Part 1: Answer 4 of the following 5 questions in this part. Each problem you complete is worth 16 points.

1) Below is a side-by-side stem and leaf diagram representing the weights of the members of the boys and girl's basketball teams for St. Grace's Catholic Middle School:

	BOYS' WEIGHTS			STEMS	GIRLS' WEIGHTS					
				4	8					
	4	4	4	**5**	0	1	1	2	3	4
9	8	7	7	6	**6**	1	1	2	3	4	5
	3	3	0	**7**						
		7	6	**8**	5					

Key: 87 = 7 | 8 | 5 = 85

a) Compute the standard deviation and the IQR for both girls and boys. Round to the nearest tenth.

	BOYS	GIRLS
Standard Deviation		
Inter-Quartile Range		

b) Which gender has the greater range of weights and what is that range?

Gender with the Greater Range	Range

c) Compute the mean, median, and mode for both boys and girls. Round to the nearest tenth if necessary.

	BOYS	GIRLS
Mean		
Median		
Mode		

d) Find any outliers for EACH set of data, and eliminate them (if any), and then recalculate the median heights for each gender.

	BOYS	GIRLS
OUTLIERS		
MEDIAN without the Outliers (if applicable)		

e) With the outliers removed (if applicable), answer the following question: Jimmy weighs 54 pounds and Sheila weights 54 pounds. Who is closer to the median height for their gender?

_____

2. Below is a table of 16 Canadian Provinces and the average precipitation each province receives.

Canadian Province	Annual average precipitation (mm)
St. John's	1482
Charlottetown	1201
Halifax	1474
Fredericton	1131
Quebec	1208
Montreal	940
Ottawa	911
Toronto	819
Winnipeg	504
Regina	364
Edmonton	461
Calgary	399
Vancouver	1167
Victoria	858
Whitehorse	269
Yellowknife	267

a. Calculate the mean and the standard deviation for the data. Round to the nearest tenth.

Mean = _____   Standard deviation = _____

b. What percent of the data lies within of 2 standard deviation from the mean? Round to the nearest percent.

ANSWER:_____

c. Find the percentile rank for Toronto.

ANSWER:_____

d. Find the approximate value of the 4th decile.

ANSWER:_____

e. Find a 5 % trimmed mean for the data. Round to the nearest tenth.

ANSWER:_____

3. The **Willamette Valley** is a 150-mile (240 km) long valley in the Pacific Northwest region of the United States.

Average rainfall in Willamette Valley

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Rainfall (ml)	15	21	48	24	16	8	2	1	2	3	5	10

a. Calculate the mean absolute deviation for the data. ROUND TO THE NEAREST TENTH.

MEAN ABSOLUTE DEVIATION = _____

b. Calculate the IQ, and the lower and upper fences.

IQ = _____   Lower Fence = _____   Upper Fence = _____

c. Identify any outliers for the data.

Outliers = _____

d. Create a modified box plot for the data. Draw it to scale.

_____

4. A survey recorded the number of people living in each of 40 houses. The numbers were as follows:

3	4	10	4	3	2	2	5	4	12
4	9	2	6	3	5	5	2	4	1
4	3	4	2	4	4	6	2	4	3
2	5	4	5	6	4	2	3	2	4

a. Using the data, create a frequency distribution, relative frequency distribution, and a cumulative frequency distribution using 4 intervals.
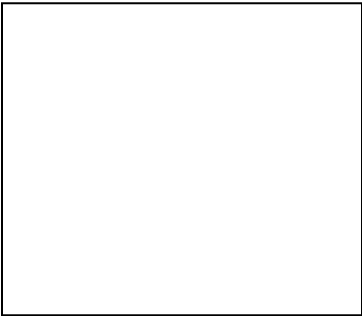
Interval	Frequency	Relative Frequency	Cumulative Frequency

b. Draw a frequency histogram, relative frequency histogram, and a cumulative frequency histogram for the data. Be sure to label each axis for each histogram.
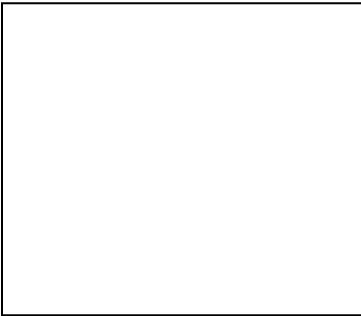
Frequency Histogram
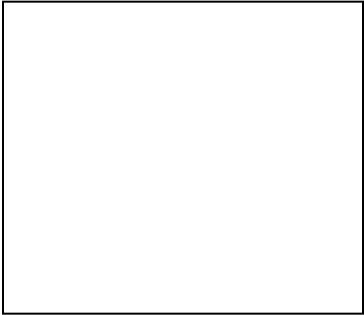
Relative Frequency Histogram

Cumulative Frequency Histogram

5. Breathing rate of the freshwater Sunfish

Temperature (°C)	Breathing Rate per minute
10	15
15	25
18	30
20	38
23	60
25	57
27	25

a. Perform a quadratic, cubic, and exponential regression on the, and give their corresponding a, b, c, d, and r values. Round to the nearest 3 decimal places.

	QUADRATIC	CUBIC	EXPONENTIAL
a			
b			
c			N/A
d	N/A		N/A
r			

b. Which model best represents the data?   _____

c. Using the best regression type from part a, determine the temperature(s) (to the nearest degree) if the breathing rate is 43.
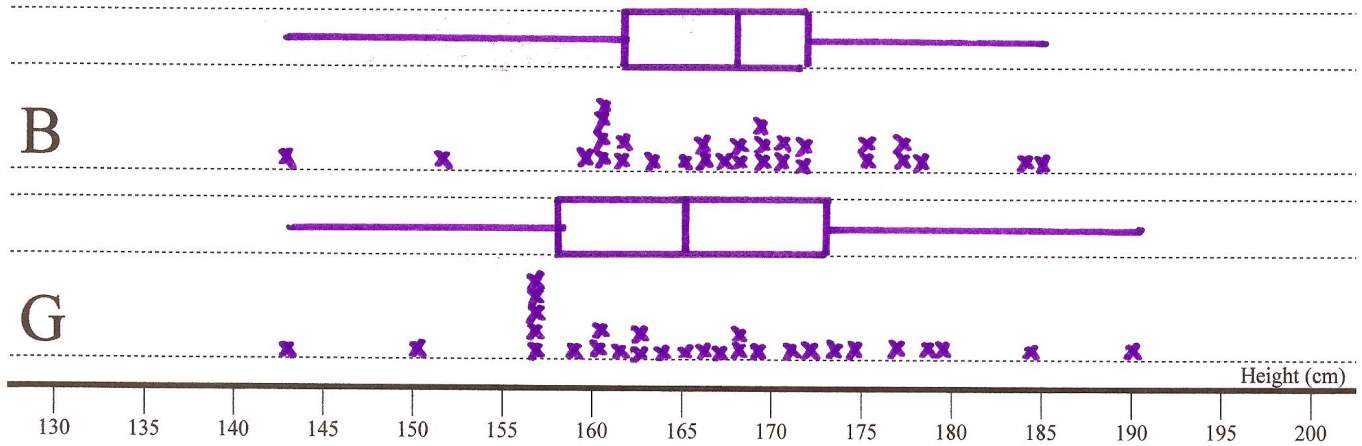

_____

d. Using the best regression type from part a, determine the breathing rate (to the nearest integer) if the temperature is 22.

_____

Part 2: Answer 3 of the following 4 problems in this part. Each problem you complete is worth 12 points for a total of 36 points.

1) A sample of 30 boys and 30 girls from the Karekare College population was surveyed and below are line plots and box and whisker plots of their heights.

a) Identify the approx. median height of the girls surveyed.   a)_____

b) Identify the gender with the greater mode.   b)_____

c) Identify the gender with the greater range.   c)_____

d) Identify the gender with the greater interquartile range.   d)_____

e) What is the percentile rank of a boy whose height is 168 cm? e)_____

f) What is the percentile rank of a girl whose height is 173 cm? f)_____

2) Answer BOTH parts to this problem:

a) The following is some student's grade report. This student just completed 15 credit hours.

Course	Credits	Grades
Calculus	5	C
Statistics	4	A
English	3	D
Music	2	B
History	1	A

The local university uses a 4 point grading system, i.e. A = 4 points, B = 3 points, C = 2 points, D = 1 point. Find the student's grade point average to the nearest hundredth.

a)_____

b) Find the average weight of a vehicle crossing a bridge if 5 motorcycles each averaging 100 lbs, 57 cars each averaging 5,000 lbs, and 28 trucks each averaging 10,000 lbs crossed a bridge one afternoon.

b)_____

3) Answer all three questions in this part.

a) Tommy and Jeremy are pitchers for the baseball team and are being evaluated by the coach. The speeds in miles per hour of each of their practices are shown below.

Practice Pitch Speeds

Which of the following statements is true regarding their performance?

A. Tommy has a lower mean speed.
B. Four of Tommy's speeds lie within 1 standard deviation of the mean of his data.
C. Tommy has a lower median speed.
D. Jeremy's median speed is higher than Tommy's mean speed.

Tommy	Jeremy
60	63
69	70
85	79
68	67
80	65
73	72
65	68

ANSWER:_____

----

b) The chart below shows the scores for each of the first 10 basketball games for the Hawks and the Blue Jays.

Which of the following is false?

A. The mode for the Hawks is more than the mode for the Blue Jays.
B. The mean for the Blue Jays is more than the mean for the Hawks.
C. The median for the Hawks is less than the median for the Blue Jays.
D. The range for the Hawks is less than the range for the Blue Jays.

HAWKS	BLUE JAYS
95	91
93	103
93	93
93	76
82	91
81	95
80	90
103	104
87	95
98	95

ANSWER:_____

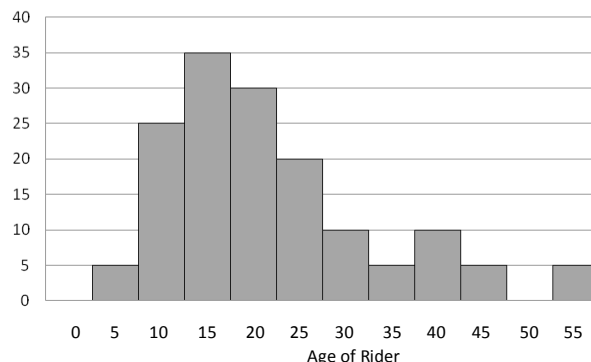
c) This histogram shows the ages of the last 150 people who rode *The Beast* at Kings Island.

Which of the following statements is correct about this histogram:

    1. The mean will most likely be less than the median.
    2. The mean will most likely be more than the median.
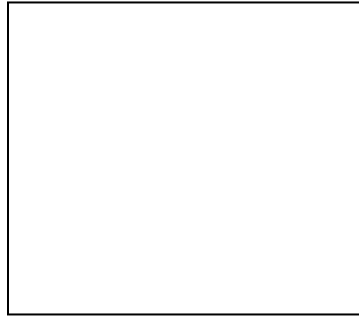   3 The mean will be exactly equal to the median.

Ages of Riders of *The Beast*

ANSWER:_____

4) The following table shows the sales S (in millions of dollars) for Guitar Center from 2005 to 2011:

YEAR	SALES
2005	213.3
2006	296.7
2007	391.7
2008	620.7
2009	785.7
2010	938.2
2011	1101.1

1. Use the regression feature to find a linear model that fits the data and sketch it in the above viewing window. Round to the nearest 3 decimal places.

a = _____   b = _____   r = _____

2. Describe the correlation that exists. (Circle one)

PERFECT   STRONG   MODERATE   WEAK   NONE

3. Estimate the sales for Guitar Center in 2018 to the nearest tenth
        of a million dollars.   _____

4. Estimate the year when the sales for Guitar Center first reached $ 2 billion.

_____

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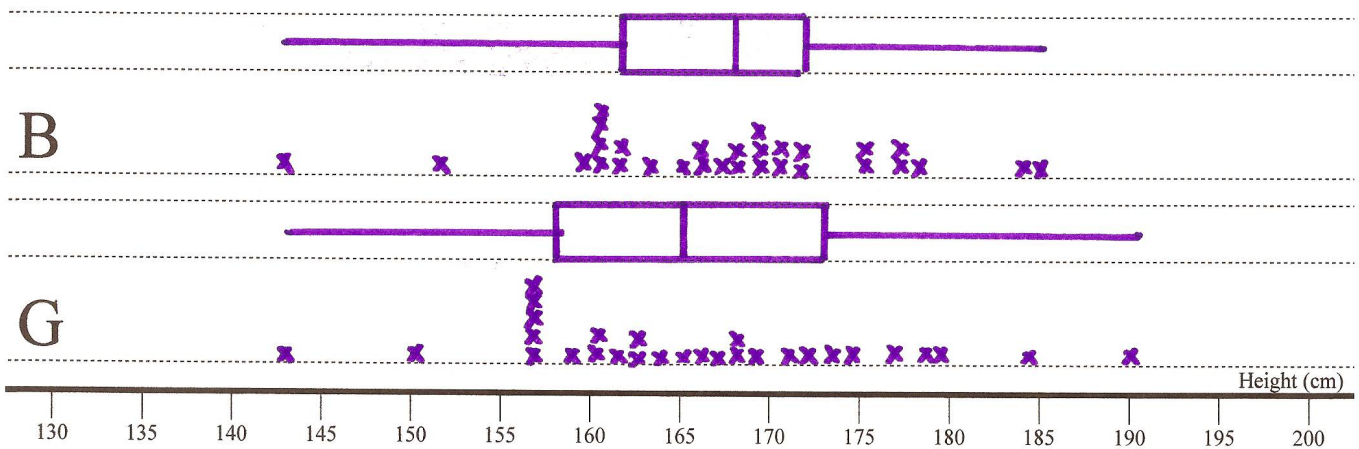
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Height (cm)

130   135   140   145   150   155   160   165   170   175   180   185   190   195   200

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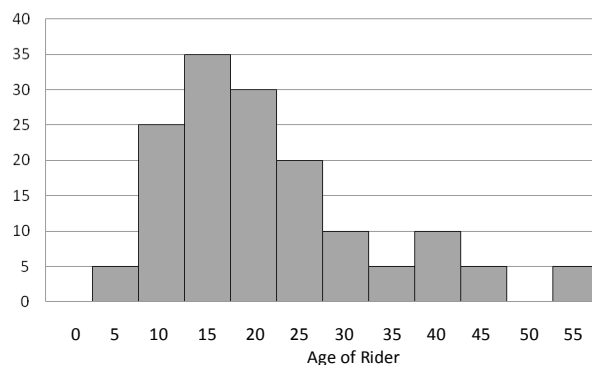
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