Review for Mean, Median and Mode

Match the terms with the correct definition.

_____1) Interquartile range	A) an unusually small or large value in a data set
_____2) mean	B) a measure calculated using population values
_____3) median	C) the difference between the largest and the smallest number
_____4) mode	D) the measure at the center of the data set dividing it into equal halves
_____5) midrange	E) the difference between the upper and lower quartiles
_____6) outlier	F) a measure calculated using sample values
_____7) range	G) the average of a data set
_____8) statistic	H) the value in a data set that comes up most often
_____9) parameter	I) half the sum of the minimum value and the maximum value

Match the value to its symbol

_____1) sum	A) Med
_____2) mean	B) R
_____3) median	C) S_x
_____4) midrange	D) Σ
_____5) range	E) MR
_____6) standard deviation	F) $\overline{X}$

Determine whether each statement is true or false. If the statement is false, fix it.

1) A single extremely large value can affect the median more than the mean.

2) Half of all the values will fall above the mode and half will fall below the mode

3) The range and midrange are both measures of variation

Multiple choice

1) What is the value of the mode when all values in a data set are different?

a) zero b) one c) there is no mode

2) Which is not part of the five-number summary?

a) Q_1 b) median c) minimum d) mean

3) If the data is skewed right, in what order do the measures of center fall?

a) mean, median, mode
b) mode, median, mean
c) mean, mode, median
d) median, mean, mode

Solve the following.

1) Below are the costs of 10 electric smooth top ranges rated very good or excellent by *Consumer Reports* in August 2002.

$850 $900 $1400 $1200 $1050 $1000 $750 $1250 $1050 $565

a) Find the mean price

b) Find the median price

c) Find the mode price

d) Find the standard deviation

e) Find the range

f) Find the midrange

2) A clerk entering salary data into a company spreadsheet accidentally put an extra 0 in the boss's salary, listing it as $2,000,000 instead of $200,000. Explain how the error will affect these summary statistics for the company payroll.

a) mean salary

b) median salary

c) mode salary

3) A small warehouse employs a supervisor at $1200 a week, an inventory manager at $700 a week, six stock boys at $400 a week, and four drivers at $500 a week.

a) Find the mean wage (be sure to include a salary for each person)

b) Find the median wage (be sure to include a salary for each person)

c) How many employees earn more than the mean wage?

d) Does the mean or median wage better describe the typical wage at the company? Explain.

4) Which measure, mean median, or mode is considered non-resistant?

5) 100 randomly selected students were surveyed about how many times per day they leave the classroom to go somewhere. The results are given in the distribution below.

# of Times Leave	Frequency
0	34
1	23
2	20
3	11
4	4
5	2
6	6

$\bar{x}$ = _____ MD = _____ Mode(s) = _____ MR = _____

6) The grouped frequency distribution shows the results of the scores on a science test. Complete the table and find the given measures of central tendency.

Class Limits	Class midpoints	Frequency
50 - 59		3
60 - 69		10
70 - 79		9
80 - 89		5
90 - 99		3

μ = _____ MD = _____ Mode = _____ MR = _____

7) The following measures are the diameter of each of the eight planets in miles.

Planet	Mercury	Venus	Earth	Mars	Jupiter	Saturn	Uranus	Neptune
Diameter (miles)	3,030	7,520	4,217	88,838	74,896	31,762	30,774	1,428

Calculate the five number summary and create a box and whisker plot of the data. Remember to label the axis and title the graph.

5-number summary values					

8) Use the 1.5 (IQR) rule to determine if there are any outliers for the data in #7 (you must show the work).

9) In 2006 a marketing report recorded the price of an adult ticket for a professional baseball game in the following states.

Arizona	$19.68		Philadelphia	$26.73
Baltimore	$22.53		Pittsburgh	$17.08
Boston	$46.46		Seattle	$24.01
Cleveland	$21.54		Tampa Bay	$17.09
Kansas City	$13.17		Texas	$15.81
LA Dodgers	$20.09		Toronto	$23.40
NY Yankees	$28.27		Washington	$20.88

Create a cumulative frequency graph of the data. Remember to label your axes and title your graph.

10) Below is data from the National Safety Council in 1999 listing the estimated number of injuries in certain sports based on hospital records during that year.

Sport	**Injuries**		**Sport**	**Injuries**
Basketball	644,921		Golf	39,473
Bicycle riding	544,561		Snowboarding	37,638
Football	334,420		Iceskating	25,379
Baseball, softball	326,714		Bowling	23,317
Roller skating	153,023		Tennis	22,294
Soccer	148,913		Water skiing	10,657
Weight lifting	86,024		Racquetball	10,438
Swimming	83,772		Billards, pool	3,685
Ice hockey	77,491		Archery	3,213
Fishing	72,598		Skateboarding	48,186
Volleyball	67,340			

Calculate the following

Mean = _____ Median = _____ Mode = _____

Standard deviation = _____ Range = _____

Describe this data using your SOCS giving specific values for any outliers and the measures of center.

Answer Key:

Matching terms:
1) E
2) G
3) D
4) H
5) I
6) A
7) C
8) F
9) B

Matching symbols:
1) D
2) F
3) A
4) E
5) B
6) C

True or false:
1) F switch mean and median in the sentence
2) F it should be median instead of mode
3) T

Multiple choice:
1) C
2) D
3) B

Solve:
1) a) $1001.50
b) $1025
c) $1050
d) $247.59
e) $835
f) $350

2) a) increase a lot
b) stay the same
c) stay the same
3) a) $525
b) $450
c) 2
d) median
4) mean
5) Mean = 1.58
Median = 1
Mode = 0
Midrange = 3
6) Mean = 72.8
Median = 74.5
Mode = 64.5
Midrange = 74.5

7) min = 1,428
Q_1 = 3,623.5
Med = 19,147
Q_3 = 53,329
Max = 88,838
See below for box and whisker plot
8) no outliers
9) see below for graph
10) Mean = 131,621.8
Med = 67,340
Mode = none
St. dev. = 180,317.13
Range = 641,708
S: skewed right
O: 544,561 and 644,921
C: Mean = 131,621.8
Med = 67,340
Mode = none
S: inconsistent