BRAC UNIVERSITY
Inspiring Excellence

STA201 Assignment 1

Question 1

The following table shows some information on a variety of different vehicles. Using the information given in table 1, answer question 1a – 1d

Table 1: Vehicles

Model	Engine size	Cylinders	Transmission	Number of gears	Fuel	Vehicle Class	City MPG	Hwy MPG	Model Year
ACURA RDX	3.5	6	Automatic	6	Gasoline	small SUV	19	28	2010
HYUNDAI Sonata	1.6	4	Manual	7	Gasoline	large car	28	38	2015
Ford Fiesta	1.6	4	Manual	5	Gasoline	Small car	28	36	2006
DODGE Challenger	6.4	8	Automatic	8	Gasoline	midsize car	14	25	2010
BMW X5 xDrive35i	3	6	Automatic	8	Gasoline	standard SUV	18	24	2013
HONDA Accord	3.5	6	Automatic	6	Gasoline	midsize car	21	32	2014
LAND ROVER Range Rover	3	6	Automatic	8	Diesel	standard SUV	22	29	2008
BENTLEY Mulsanne	6.8	8	Automatic	8	Gasoline	midsize car	11	18	2012
MAZDA CX-5	2.5	4	Automatic	6	Gasoline	small SUV	24	30	2013
PORSCHE Cayman GTS	3.4	6	Manual	6	Gasoline	small car	19	26	2015

1a)

i. How many variables are listed in table 1?

ii. Classify the variables according to their types (Qualitative / Quantitative).

1b) Construct a frequency distribution table to represent the summary information of the variable "Vehicle Class" and display the results in a pie chart.

1c) Complete the following table and answer the questions

Table 2: Frequency distribution of Transmission by Number of Gears

Transmission	Number of Gears				Total
	5	6	7	8	
Automatic					
Manual					
Total					

i. What is the modal response for the variable "Transmission"? (Which has the highest frequency?)

ii. What proportion of vehicles have 7 gears?

iii. What proportion of Automatic vehicles have 8 gears?

iv. What proportion vehicles with 6 gears are Manual?

v. Construct a side by side bar chart to represent the information given in the table 2.

1d) Complete the following table and answer the questions

Table 3: Frequency distribution of Hwy MPG

Hwy MPG	Tally	Frequency	Relative frequency	Cumulative relative frequency
15 – 20				
20 – 25				
25 – 30				
30 – 35				
35 – 40				

i. What proportion of vehicles have mileage between 20 and 30 MPG
ii. What proportion of vehicles have mileage greater than 30 MPG
iii. Construct a histogram to display the data represented in table 3.

Question 2

The following data set represents the record high temperatures in degree Fahrenheit (°F) for each of the 50 US states:

106	98	96	108	90	93	89	103	104	119
111	85	97	102	85	109	93	120	98	102
90	96	114	108	91	100	96	105	89	96
107	99	113	125	88	122	110	85	99	90
93	102	123	110	111	101	92	96	89	116

i. Construct a suitable frequency distribution table using interval 85 – 95, 95 – 105 and so on.
ii. Construct a histogram to visualise the data represented in the frequency distribution table from part (i).

Question 3

Do running times of American movies differ somehow from running times of French movies?
A researcher investigated this question by randomly selecting 25 recent movies of each type, resulting in the following running times:

Am:	94	90	95	93	128	95	125	91	104	116	162	102	90
	110	92	113	116	90	97	103	95	120	109	91	138	
Fr:	123	116	90	158	122	119	125	90	96	94	137	102	105
	106	95	125	122	103	96	111	81	113	128	93	92	

Construct a comparative stem-and-leaf display by listing stems in the middle of your paper and then placing the Am leaves out to the left and the Fr leaves out to the right. Then comment on the interesting features of the display.