Section 1.2 Worksheet – Organizing and Displaying Categorical Data

MDM4U

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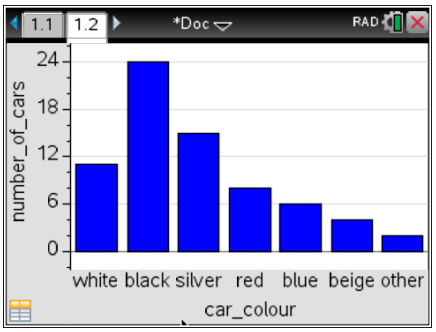
Refer to part 1, 2 & 3 from 1.2 lesson for help with the following questions

1) The colours of cars in the King's parking lot are recorded in the table below

Colour	Frequency
White	11
Black	24
Silver	15
Red	8
Blue	6
Beige	4
Other	2

a) What type of variable is 'colour of car'? *It is a nominal, categorical variable*

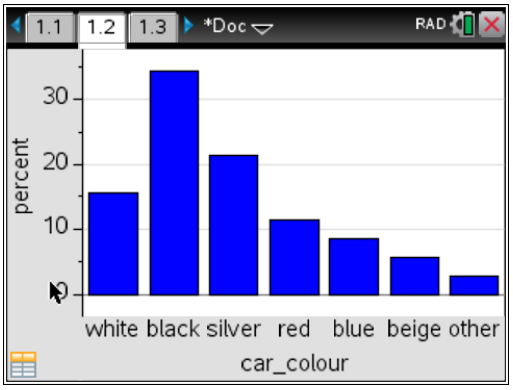
b) Make a bar graph to display this data



c) Copy the table and add a relative frequency column

d) Make a relative frequency bar graph

Colour	Frequency	Relative Frequency
White	11	15.7%
Black	24	34.3%
Silver	15	21.4%
Red	8	11.4%
Blue	6	8.6%
Beige	4	5.7%
Other	2	2.9%

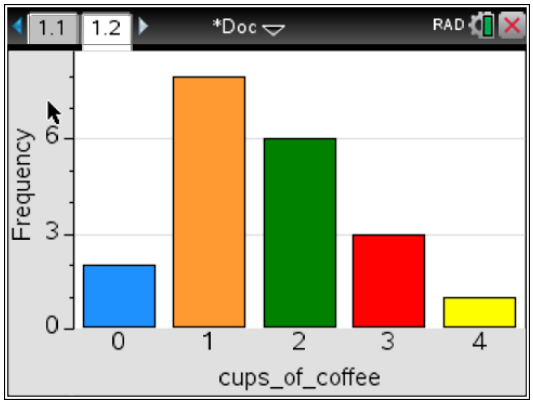


2) In order to set a reasonable price for a bottomless cup of coffee, a restaurant owner recorded the number of cups each customer ordered on a typical afternoon.

2	1	2	3	0	1	1	1	2	2
1	3	1	4	2	0	1	2	3	1

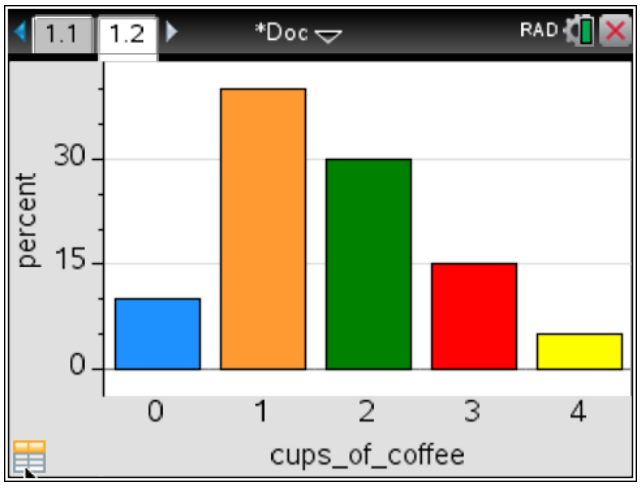
a) What type of variable is 'number of cups of coffee'? *Discrete, numeric variable*

b) Create a frequency table and bar graph to display the information



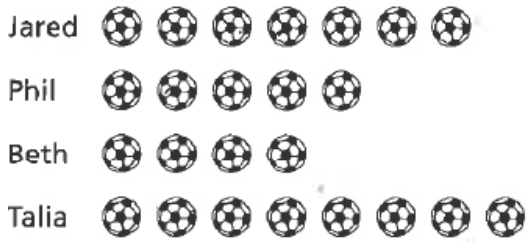
c) Create a relative frequency table and corresponding relative frequency bar graph

Cups of Coffee	Frequency	Relative Frequency
0	2	10%
1	8	40%
2	6	30%
3	3	15%
4	1	5%



Refer to part 5 from 1.2 lesson for help with the following question

3) The number of goals scored by the top four players on the school soccer team are displayed. Jared has 14 goals.



a) What information is missing from the graph? Provide it.

Legend is missing. Each soccer ball represents 2 goals.

b) How many goals does each player have?

Jared-14, Phil-10, Beth-8, Talia-16

c) What are the advantages and disadvantages of using a pictograph?

advantages-simple, visually appealing; disadvantages-hard to tell what fraction of the symbol has been drawn

Refer to part 6 from 1.2 lesson for help with the following questions

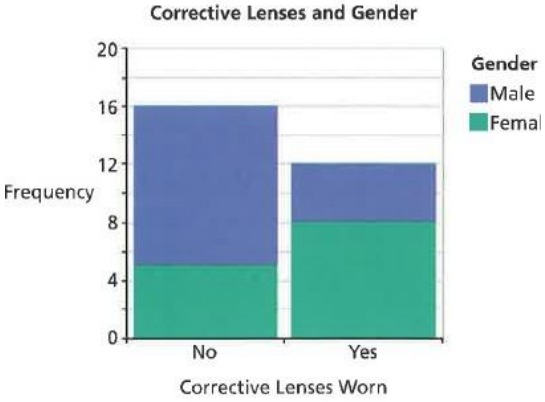
4) Here data from a survey conducted at eight high schools on smoking among students and their parents.

	Neither Parent Smokes	One Parent Smokes	Both Parents Smoke	Total
Student Does Not Smoke	1168 =86.1%	1823 =81.4%	1380 =77.5%	4371
Student Smokes	188 =13.9%	416 =18.6%	400 =22.5%	1004
Total	1356	2239	1780	5375

a) Copy the table and complete the totals
b) Calculate the conditional distribution of student smoking behavior based on parent smoking behaviour.
c) Use your conditional distribution to describe the relationship between the smoking behaviours of students and their parents. *When the number of parents smoking goes from 0 to 1 to 2, the percentage of students who smoke increases.*

5) Students were asked if they wear corrective lenses. The graph shows the responses. Do more females or more males wear corrective lenses? Explain.

	Male	Female	Total
Wears Corrective Lenses	4	8	12
Does Not Wear Corrective Lenses	11	5	16
Total	15	13	28



More females wear corrective lenses

6) Students were asked if they possess a valid driver's license. The results are shown below, broken down by gender. Does gender have any effect on whether a student has a license or not? Explain.

	Male	Female	Total
Has License	9 =64.3%	11 =73.3%	20
Does Not Have License	5 =35.7%	4 =26.7%	9
Total	14	15	29

To check if having a license depends on gender, I checked the conditional distribution for having a license based on gender (column percentages).

The proportion of females who have their license is higher than the proportion of males. This shows that gender may have an effect on whether a student has a license or not.