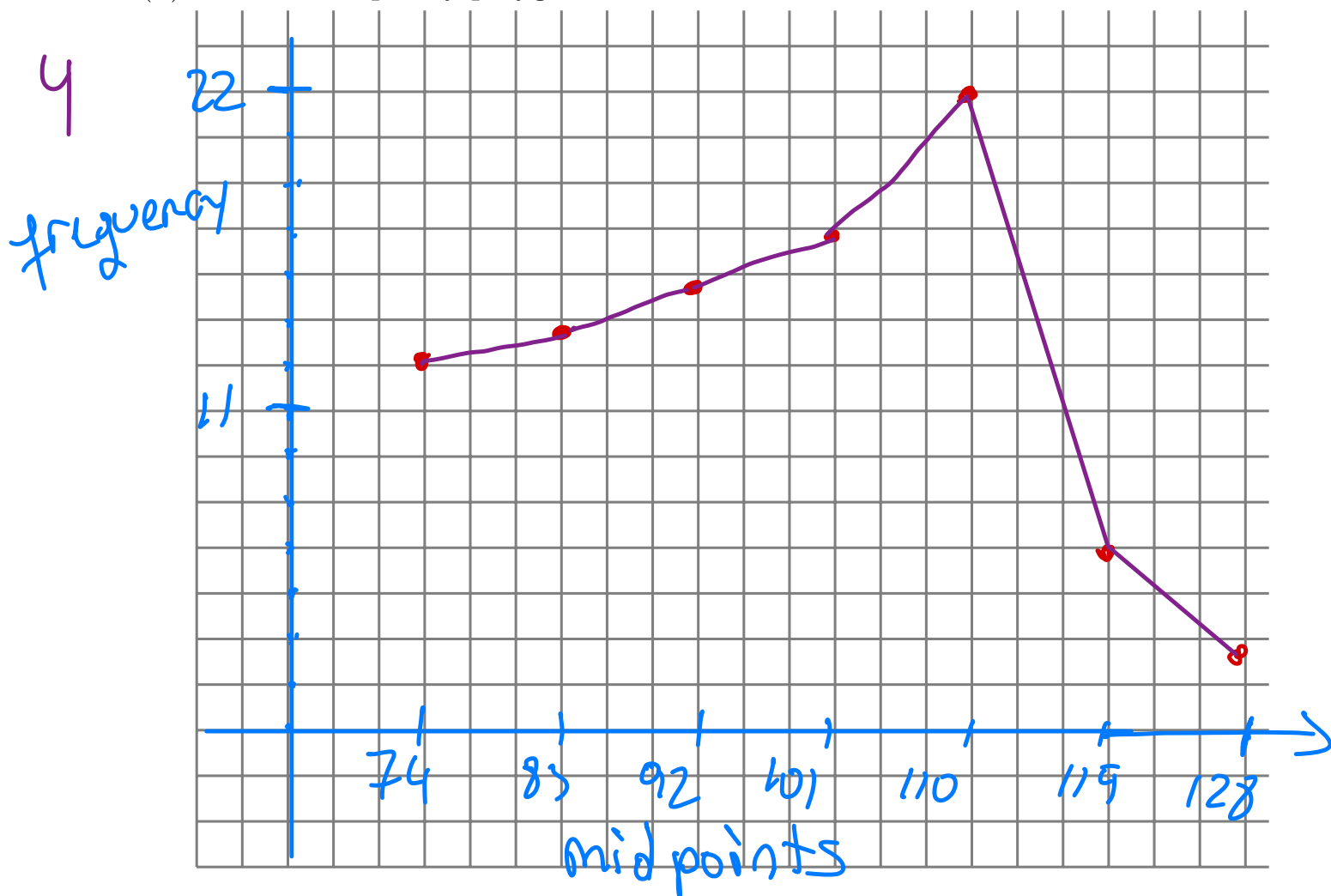
101

110

119

128

(d) Create a frequency polygon for this data.



(e) Estimate the mean of the grouped frequency distribution.

4

L_1 : Mid points

L_2 : Frequency

1 Var Stats L_1, L_2

gives

96.92 as mean