Probability and Statistics
466
Summer Work Packet

Welcome to Statistics!

This course is an introduction to statistics and data analysis. You will be completing daily, in-class investigations designed to help you understand basic statistical calculations, data collection, and an introduction to inference. You will learn how to analyze topics of interest from a statistical perspective. In order to do so, you must prepare by reviewing math skills that will help you quickly and accurately analyze data. You do not need Algebra skills beyond Algebra 2 in this class, but strong understanding of algebra is required.

Summer Assignments:

1) Practice Exercises – these are due the first day of class. Do not use a calculator unless specifically asked to do so. Show your work!

2) Read Huff, *How to Lie With Statistics* and answer the summary questions at the end of the packet. You can pick up a copy of this book from school, purchase your own on amazon, or pick it up at a public library.

3) Purchase or borrow a graphing statistical calculator such as the TI-84+CE/TI-84+, TI nspire CX, or TI nspire CX CAS.

4) Prepare a three-ring binder for the first day of class. The binder should have 2 sections. Section one should have regular loose leaf paper. Section two should have graph paper.

Practice Exercises:

Find a fraction of a number

1) Find $\frac{5}{8} of 72$

2) $Find \frac{6}{7} of\ 72$

3) $Find \frac{9}{10} of\ 125$

5) $Find \frac{3}{4} of\ 175$

Find a percent of a number

5) Find 23% of 170

6) Find 8.2% of 120

7) Find 12.25% of 56

8) Find 0.016% of 48

9) Find 0.18% of 80

Fraction/Decimal/Percent Equivalents

10) Complete the chart.

Fraction	Decimal	Percent
$\frac{2}{3}$		
	0.125	
		95%
	0.003	
		0.017%
$\frac{5}{12}$		
$\frac{7}{16}$		
	0.307	
		2.015%
	2.04	

Determine if a fraction is greater than or less than ½.

11.) Is $\frac{1}{4}$ greater than, less than, or equal to $\frac{1}{2}$?

12.) Is $\frac{3}{6}$ greater than, less than, or equal to $\frac{1}{2}$?

13.) Is $\frac{5}{6}$ greater than, less than, or equal to $\frac{1}{2}$?

14.) Is $\frac{3}{4}$ greater than, less than, or equal to $\frac{1}{2}$?

15.) Is $\frac{5}{8}$ greater than, less than, or equal to $\frac{1}{2}$?

16.) Is $\frac{1}{3}$ greater than, less than, or equal to $\frac{1}{2}$?

Add fractions

17.) $\frac{5}{7} + \frac{2}{4}$

18.) $\frac{10}{22} + \frac{7}{11}$

19.) $\frac{8}{14} + \frac{2}{7}$

20.) $\frac{5}{27} + \frac{1}{9}$

Subtract fractions

21.) $\frac{6}{8} - \frac{2}{12}$

22.) $\frac{5}{11} - \frac{2}{12}$

23.) $\frac{2}{3} - \frac{3}{9}$

24.) $\frac{4}{6} - \frac{2}{5}$

25.) $\frac{8}{9} - \frac{8}{27}$

Substitute a value for a variable in an expression

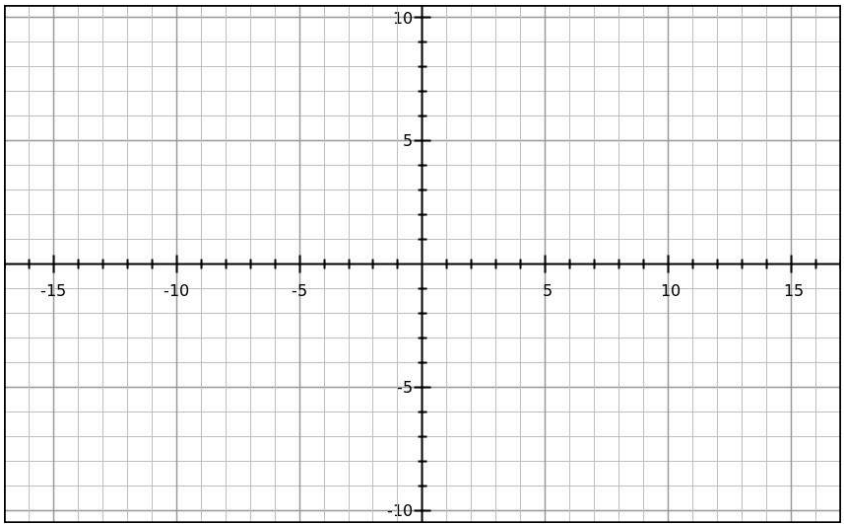
26) Find the value of y = 48.1825x – 118.25 when x = 45

27) Find the value of y = 62.138x – 11.23 when x = 64

28) Find the value of y = 0.614*x* + 124.7 when *x* = 40

Graph lines in slope-intercept form.

29) Graph y = -6.25x + 10



Measures of Central Tendency: Mean, Median, and Mode

Example: A manager at a small movie theater was analyzing the number of people who came to the movies during the week. Over nine days, he found the following data: 81, 89, 92, 85, 93, 62, 85, 105, and 90. Find the mean, median, and mode of the data.

First, find the mean. Remember that the mean is the same as the average.

Mean: add all of the data items and divide by the number of items.

$$= \frac{81+89+92+85+93+62+85+105+90}{9} = \frac{782}{9} = 86.8$$

The average or mean is 86.8 which could be rounded up to 87.

Next, find the median.

Median: the middle number when the data is ordered from lowest to highest.

First reorder the data from least to greatest:

62,81,85,85,**89**,90,92,93,105 The middle number, 89, is the median.

The median is 89.

Finally, find the mode.

The mode is the number that occurs most often. In this case, 85 occurs two times and all of the other number only once.

The number 85 is the mode.

The mode is 85.

Find the Mean, Median, and Mode.

30) The quiz scores of eight students are 12 points, 18 points, 20 points, 15 points, 18 points, 15 points, 16 points, and 14 points.

31) The table shows the number of books borrowed from the school library from Monday to Friday last week.

Books Borrowed from School Library

Monday	Tuesday	Wednesday	Thursday	Friday
120	148	165	147	180

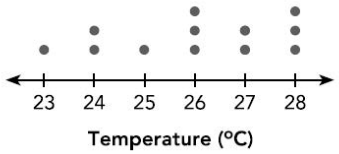
Find the Mean, Median, and Mode.

32) The data set shows the number of T-shirts sold each day of a sale at Abercrombie. 30, 36, 38, 32, 38, 30, 34, 32, 36

33) The data set shows the number of roses in each vase for sale at Lord's Farm. 12, 16, 20, 12, 24, 18, 16, 20

34) A group of high school students in the library were asked by Mrs. Costello the number of magazines that they read last month. 0, 2, 4, 1, 2, 0, 3, 2, 4, 1, 3, 2, 1, 2, 5, 3

35) The dot plot shows the temperature (℃) of a lab sample recorded over a period of time. Each dot represents 1 hour.



36) An animal shelter volunteer counted the number and the type of animals currently at the shelter. She uses the following notation to record the data: D (dogs), C (cats), H (hamsters), G (guinea pigs), and R (rabbits). Below is the data she recorded.

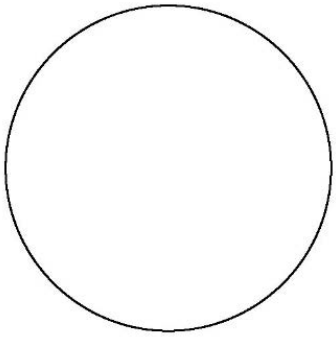
R	H	D	D	C	R	D	R	H	H
D	C	C	R	H	G	D	H	G	C

Animals in a Shelter

Animal	Frequency
Dogs	
Cats	
Hamsters	
Guinea pigs	
Rabbits	

Construct a pie chart to represent the data.

37) The Red Cross Blood Donor Clinic had a very successful morning collecting blood donations. Within 3 hours, people had made donations, and the following is a table showing the blood types of the donations:



Blood Type	A	B	O	AB
Number of donors	7	5	9	4

Construct a bar graph to represent the data.

38) Construct a bar graph to represent the depth of the Great Lakes:

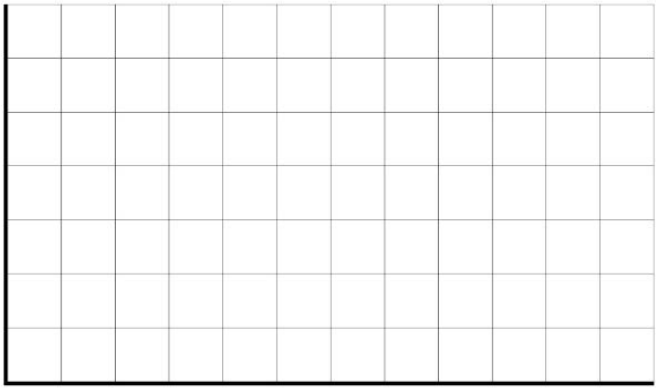
Lake Superior – 1,333 ft.

Lake Michigan – 923 ft.

Lake Huron – 750 ft.

Lake Ontario – 802 ft.

Lake Erie – 210 ft.



Construct a dot plot to represent the data.

39) The following data set lists the ages, arranged in order, for the CEOs of the 60 top-ranked small companies in America:

32, 33, 36, 37, 38, 40, 41, 43, 43, 44, 44, 45, 45, 45, 45,46, 46, 47, 47, 47, 48, 48, 48, 48, 49, 50, 50, 50, 50, 50, 50, 51, 51, 52, 53, 53, 53, 55, 55, 55, 56, 56, 56, 56, 57, 57, 58, 58, 59, 60, 61, 61, 61, 62, 62, 63, 69, 69, 70, 74

Create a dot plot for these ages.

40) Read the book, Huff, *How to Lie with Statistics* and fill out the summary below with 2-3 things in each box.

Things I knew already.
Things I never realized.
Things I still wonder about.