Date: _____

STATISTICS REVIEW

1. The final grades for the students in Mr. Milne's music class are listed below.

83	81	98	81	25	30	66
53	84	91	55	33	74	87
80	94	41	90	47	88	82
65	71	88	96	97	81	67
50	76	63	74	78	89	81

a) Complete the frequency distribution table.

Interval	Tally	Frequency
[20,29]	I	1
[30,39]	II	2
[40,49]	II	2
[50,59]	III	3
[60,69]	IIII	4
[70,79]	HHT	5
[80,89]	HHT HHT II	12
[90,100]	HHT I	6

b) Create a histogram to display the data.
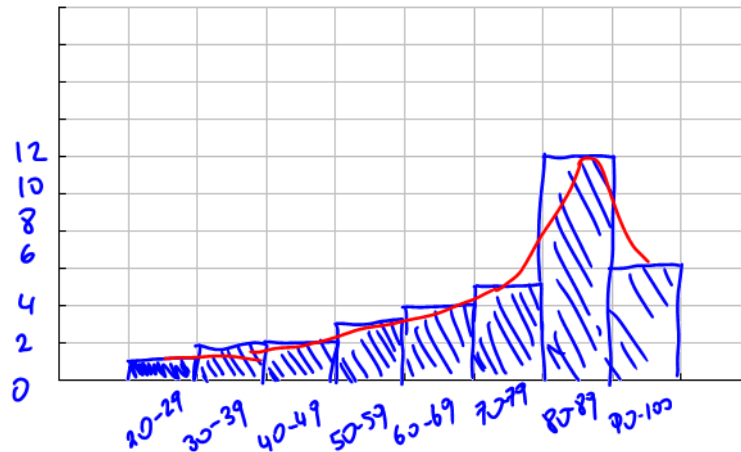
c) Join the middle of each bar to create a distribution curve. Describe the distribution.

Left skewed

3. Tourism Canada conducted a survey of Canadians travelling from Vancouver.
    Tourism Canada surveyed a sample of travellers from various age groups.
    Each traveller was asked the following question:

    "Is Vancouver as beautiful as everyone says?"

   b) What is the population of this survey?

    Canadians travelling from Vancouver

    c) Determine a flaw in this survey and suggest a way to fix this flaw.

    The way that the question worded influence a response. LOADED QUESTION
    "How do you describe Vancouver?"

4. Describe a situation in which the data would produce a bimodal distribution.

    The intervals with the highest frequences are at both ends of the graph,
    and the interval with the lowest frequency is in the centre.
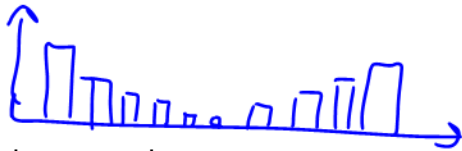
5. Identify the bias in each survey.
a) a survey where people are asked to mail their responses to the surveyor
    non-response bias
b) a survey where people are asked to choose from a list of suggested options
    leading question
c) a survey with the question: "The student council is doing a terrible job this year. Should they all
    resign?"

    loaded question.

6. Find the mean, the median, the mode, and the range for each set of data.
a) 55, 75, 41, 37, 81, 87, 64, 62, 45, 42, 83, 71

Mean: $(55+75+41+37+81+87+64+62+45+42+83+71) \div 12 = \boxed{61.91}$

Median: 37, 41, 42, 45, 55, 62, 64, 71, 75, 81, 83, 87
        $(62+64) \div 2 = \boxed{63}$

Mode: NO MODE

Range: $87 - 37 = 50$

b) 11, 14, 9, 15, 22, 7, 14, 21, 25, 26, 11, 9, 11

Mean: $(11 + 14 + 9 + 15 + 22 + 7 + 14 + 21 + 25 + 26 + 11 + 9 + 11) \div 13 = 15$
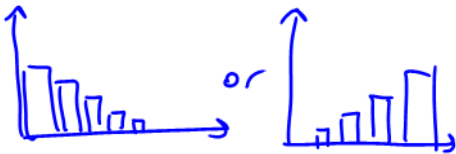
Median: 7, 9, 9, 11, 11, 11, (14), 14, 15, 21, 22, 25, 26

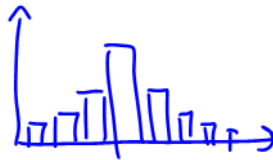Median = 14

Mode:

ONE MODE = 11

Range:

$26 - 7 = \underline{19}$
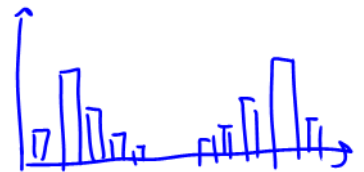
7. Sketch a graph of each type of distribution.
a) skewed   **b)** normal   **c)** bimodal

8. Identify the population and the sample for each survey.
a) A survey is sent to 2000 random households in Canada asking their opinions about natural gas prices.

Population: 2000 random households

Sample: Those who responded to the survey

b) Drivers are asked to comment on the current cost of their vehicle insurance at a local gas station on Friday.

Population: Drivers who bought gas at a local station

Sample: Those who commented

c) Baseball fans are asked to vote for their picks for the upcoming all-star game by filling out a ballot at a Saturday afternoon game.

Population: Baseball fans who came to watch a game on Sat.

Sample: Those voted

9. Find the mean, the variance, and the standard deviation for each set of data.

a) 91, 47, 58, 55, 74, 83, 64, 61, 55, 64, 67, 73

mean $= (91+47+58+55+74+83+64+61+55+64+67+73) \div 12 = 66$

$\overline{X} = 66$

x	x - mean	(x-mean)^2
91	$91-66 = 25$	$(25)^2 = 625$
47	$47-66 = -19$	$(-19)^2 = 361$
58	$58-66 = -8$	$(-8)^2 = 64$
55	$55-66 = -11$	$(-11)^2 = 121$
74	$74-66 = 8$	$(8)^2 = 64$
83	$83-66 = 17$	$(17)^2 = 289$
64	$64-66 = -2$	$(-2)^2 = 4$
61	$61-66 = -5$	$(-5)^2 = 25$
55	$55-66 = -11$	$(-11)^2 = 121$
64	$64-66 = -2$	$(-2)^2 = 4$
67	$67-66 = 1$	$(1)^2 = 1$
73	$73-66 = 7$	$(7)^2 = 49$
	Total	1728

Variance $= 144$

Standard Deviation $= \sigma = \sqrt{\dfrac{1728}{12}} = \sqrt{144} = 12$

b) 5, 8, 11, 9, 4, 7, 12, 8, 7, 16, 2, 8.

mean $= \dfrac{(5+8+11+9+4+7+12+8+7+16+2+8)}{12} = 8.1$ Variance $= 12.74$

Standard Deviation $= \sigma = \sqrt{\dfrac{152.92}{12}} = \sqrt{12.74} = 3.56$

x	x - mean	(x-mean)^2
5	$5-8.1 = -3.1$	9.61
8	$8-8.1 = -0.1$	0.01
11	$11-8.1 = 2.9$	8.41
9	$9-8.1 = 0.9$	0.81
4	$4-8.1 = -4.1$	16.81
7	$7-8.1 = -1.1$	1.21
12	$12-8.1 = 3.9$	15.21
8	$8-8.1 = -0.1$	0.01
7	$7-8.1 = -1.1$	1.21
16	$16-8.1 = 7.9$	62.41
2	$2-8.1 = -6.1$	37.21
8	$8-8.1 = -0.1$	0.01
	Total	152.92