1. The graph below shows the average snowfall in Upper Rubber Boot by month.

Average Monthly Snowfall in Upper Rubber Boot

(graph: Snowfall (cm) vs Month, values rising to a peak at Aug. ~55 and falling)
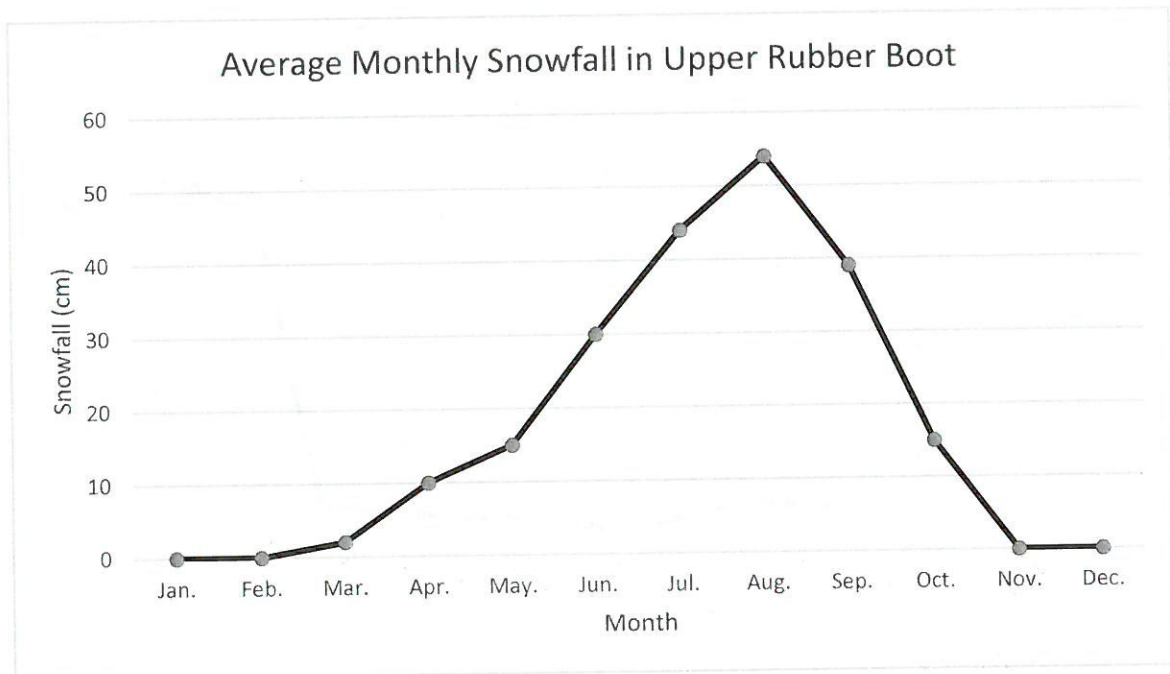
a) What month had the highest average snowfall?   August

b) What month had the lowest (not zero) average snowfall?   Mar.

c) In what months is there no snowfall in Upper Rubber Boot? Jan, Feb, Nov, Dec

d) What two months have exactly the same average snowfall? May, Oct

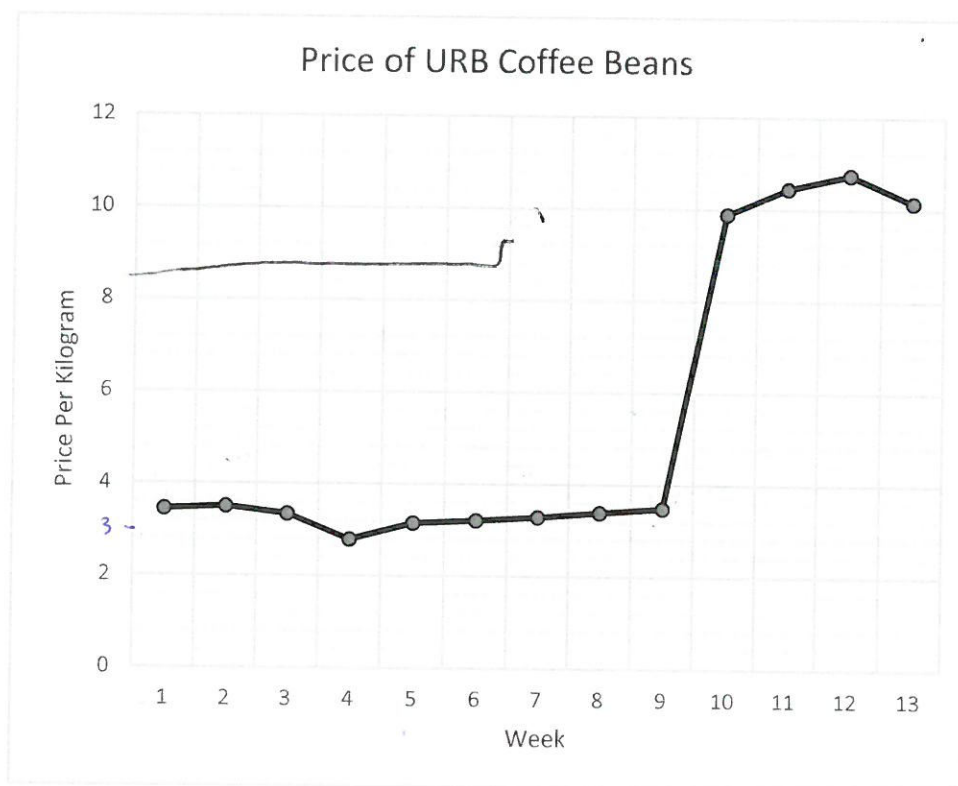e) What is the average snowfall in April?   10 cm

f) What is the average snowfall in July?   44 cm

g) Where do you think Upper Rubber Boot is?

Australia   Southern Hemisphere.

2. Mr. Galloway only makes coffee from beans grown in Upper Rubber Boot. The graph shows the price of one kilogram of URB coffee beans over the last 13 weeks.

Price of URB Coffee Beans

a) What was the price of one kilogram of URB coffee beans in week 1?

$ 3.5/Kg

b) What was the price of one kilogram of URB coffee beans in week 13?

10.5 $/Kg

c) In what week was the price of URB coffee beans the lowest?

4

d) In what week was the price of URB coffee beans the highest?

12

e) What is the trend of URB coffee bean prices in weeks 1 to 9?

Slight decrease

f) In what week did the price of URB coffee beans change the most?

10
(9-10)

g) Why do you think the price of URB coffee beans changed in week 10?

Supply and demand. Less beans to sell. Out of season.

h) Why do you think 13 weeks was used as the time frame for the graph?

*To show the quick change in price.*

i) What is the overall trend of URB coffee beans for the period shown in the graph?   *Increasing.*

3. As part of his fitness program, Xavier uses a pedometer to measure how far he walks each day. He recorded the data for one week of walking in the following table:

| XAVIER'S FITNESS PROGRAM – WALKING							
Day	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Kilometers	3	4.5	5	3.5	6	10	1

Display the data in a broken line graph:

Days vs Distance Walked
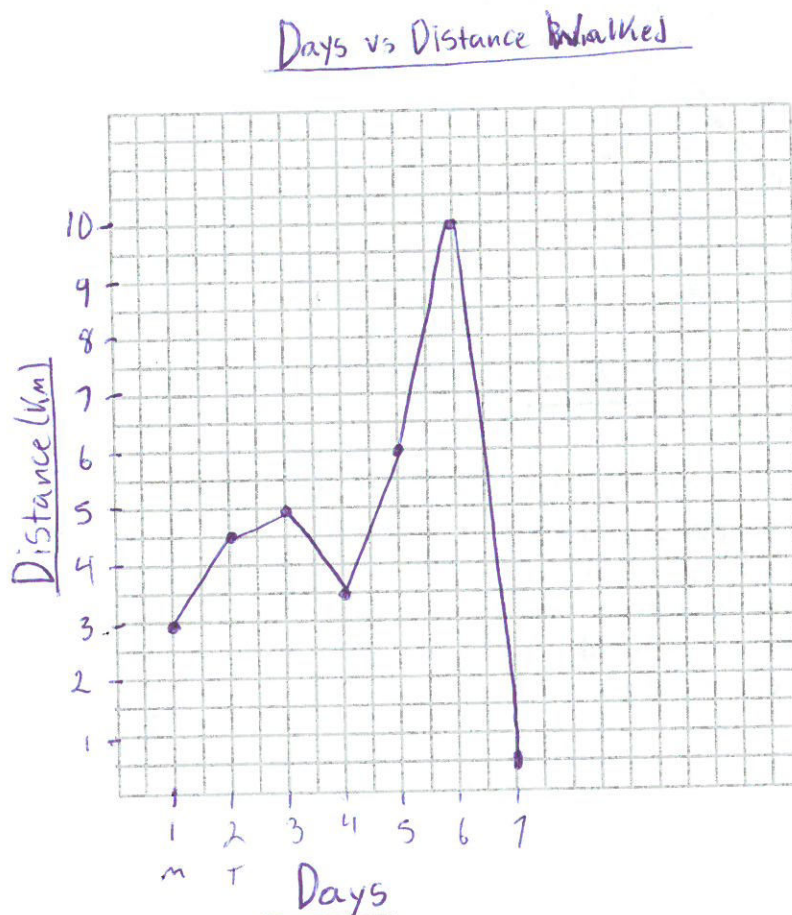
4. For 10 days, the Condor Cake and Pie Company sold an experimental chocolate-rhubarb pie. The sales data was recorded in the following table:

CHOCOLATE-RHUBARB PIE SALES										
Day	1	2	3	4	5	6	7	8	9	10
Number sold	2	6	10	18	8	16	28	34	36	38

a) Display the data in a broken line graph:

Chocolate Rhubarb Pie Sales over time
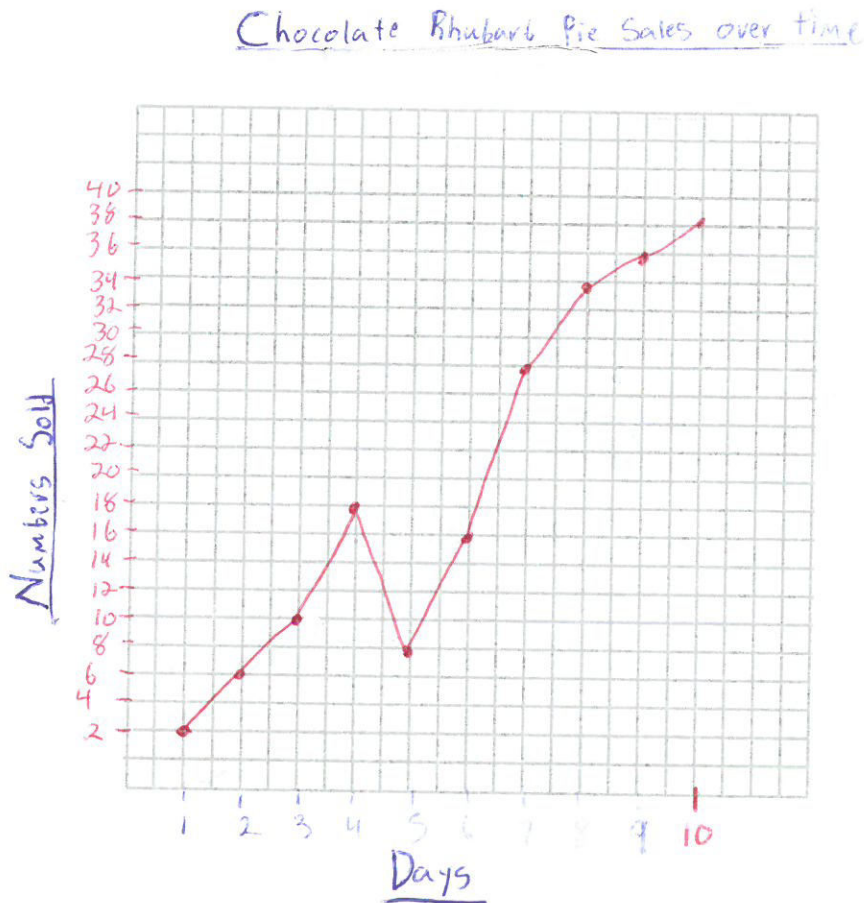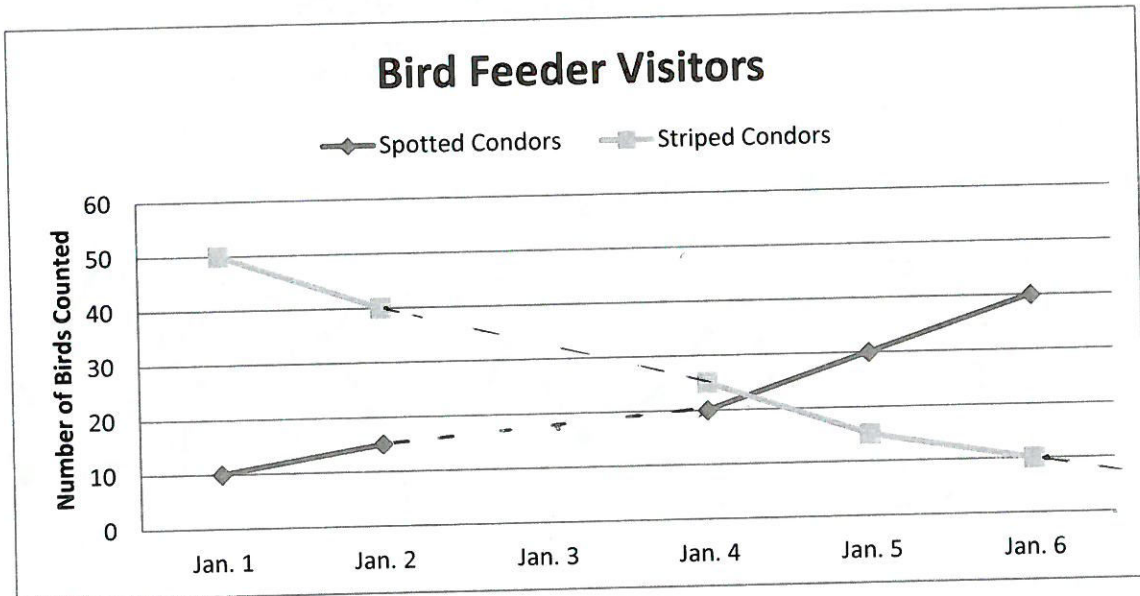

b) What overall trend do you see in the graph (circle your answer)?

- Significant increase in pies sold
- Slight increase in pies sold
- Little or no increase in pie sales
- Slight decrease in pies sold
- Significant decrease in pies sold

1. For the first week of January, Damian counted the number of spotted and striped condors that visited his backyard bird feeder. Damian missed the count on Wednesday because he played two rounds of golf that day. The data is represented in the following broken line graph:

Bird Feeder Visitors

◆ Spotted Condors   ■ Striped Condors

Number of Birds Counted (y-axis: 0, 10, 20, 30, 40, 50, 60)

x-axis: Jan. 1, Jan. 2, Jan. 3, Jan. 4, Jan. 5, Jan. 6

a) Estimate the number of **spotted** condors that visited the bird feeder on January 3.

    18

b) Estimate the number of **striped** condors that will visit the bird feeder on January 7.

    6

c) On what day was the number of visits by spotted condors approximately the same as the number of visits by striped condors?

    Jan 4th

d) What is the overall trend of visits by spotted condors?

    Increasing

e) What is the overall trend of visits by striped condors?

    Decreasing

2. Scarlett is considering adding shares in Condor Electronics and Hixon Petroleum to her investment portfolio. As part of her research, she made a graph of the share prices of the two companies over the last year:

Price Per Share
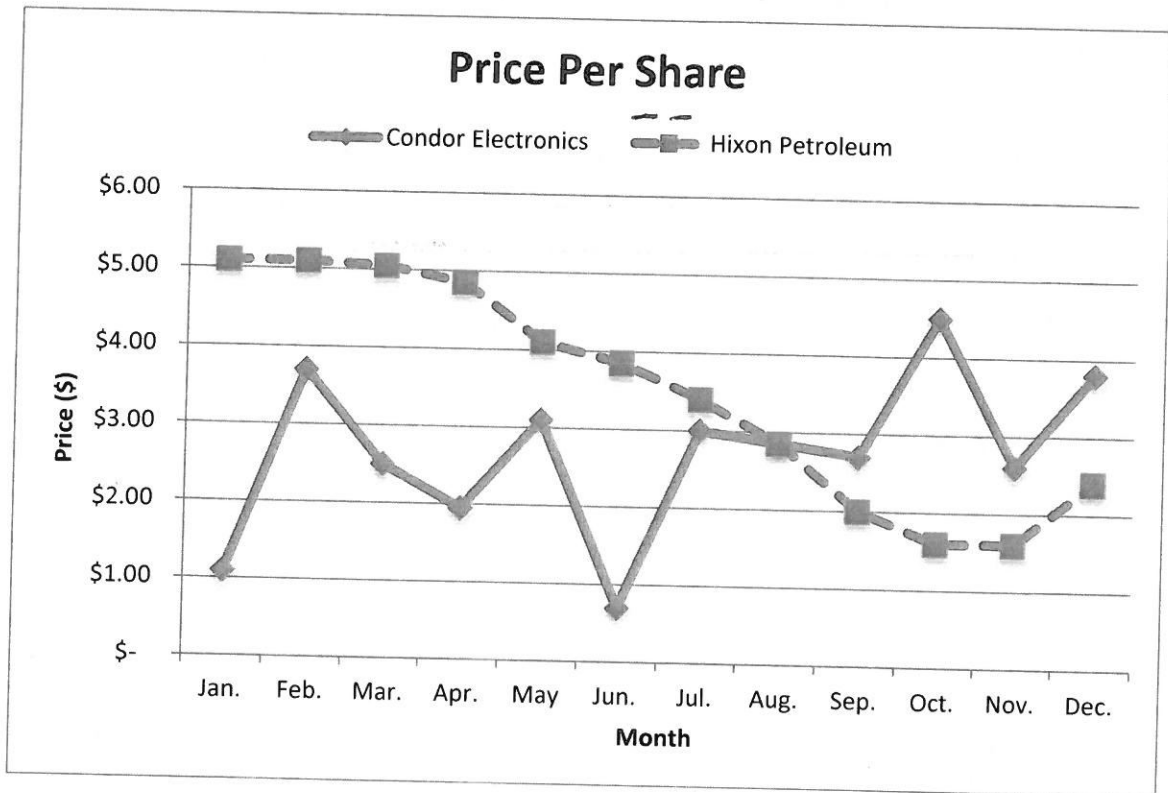
a) What was the price of one share of Condor Electronics at the beginning of the year?

$ 1.10

b) What was the price of one share of Hixon Petroleum at the beginning of the year?

$ 5.10

c) What was the price of one share of Condor Electronics at the end of the year?

$ 3.90

d) What was the price of one share of Hixon Petroleum at the end of the year?

$ 2.40

e) In what month were the share prices of the two companies approximately the same?

August.

f) What was the overall trend in the price of shares in Condor Electronics last year?

Increasing (significant)

g) What was the overall trend in the price of shares in Hixon Petroleum last year?

Decreasing (Significant)

3. As an experiment, the Condor Pizzeria added sardine pizza to its menu last week. Create a broken line graph from the sales results shown in the table below.

| Sardine Pizza Sales By Gender					
Day	Mon.	Tue.	Wed.	Thu.	Fri.
Girls	15	20	18	12	10
Boys	5	10	15	20	22

Pizza Sales by Gender
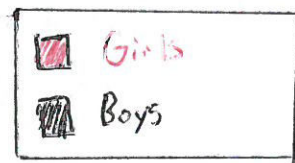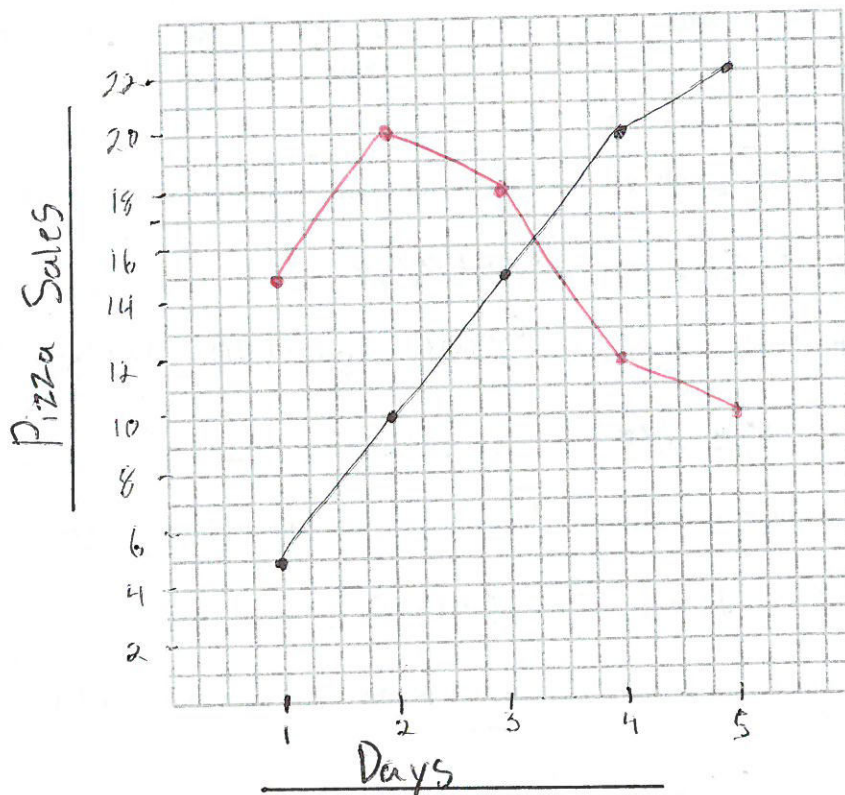
4. Every January for the last ten years, local bird watchers have held a bird count of condors in the Prince George area. The table below shows the data they collected:

Condor Sightings in Prince George, 2001 – 2010										
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Number	119	115	113	109	111	109	107	108	105	101

The president of the local bird watchers society made a graph of the data:

**Condor Sightings in Prince George, 2001-2010**
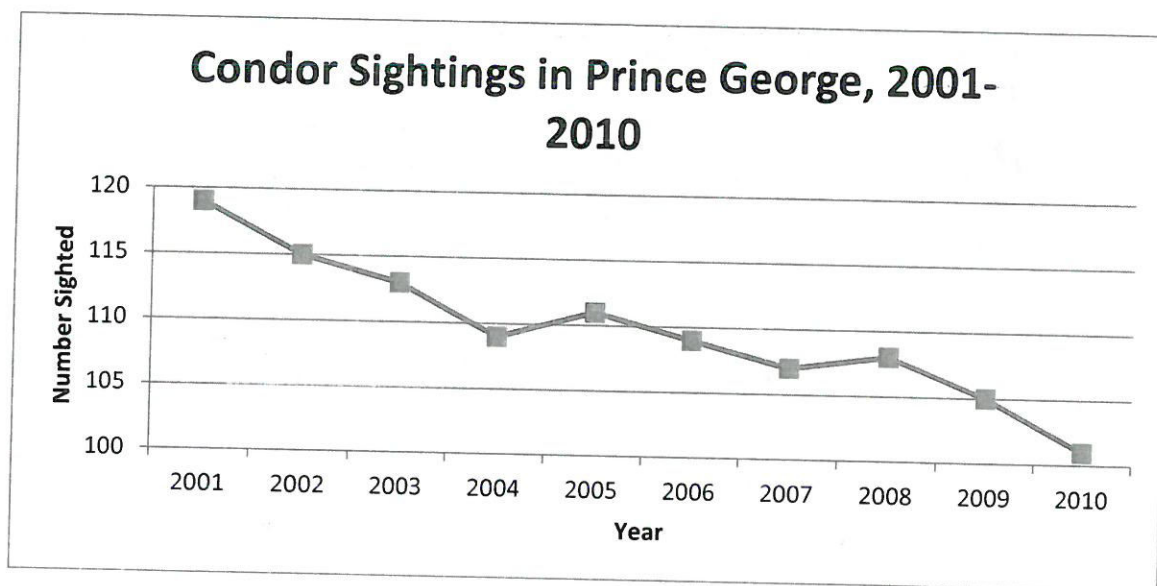
a) According to the graph, what is the overall trend of condors seen in Prince George?

Significant decrease

b) How is the graph misleading? _Scale 120-100 looks like there is a huge drop in birds._

c) Why is the graph misleading? _To show a significant drop for funding/protection._

d) Describe another way you could create a graph of the data that would also be misleading?
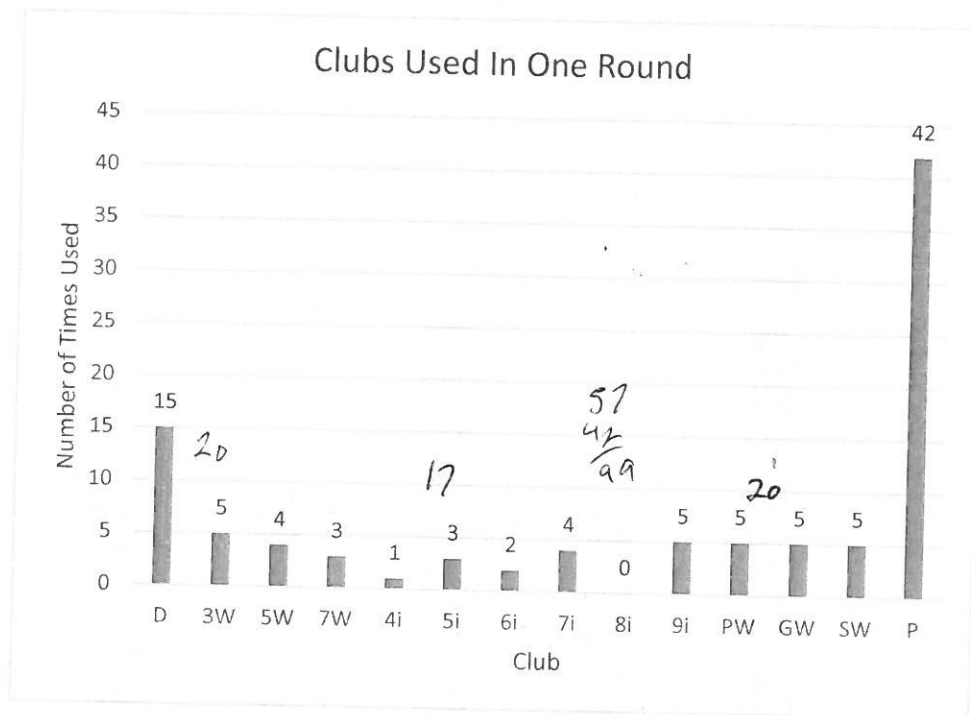
Only show 2004-2005 → shows increase.

1. A group of friends entered into a fitness challenge to see who could walk the most in one week. The data was displayed as a bar graph:

Kilometers Walked Last Week
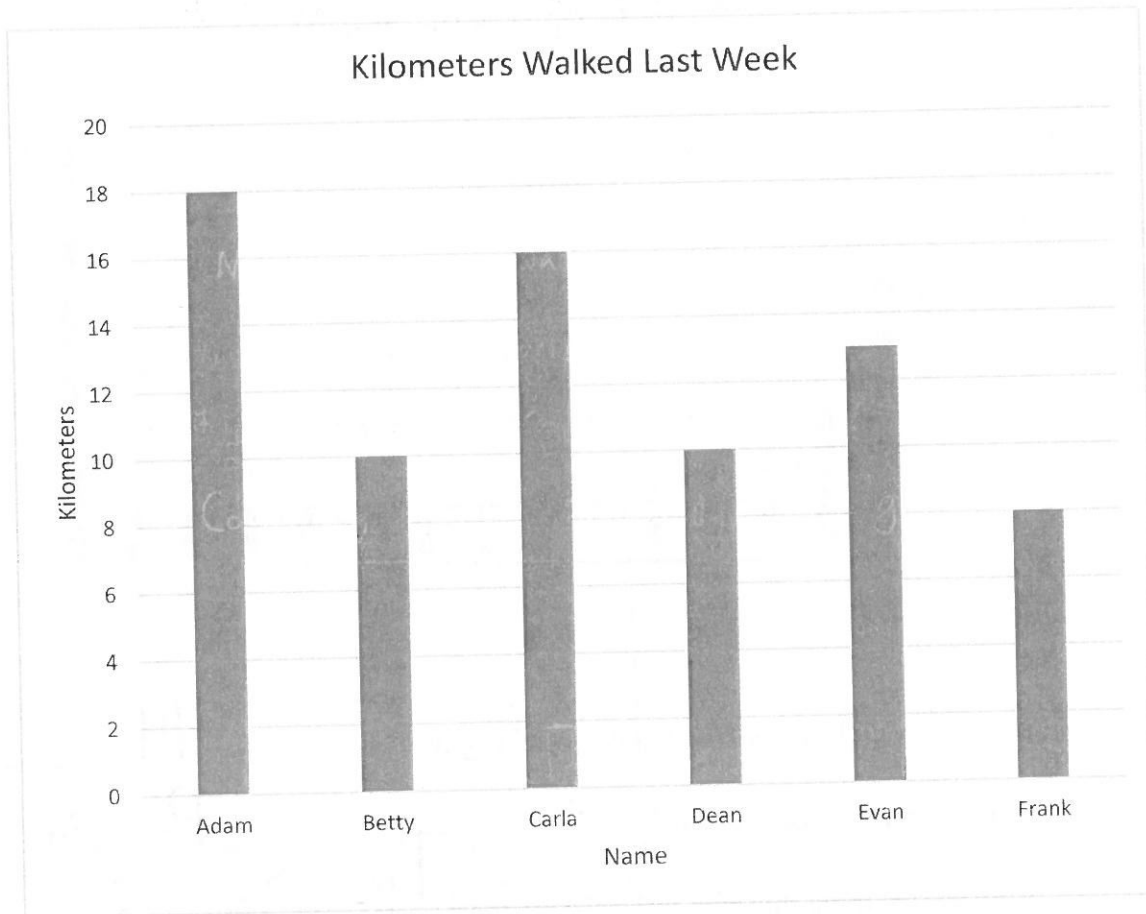
a) Who walked the most in one week?   _Adam_____

b) Who walked the least in one week?   _Frank_____

c) How far did Carla walk?   _16 Km_____

d) How far did Evan walk?   _13 Km_____

e) Who walked the same amount as Dean?   _Betty_____

f) Who walked twice as far as Frank?   _Carla_____

2. Winston kept track of how many times he used each of the clubs in his golf bag in one round of golf. The data is displayed in a bar graph:

Clubs Used In One Round

Number of Times Used (y-axis): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45

Bar values:
D: 15 (handwritten: 20)
3W: 5
5W: 4
7W: 3
4i: 1
5i: 3 (handwritten: 17)
6i: 2
7i: 4 (handwritten: 57, 4, 99)
8i: 0
9i: 5
PW: 5 (handwritten: 20)
GW: 5
SW: 5
P: 42

Club (x-axis)

a) How many clubs does Winston carry in his bag? **14**

b) What club was used the most? **P (Putter)**

c) Why do you think this club was used the most? **He is bad at putting? Must put every hole (unless amazing shot)**

d) Which club was not used at all? **8 iron**

e) Of the clubs used, which club was used the least? **4 iron**

f) What club was used three times as much as the sand wedge? **Driver**

g) What do you notice about how often Winston used his short irons (9i to SW)? **All the same, 5 times.**

h) What was Winston's final score? **99**
   * Add all strokes.

3. The RCMP in Prince George compiled the data on all the UFO sightings last year and categorized the reports by neighborhood:

UFO Sightings by Neighborhood, 2014				
Neighborhood	The Bowl	The Hart	Pineview	College Heights	Beaverly
Number of Sightings	8	13	32	11	48

a) Draw a **vertical** bar graph to represent the data:

UFO Sightings vs Location
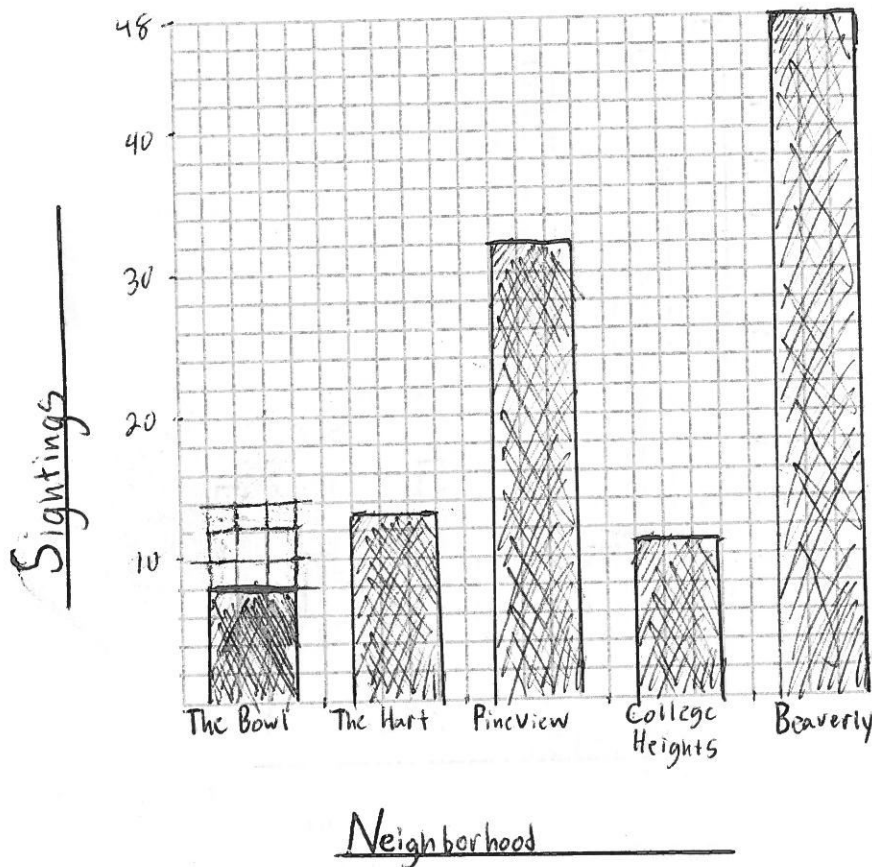
b) Why do you think more UFOs are reported in some neighborhoods than others? _____

Less city lights / Amount of time outside (Free time) /

_____

4. The geography class set up a station on Winnipeg Street to count the number of cars that passed the school in one day. The data was categorized by car color:

Cars Counted By Color								
Color	Red	White	Silver	Black	Green	Blue	Yellow	Brown	Other
Number	315	300	42	295	65	85	21	35	74

9

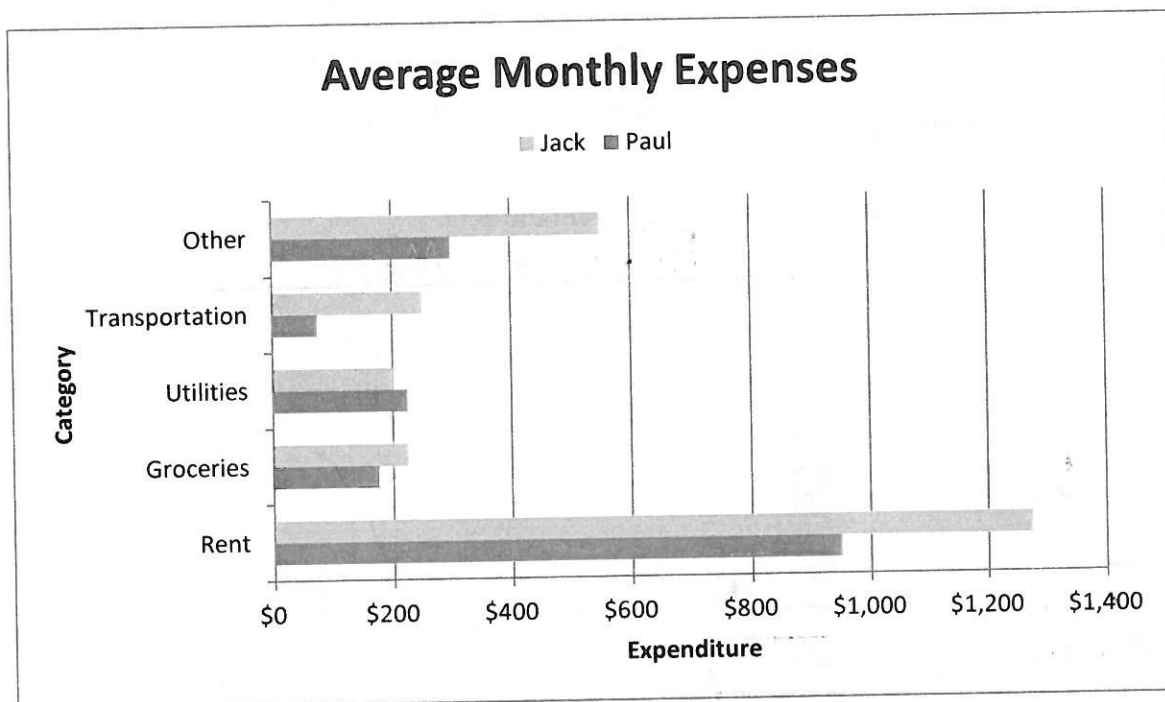a) Draw a **vertical** bar graph to represent the data:

Car Count vs Color
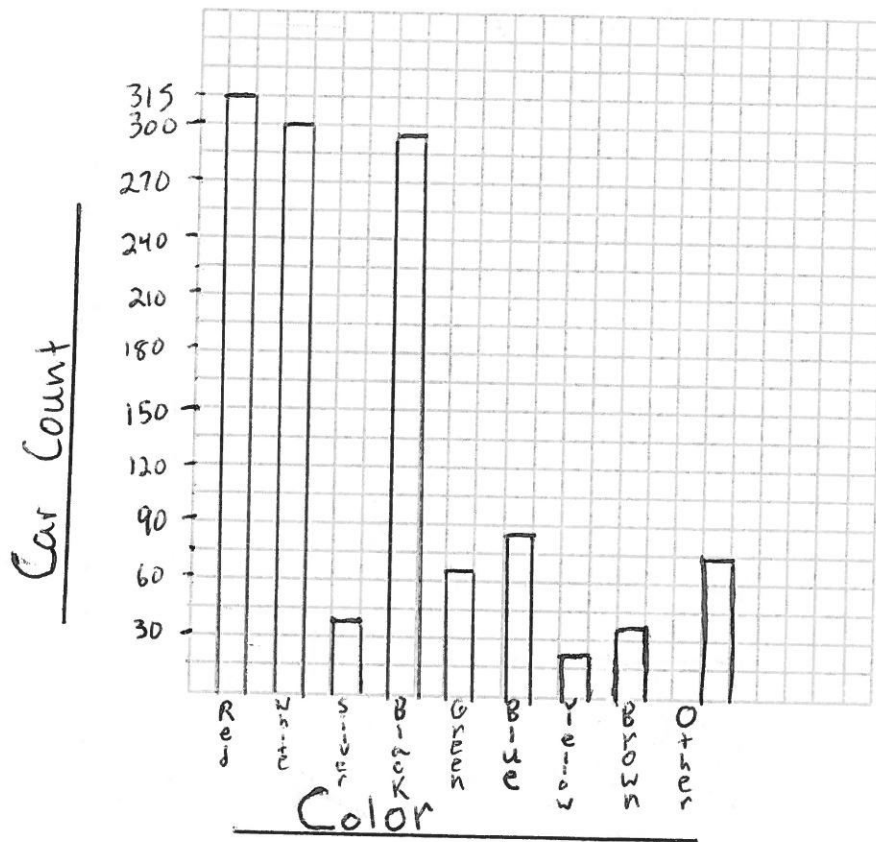
b) What conclusion can you draw from this graph? Red, White and black are the most popular. Yellow is the least popular Shown (ignoring "other")

24

1. Paul and Jack completed a **horizontal double bar graph** comparing their monthly expenses:

Average Monthly Expenses

◻ Jack ◼ Paul

(Category axis: Other, Transportation, Utilities, Groceries, Rent; Expenditure axis: $0, $200, $400, $600, $800, $1,000, $1,200, $1,400)

a) In which category does Paul spend more than Jack?   _Utilities_

b) How much does Paul spend on groceries?   _≈ 180 $_

c) In which category do both Jack and Paul spend the most?   _Rent_

d) Why is a horizontal bar graph a better representations of the data than a vertical bar graph?

Long catagory names

e) Why would a broken line graph not be an appropriate representation of the data? ____

_No, because there are non-numerical catagories._
Data is not continues / related.

2. In the most recent edition of the *Martian Geographic Society's Almanac*, the six longest rivers are listed in a table:

Rivers of Mars						
River	St. Helen	North Craterfield	South Craterfield	Arakeen	Tantoine	Dusty
Length (km)	1200	650	350	225	185	60

Draw a horizontal bar graph to represent the data:
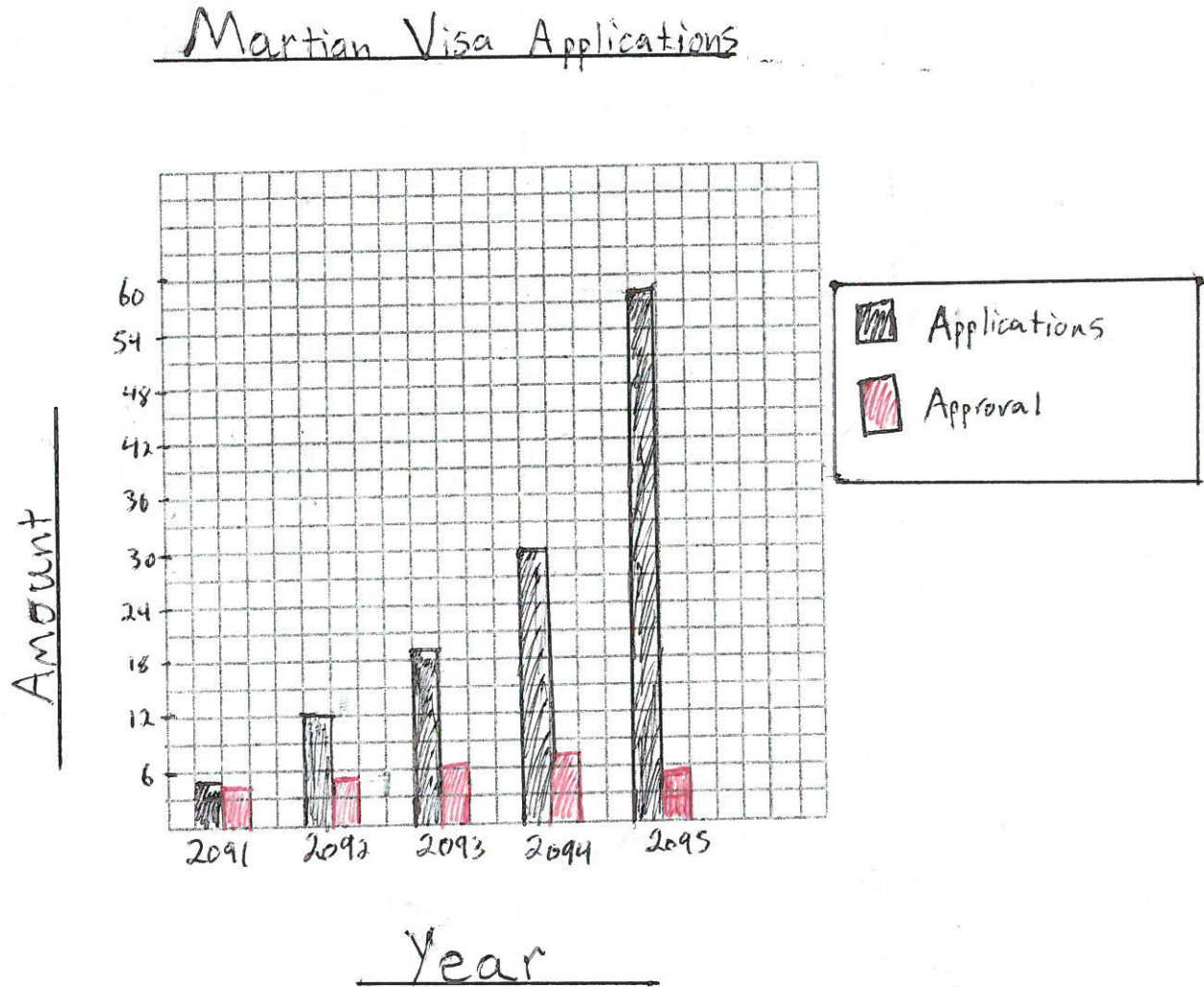

Rivers of Mars
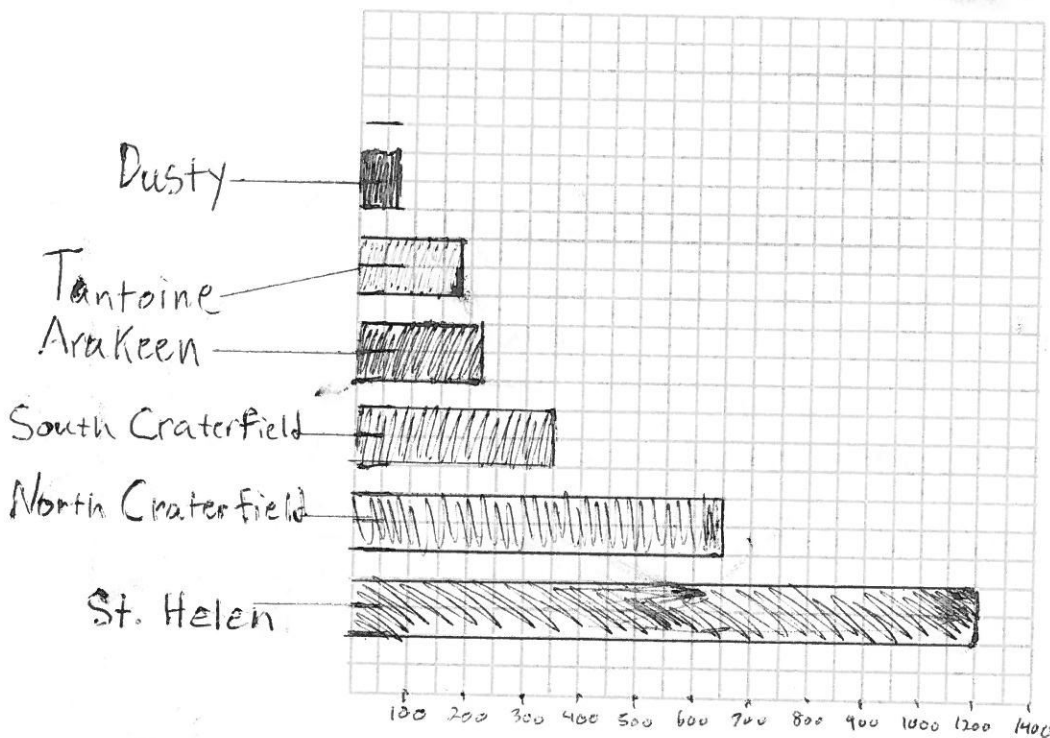
Length (Km)

River's Name

3. To emigrate to Mars, you have to apply for a visa. The following table shows visas applied for and approved for the past five years:

Martian Visa Applications					
Year	2091	2092	2093	2094	9095
Applications	5	12	19	30	58
Approvals	4	5	6	6	5

Draw a vertical double bar graph to represent the data:

Martian Visa Applications

85-8   4

4. On the last math exam, Adam got 85%, Beth got 86%, Calvin got 87% and you got 88%. Draw a vertical bar graph that exagerates your achievement. Your graph should mislead in at least two ways:

Exam Scores

Score

88
87
86
85

Me   Calvin   Beth   Adam

Name
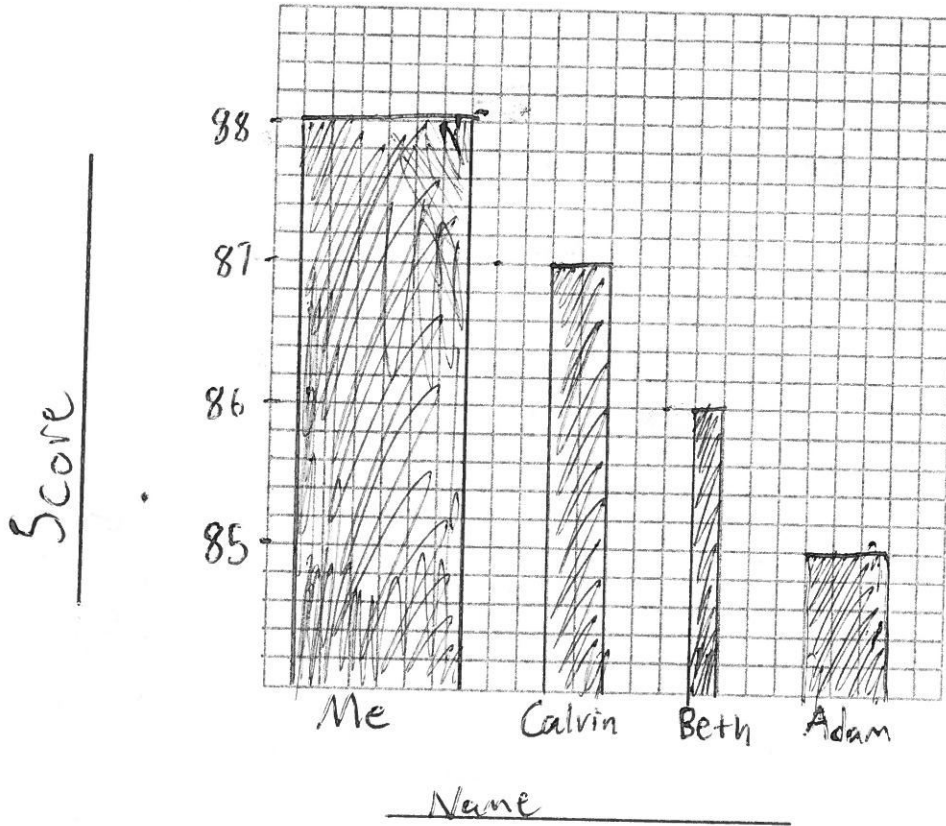
1. In 2001, e-commerce was still a new and novel idea. In January, Condor Direct Electronics introduced an on-line shopping option for its customers in addition to their traditional catalog. Sales data for the year was compiled into a stacked bar graph:

Monthly Revenue, 2001
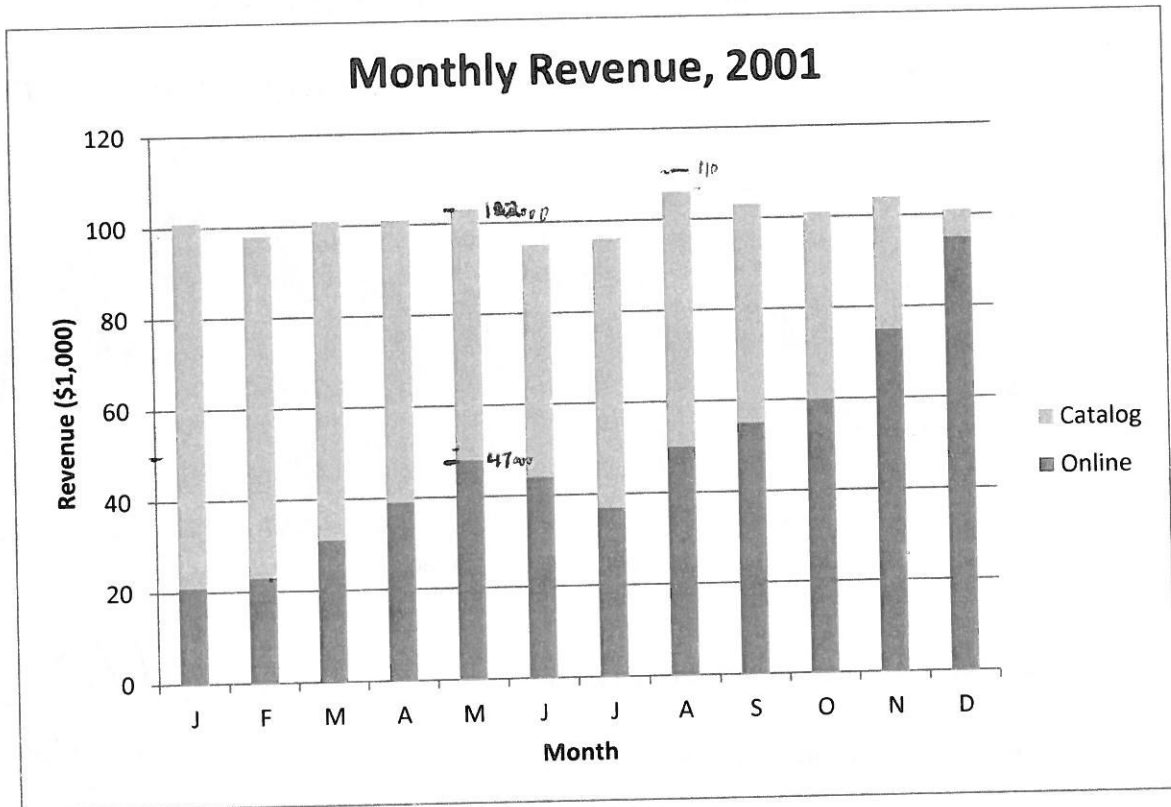
a) What was the revenue from on-line sales in February?

$\approx \$22\,000$

b) What was the revenue from catalog sales in March?

$\approx \$55\,000$

102,000 – 47 000

c) What was the over-all revenue in in April?

$\approx \$105\,000$

d) What is the trend in revenue from on-line sales?

Significant increase

e) What is the trend in revenue from catalog sales?

Significant decrease

f) What is the overall trend in sales?

No significant ↑ or ↓

2. The Marsoom Police Department keeps records of the different types of offences for which tickets were issued. The last 10 years are shown in this graph:


Marsoom PD Tickets Issued

Chewing Gum   Ugly Socks   Poor Grammar   Other
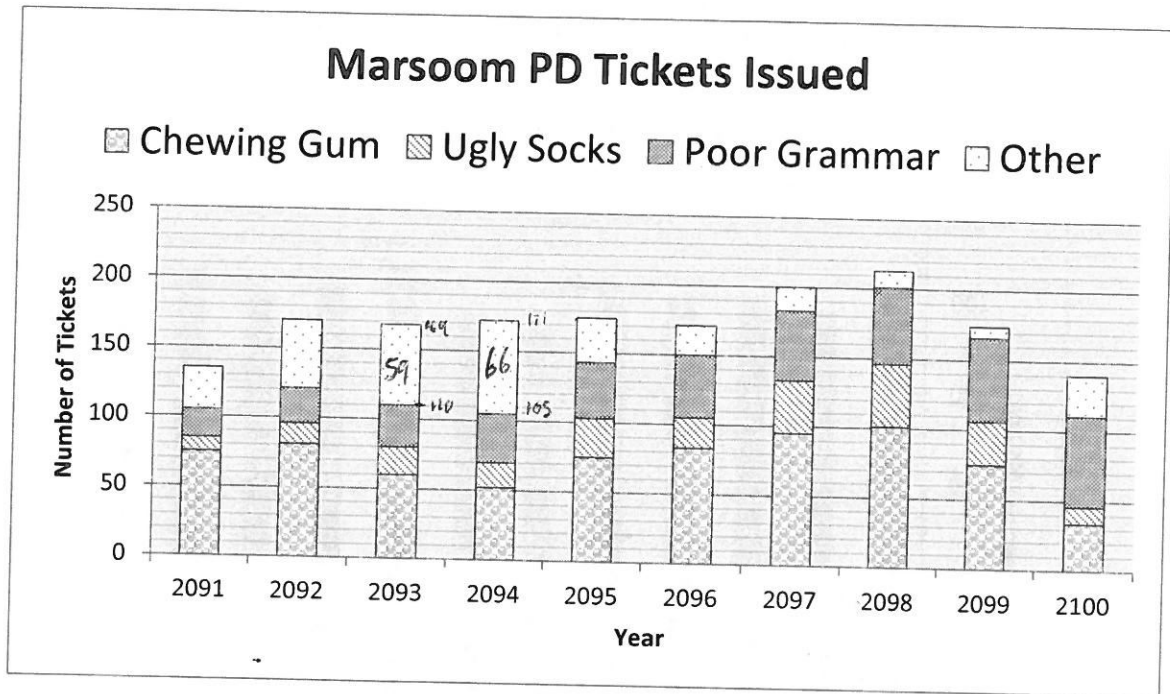
a) How many tickets were issued in 2095? **170**

b) In what year did overall tickets peak? **2098**

c) How many tickets for wearing ugly socks were issued in 2091? **10**

d) For what offence were most tickets issued in 2092? **Chewing Gum**

e) In what year did the number of tickets issued for poor grammar exceed the number of tickets issued for chewing gum? **2100**

f) Which offence shows a steady increase in tickets issued? **Poor Grammar**

g) How many tickets for chewing gum were issued in 2094? **≈ 52**

h) In what year were tickets for "other" offences the highest? **2094**

3. Connor and Colleen are raising money for their school trip to Upper Rubber Boot by selling cookies. The sales for the first four weeks is shown in the following table:

Cookie Sales by Salesperson				
Week	W1	W2	W3	W4
Connor	10	6	16	20
Colleen	8	9	4	1
	18	15	20	21

Draw a vertical stacked bar graph to represent the data:
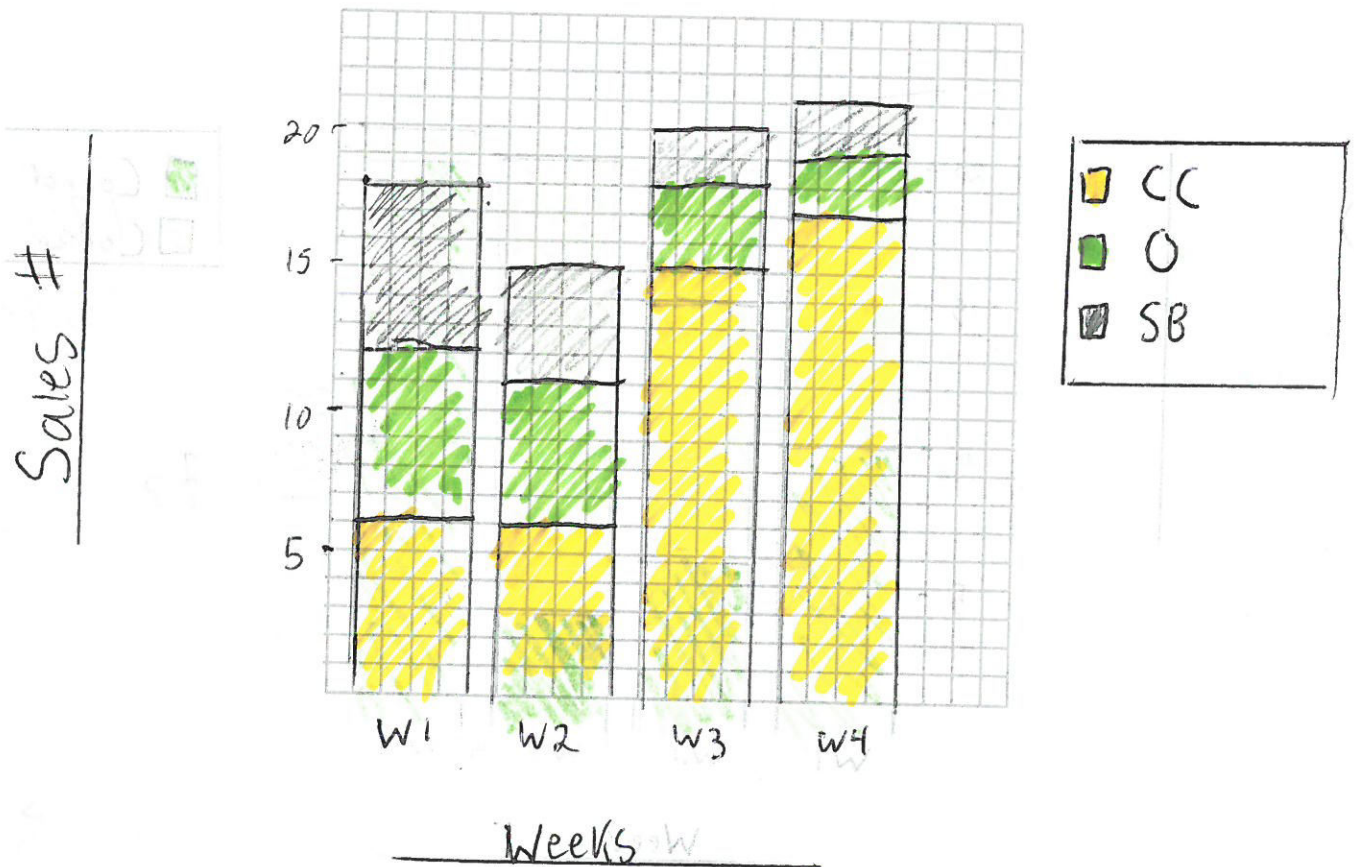

Cookie Sales by Salesperson
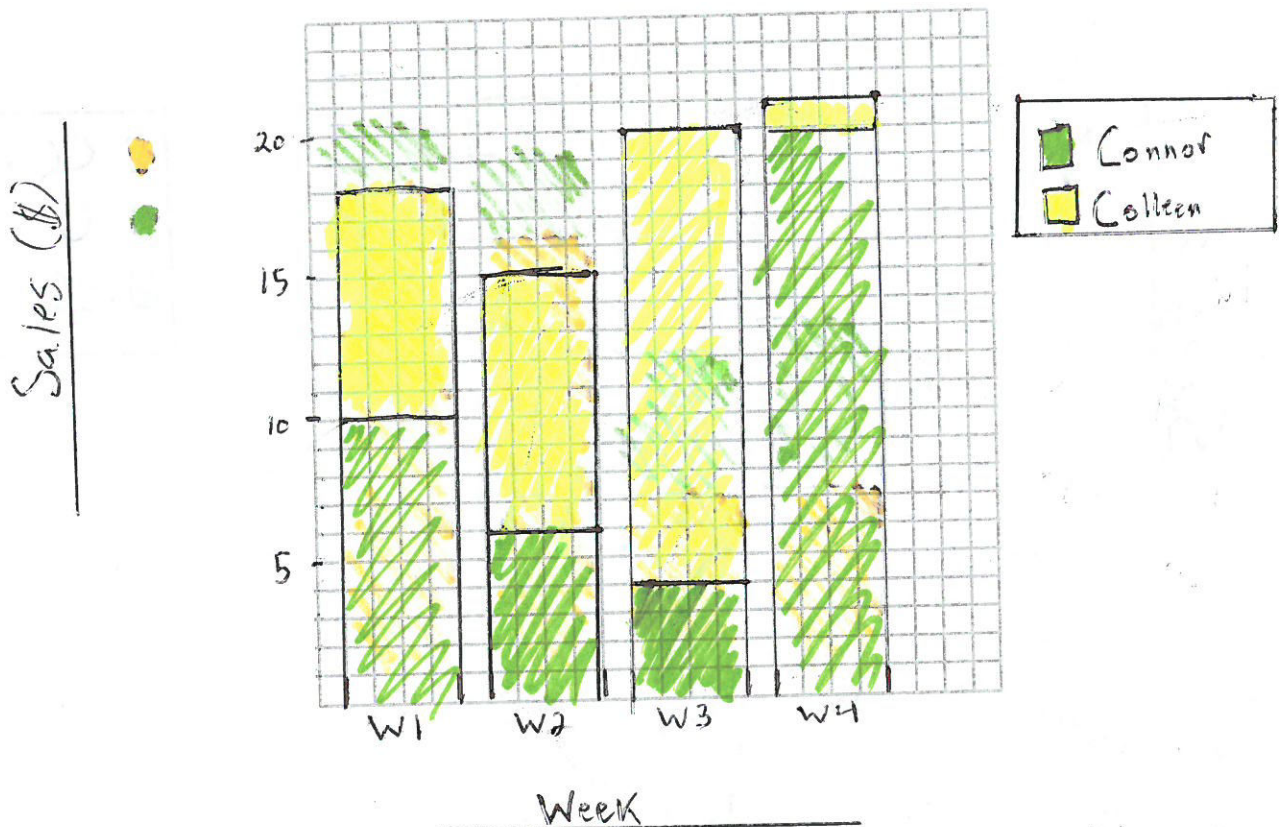
4. Before they order more cookies to sell, Connor and Colleen want to know which cookies are the most popular, so they prepared the following table:

| Cookie Sales by Type				
Week	W1	W2	W3	W4
Chocolate Chip	6	6	15	17
Oatmeal	6	5	3	2
Shortbread	6	4	2	2
	18	15	20	21

Draw a vertical stacked bar graph to represent the data:

Cookie Sales by Type

1. Condor Electronics has a large staff of part-time and full-time employees. The histogram shows the salary breakdown for all the employees last year:

Condor Electronics Annual Salaries, 2019
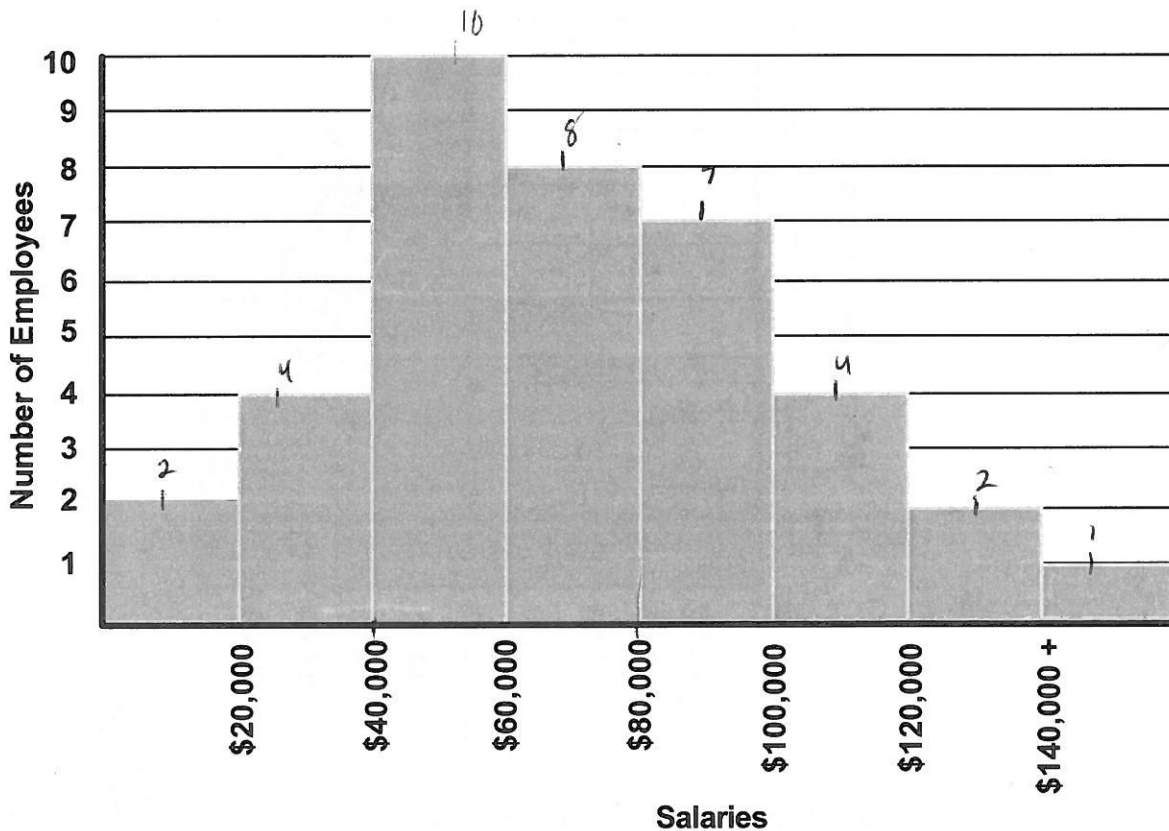
a) How many employees made less than $20 000 per year? **2**

b) How many employees made more than $140 000 per year? **1**

c) How many employees made more than $100 000 per year? **7**

d) How many employees made between $40 000 and $80 000 per year? **18**

e) How many people worked for Condor Electronics? **38**

f) How much did the lowest paid employee make last year? between $0-20,000
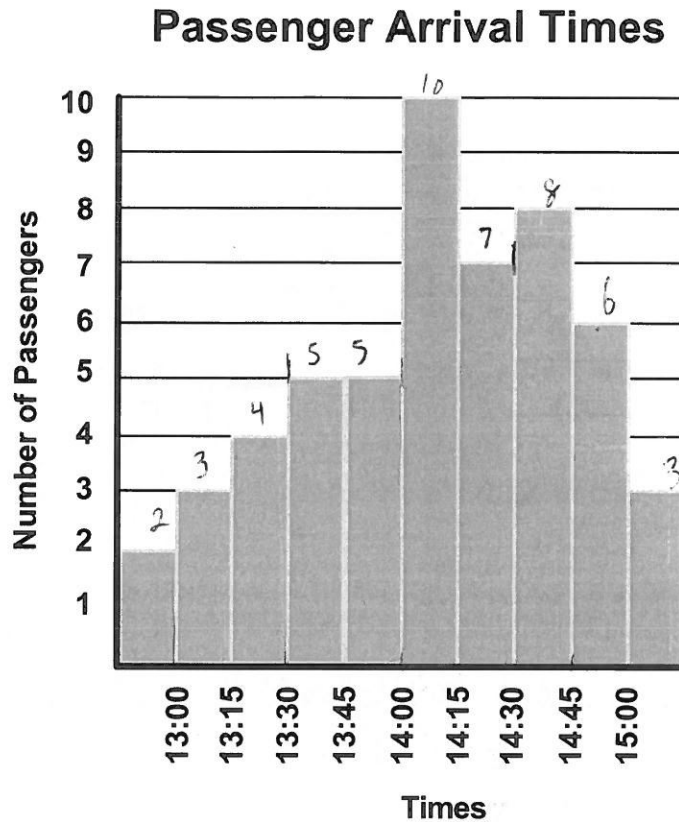Can't tell from graph.

2. A plane flies from Prince George to Upper Rubber Boot daily and leaves at exactly 15:00. Passengers are advised to arrive early enough to pass through security in time for take-off. The graph shows when the passengers arrived at the boarding gate for yesterday's flight:

Passenger Arrival Times

Number of Passengers (y-axis, values 1–10)

Bars: 13:00 = 2, 13:15 = 3, 13:30 = 4, 13:45 = 5, 14:00 = 5, 14:15 = 10, 14:30 = 7, 14:45 = 8, 15:00 = 6, last = 3

Times (x-axis): 13:00, 13:15, 13:30, 13:45, 14:00, 14:15, 14:30, 14:45, 15:00

a) How many people arrived at the gate before 13:00? _2_

b) How many people arrived at the gate between 14:45 and 15:00? _6_

c) How many people arrived between 13:30 and 14:30? _27_

d) How many people arrived at the gate before 14:00? _19_

e) How many people arrived at the gate after 14:00? _34_

f) How many people were late for the plane? _3_

g) How many people boarded the plane? _31_   34-3

3. The results are in on the elephant groomer proficiency test (70 is a perfect score):

Proficiency Test Results							
Score	0 – 10	11 – 20	21 – 30	31 – 40	41 - 50	51 – 60	61 – 70
Number of Students	3	5	9	24	36	12	2

24

7

Draw a histrogram of the data:

Proficiency Test Results.

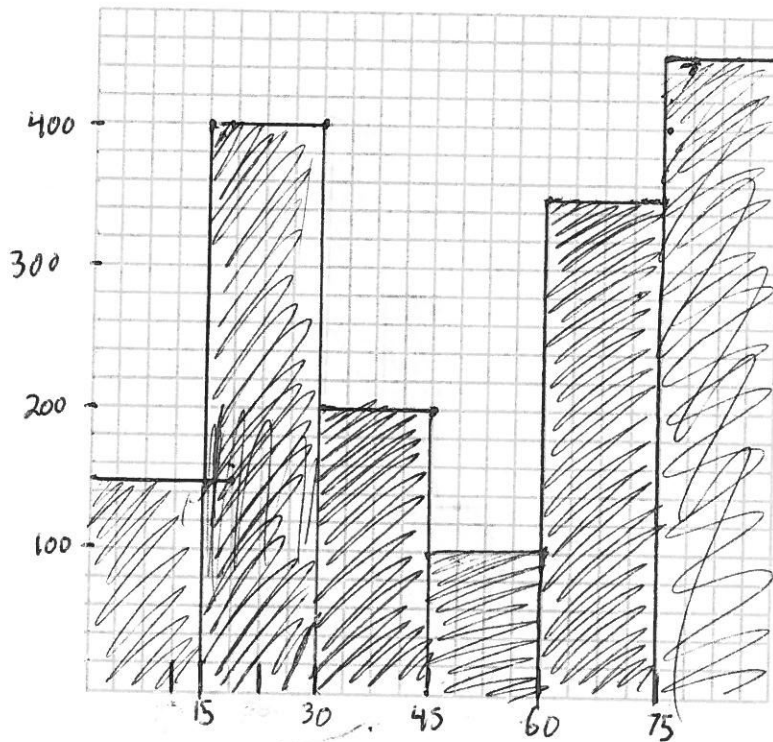24   3,ones

Number of Students

Scores
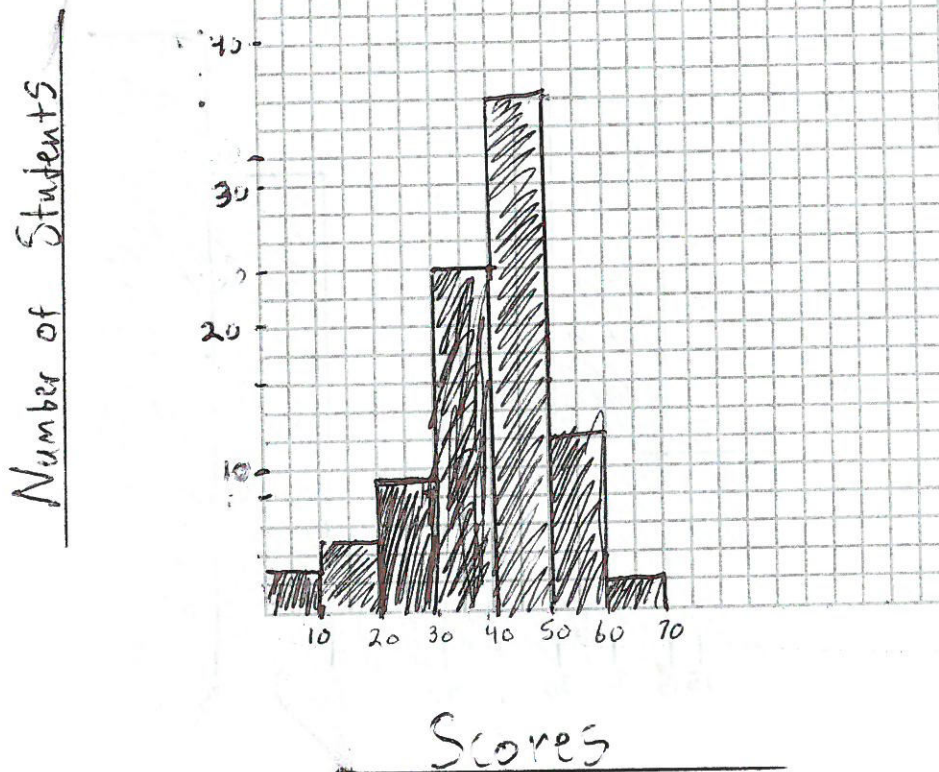
4. Last week, The Hixon Creek Resort did a survey of the riders on its "Trip of Terror" roller coaster. The data was arranged in the following table:

| Trip of Terror Riders, One Week						
Age	Less than 15	15 – 29	30 – 44	45 – 59	60 – 74	Older than 75
Number of Riders	150	400	200	100	350	450

Draw a histogram of the data:

Age vs. Number of Riders

Round all percents to one decimal place and all degrees to the nearest degree.

1. A group of grads organized a bottle drive to raise money for Dry Grad. The chart shows the results of their efforts:

Dry Grad Bottle Drive

- Alan
- Bob
- Carla
- Dawn
- Edith
- Fran
- Geoff
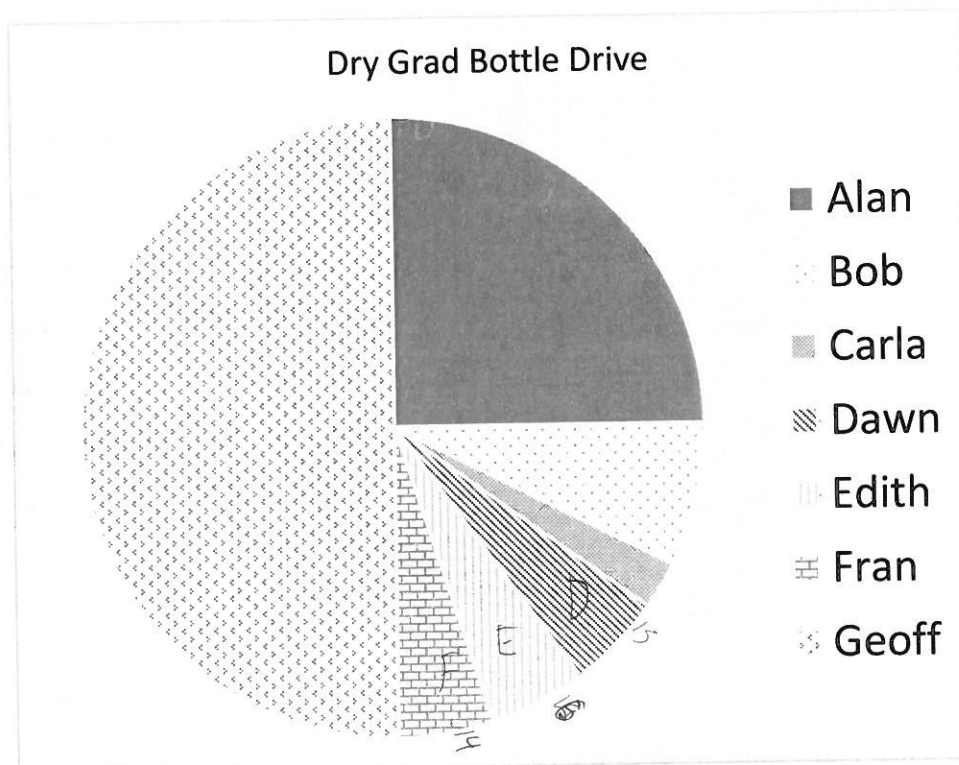
a) Who collected more bottles, Carla or Fran?   _____Fran_____

b) What percent of the bottles was collected by Geoff?   _____50%_____

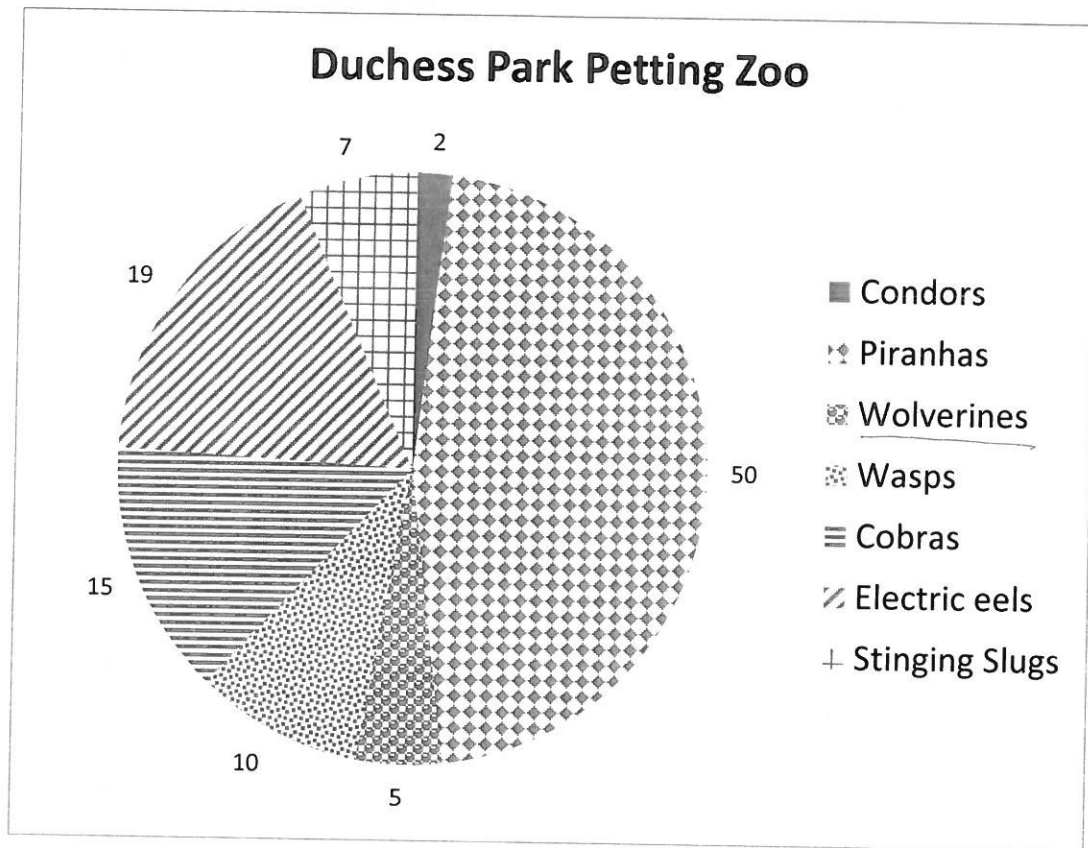c) What percent of the bottles was collected by Alan?   _____25%_____

d) Who collected the least amount of bottles?   _____Carla_____

e) Of Dawn, Edith and Fran, who collected the most?   _____Edith_____

2. The Duchess Park Petting Zoo keeps many different kinds of animals. The breakdown of animals is represented in the following circle graph:

Duchess Park Petting Zoo

7 2

19

50

15

10

5

■ Condors
▓ Piranhas
▓ Wolverines
▓ Wasps
≡ Cobras
╱ Electric eels
+ Stinging Slugs

a) How many animals does the zoo have? _____ 109

b) The zoo has the fewest number of what kind of animal? _____ Condors

c) The zoo has the largest number of what kind of animal? _____ Piranhas

d) What percent of the zoo animals are cobras? $\frac{19}{109} \times 100$ 17.43%

e) How many of the zoo animals are not mammals? _____ 103

Only 5 wolverines.

3. The legislative assembly of Marsoom is made up of delegates from its four wards. The table shows the breakdown of ward representation as of the last election. Complete the table and draw a circle graph showing how the wards are represented at the assembly:

Ward	Delegates	Percent	Degrees
Carter Caves	24	$\frac{24}{63} \times 100$ 38.1%	$\frac{38.1}{100} \times 360 = 137.16$
The Flats	17	27 %	97.2
Desert Dunes	13	20.6 %	74.16
George Gorge	9	14.3%	51.48
Total	63	100	360

Carter Caves
The Flats
Desert Dunes
George Gorge
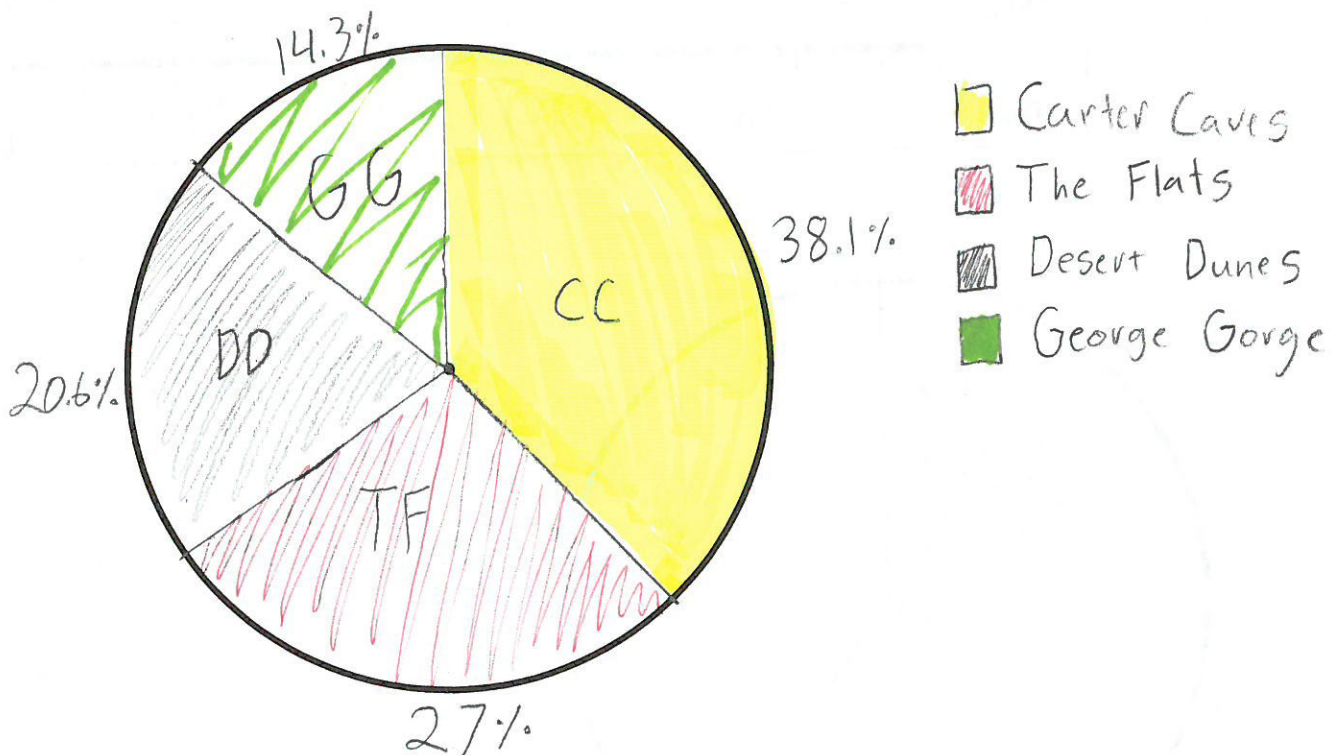
4. Mr. Galloway's math class was surveyed on their favorite types of music. The results of the survey are shown in the table. Complete the table and draw a circle graph to represent the data:

Genre	Number	Percent	Degrees
Metal	12	$\frac{12}{30} \times 100 = 40\%$	$\frac{40}{100} \times 360 = 144$
Rock	5	16.7%	60.12
Pop	1	3.3%	11.88
Rap	2	6.7%	24.12
Country	7	23.3%	83.88
Other	3	10%	36
Total	30	100	360

□ Metal
⊡ Rock
⊞ Pop
▨ Rap
⊠ Country
▧ Other
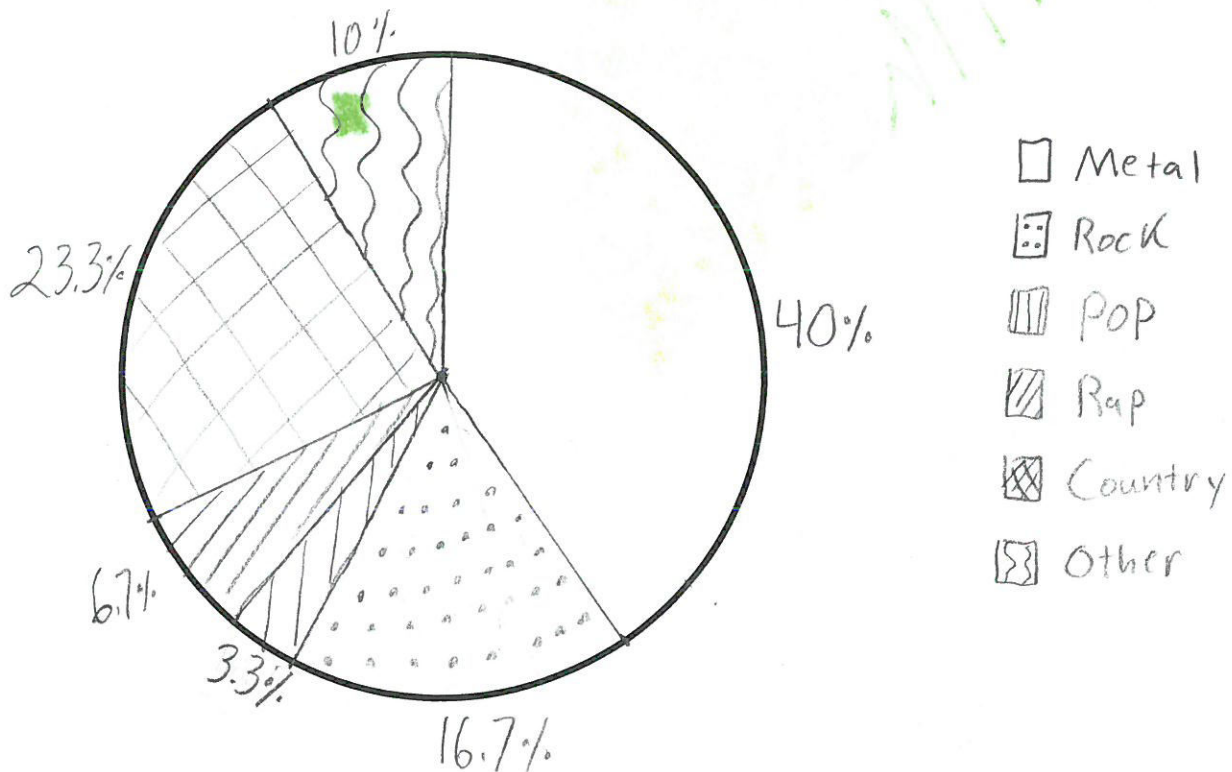
1. From Column 1, select the type of chart that would be the best to use in the situations described in Column 2:

Column 1	Column 2	
a) broken line	1. To compare categories to other categories when one of the values is significantly larger than the others.	D
b) circle	2. To compare categories to other categories when the category names are particularly long.	D
c) histogram	3. To compare categories to other categories when readability is the most important consideration.	F
d) horizontal bar	4. To compare categories to the whole at one point in time.	B
e) stacked bar	5. To compare categories to the whole over time.	F
f) vertical bar	6. To show trends over time when there are many time points.	A
	7. To show trends over time when there are only a few time points.	F
	8. When each category is a range of values rather than a discrete value or item.	C
	9. When you are more interested in the rate of change in a trend rather than the overall trend.	A
	10. When you are more interested in the cummulative change in a trend rather than the change for each category.	E

2. Define the following terms:

   a) interpolate: <u>To predict a data point within</u>
      <u>Collected data.</u>

   b) extrapolate: <u>To predict a data point outside</u>
      <u>of collected data.</u>

3. Describe two ways a graph can be misleading:

   a) <u>Scale may not start at O</u>

   b) <u>Axis units not labeled.</u>

4. The Condor Hamburger Stand kept track of the number of different kinds of burgers they sold yesterday. Complete the following table:

	Number	Percent (rounded to one decimal place)	Degrees (rounded to the nearest degree)
Hamburger	107	$\frac{107}{564} \times 100 =$ 19 %	0.19 × 360 68.4
Cheeseburger	88	15.6 %	56.16
Chicken Burger	115	20.4%	73.44
Bacon Burger	195	34.6%	124.56
Vegie Burger	59	10.5%	37.8
Total	564	100.1	360.36

5. The profits for the Hixon Creek Resort are represented by the following graph:

Hixon Creek Resort Profits, 2001 - 2010
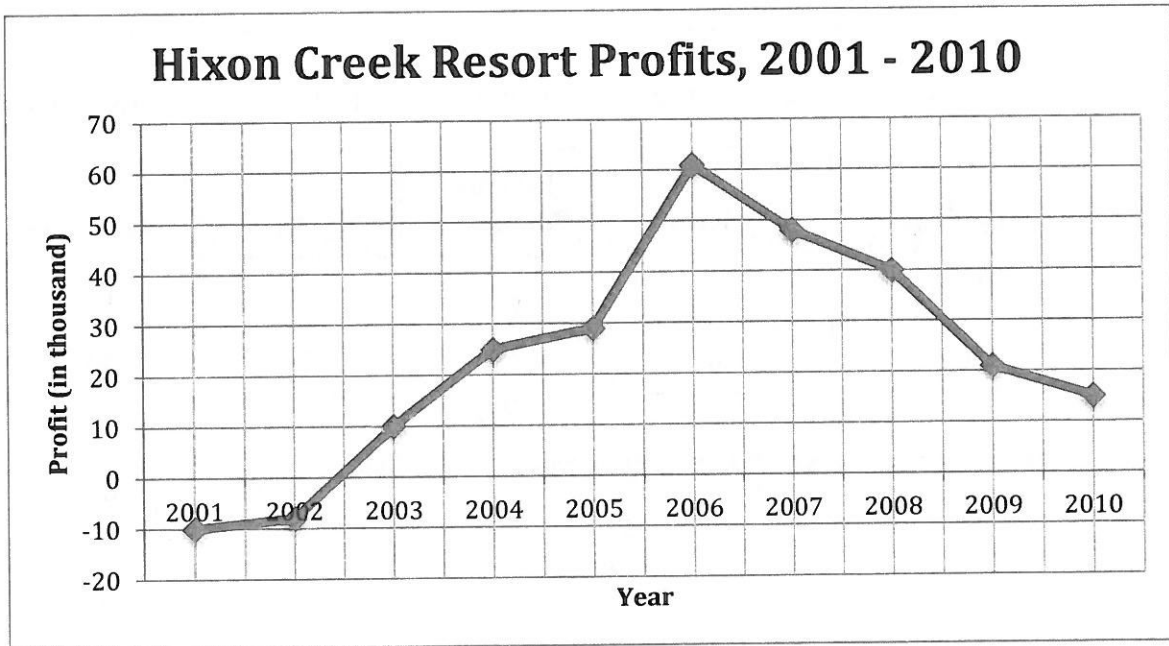
a) What type of graph is this? _Broken line Graph_

b) In what year did the Resort make the most profit? _2006_

c) In what year did the Resort make the least profit (but not a loss)? _2003_

d) How much profit did the Resort make in 2008? _$40 000_

e) What happened in 2001 and 2002? _Company lost $10,000 and $9000. Company was brand New, Start up Costs?_

f) What was the trend from 2001 to 2006? _Significant increase in profits._

g) What was the trend from 2006 to 2010? _Significant decrease in profits._
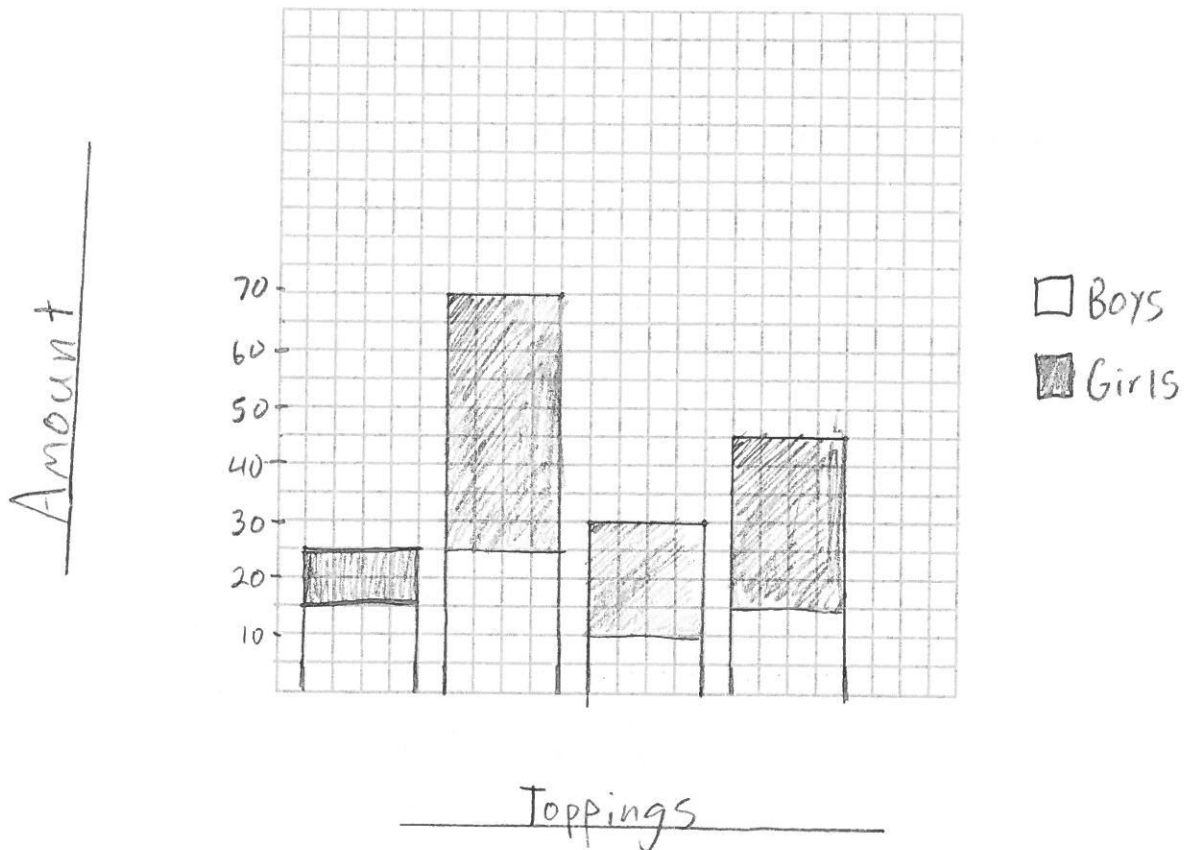
h) What was the overall trend from 2001 to 2010? _Significant increase in profits._

6. Student council did a survey at school to find out student's favorite pizza toppings:
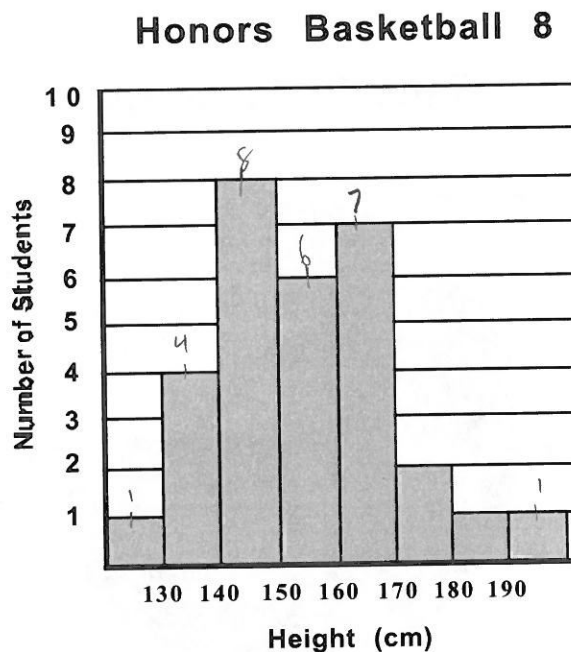
Toppings	Pepperoni	Ham and Pineapple	Anchovy	Vegetarian
Boys	15	25	10	15
Girls	10	45	20	30
	25	70	30	45

Draw a **vertical stacked bar graph** to represent the data:

Gender vs Toppings

7. The heights of the students taking Honors Basketball 8 in the first semester are represented in the following graph:

Honors Basketball 8

a) What type of graph is this? _Histogram_

b) How many students are between 160 and 170 cm tall? _7_

c) How many students are 190 cm or more tall? _1_

d) How many students are less than 140 cm tall? _5_

e) How many students are between 140 and 160 cm tall? _14_

f) In what range do the greatest number of students fall? _140-150 cm_
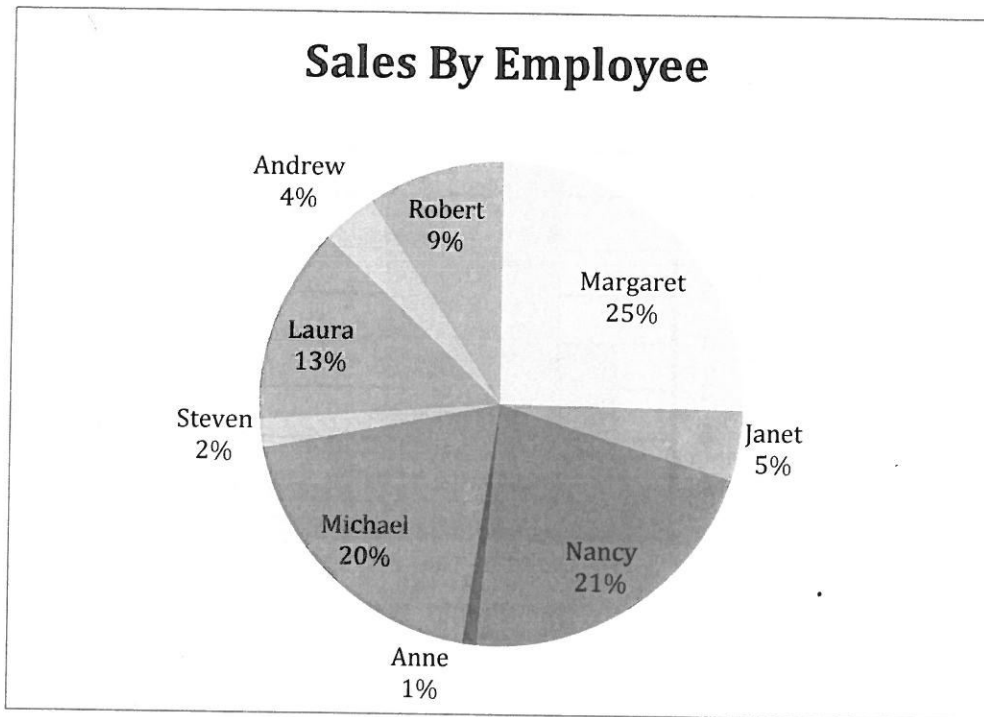
8. Total sales for the Condor Tractor Parts Company last month was $350 000. The circle graph shows the percent that each of the sales staff contributed to the total:

Sales By Employee

Andrew 4%
Robert 9%
Margaret 25%
Laura 13%
Steven 2%
Janet 5%
Michael 20%
Nancy 21%
Anne 1%

a) Which salesperson had the most sales?   _Margaret_

b) Which salesperson had the least sales?   _Anne_

c) What percent of total sales was made by Michael?   _20 %_

d) What is the value of the sales made by Andrew?   4% of 350000   _0.04 × 350 000 = 14 000_

e) What percent of total sales was made by the bottom five salespeople?   Anne 1   Janet 5   Steven 2   Andrew 4   Robert 9   _21 %_

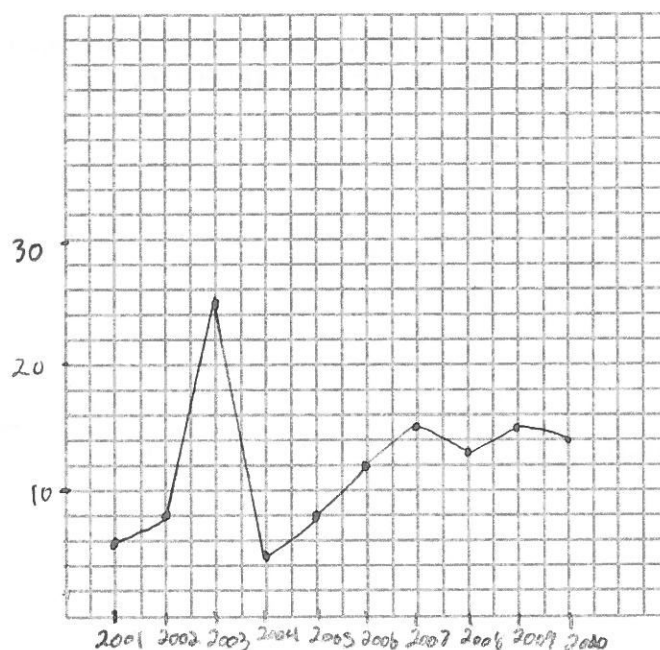f) What percent of total sales was made by the top three salespeople?   Margaret 25   Nancy 21   Michael 20   _66 %_

1. The profits in thousands of dollars for a company over a 10-year period are listed in the table below.

COMPANY PROFITS, 2001–2010												
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Profit	6	8	25	5	8	12	15	13	15	14

a) Graph the data on a broken line graph.

Company Profits

b) During which year was the profit highest?

2003

c) Is there a general trend in the data? If so, what is it? Are there any exceptions to the trend? Significant increase.

There was a decrease in 2004.

1. <u>Circle</u> the type of chart that best completes the statement:

   a) To compare categories to other categories when the category names are particularly long, you would use a (horizontal bar chart / vertical bar chart).

   b) To compare categories to other categories when readability is the most important consideration, you would use a (horizontal bar chart / vertical bar chart).

   c) To compare categories to the whole at one point in time, you would use a (circle chart / stacked bar chart).

   d) To compare categories to the whole over time, you would use a (circle chart / stacked bar chart).

   e) To show trends over time when there are many time points, you would use a (broken line chart / vertical bar chart).

2. Tomas owns a boat shop and is tracking the sales of different brands of outboard motors. The table below shows the number of motors Tomas has ordered and the number of sales.

Type	Brand A	Brand B	Brand C	Brand D
Number bought	25	32	15	34
Number sold	21	22	14	32

a) Use the data to draw a double bar graph showing the relationship between number of motors ordered and the number sold.

b) Which brand has the smallest difference between the number bought and the number sold? What is the difference? **Brand C, 1**

c) Which brand has the largest difference between the number bought and the number sold? What is the difference? **Brand B, 10**

Brand Stock + Sales


□ Bought
▨ Sales

Number

Brand
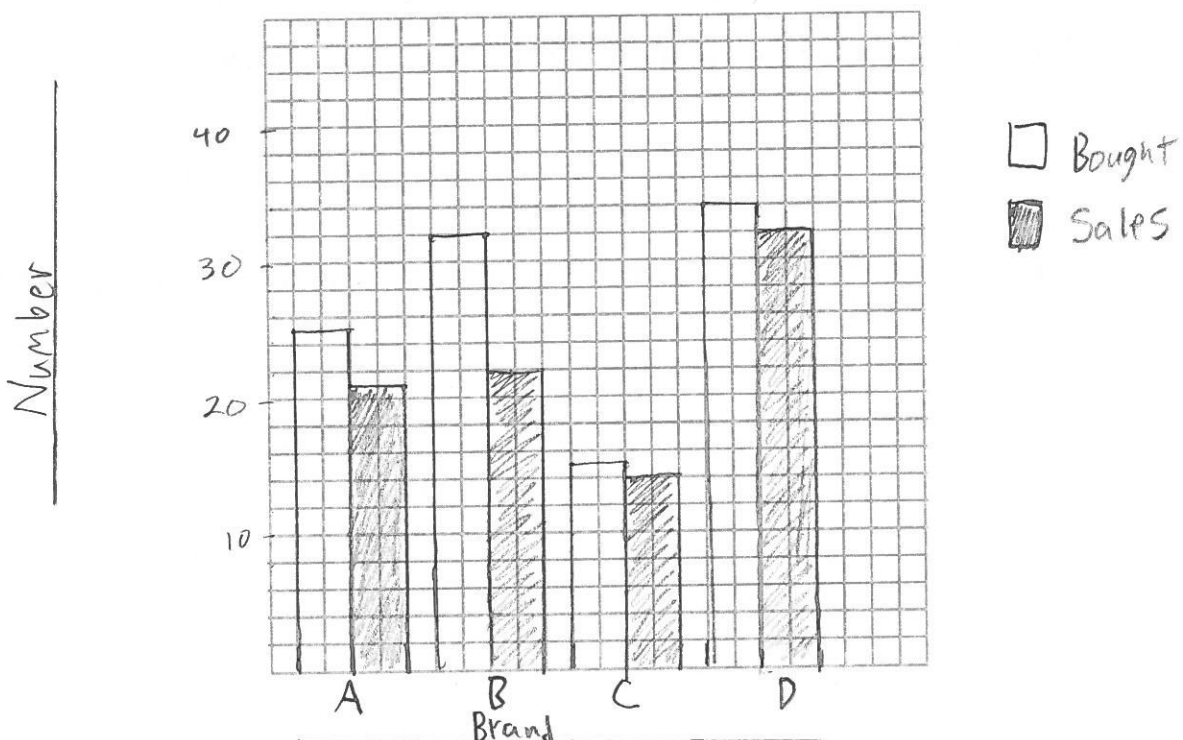
9000

3. Honoria manages a movie rental store and is considering expanding the store's floor space. She is preparing a graph to show the trend in the number of video rentals each month for the past year.

4199 - 8978

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Number	7267	7754	6987	8956	4199	5589	5826	5432	6125	8978	6674	7932

a) Graph the data from the above table on a suitable style of graph and explain your choice.

Broken.

Video Rentals
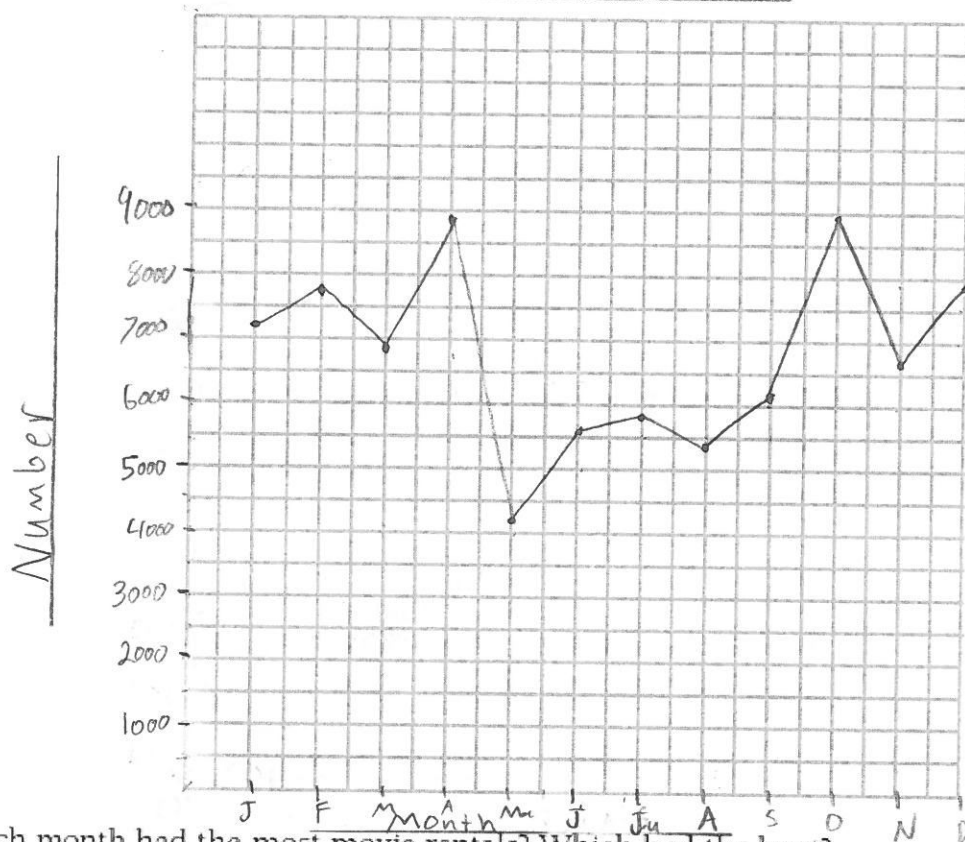
b) Which month had the most movie rentals? Which had the least?

October has the most and May has the least.

c) Is there a general trend in the data? If so, what is it? Are there any exceptions to the trend? Slight decrease. There are many exceptions

April, Feb, May, June, November.

5. A survey was taken of high school students to find out how much volunteer work they do each month. The survey results are shown in the table.

SURVEY RESULTS: NUMBER OF HOURS SPENT PER MONTH DOING VOLUNTEER WORK					
Hours	$0 \le h < 2$	$2 \le h < 5$	$5 \le h < 10$	$10 \le h < 15$	$15 +$
Number of respondents	56	34	15	21	9

4 spaces each

a) Draw a histogram to represent the data.

Volunteer hours vs Volunteers

Number of Respondents

60
54
48
42
36
30
24
18
12
6

$0 \le h < 2$ $2 \le h < 5$ $5 \le h < 10$ $10 \le h < 15$ $15 +$
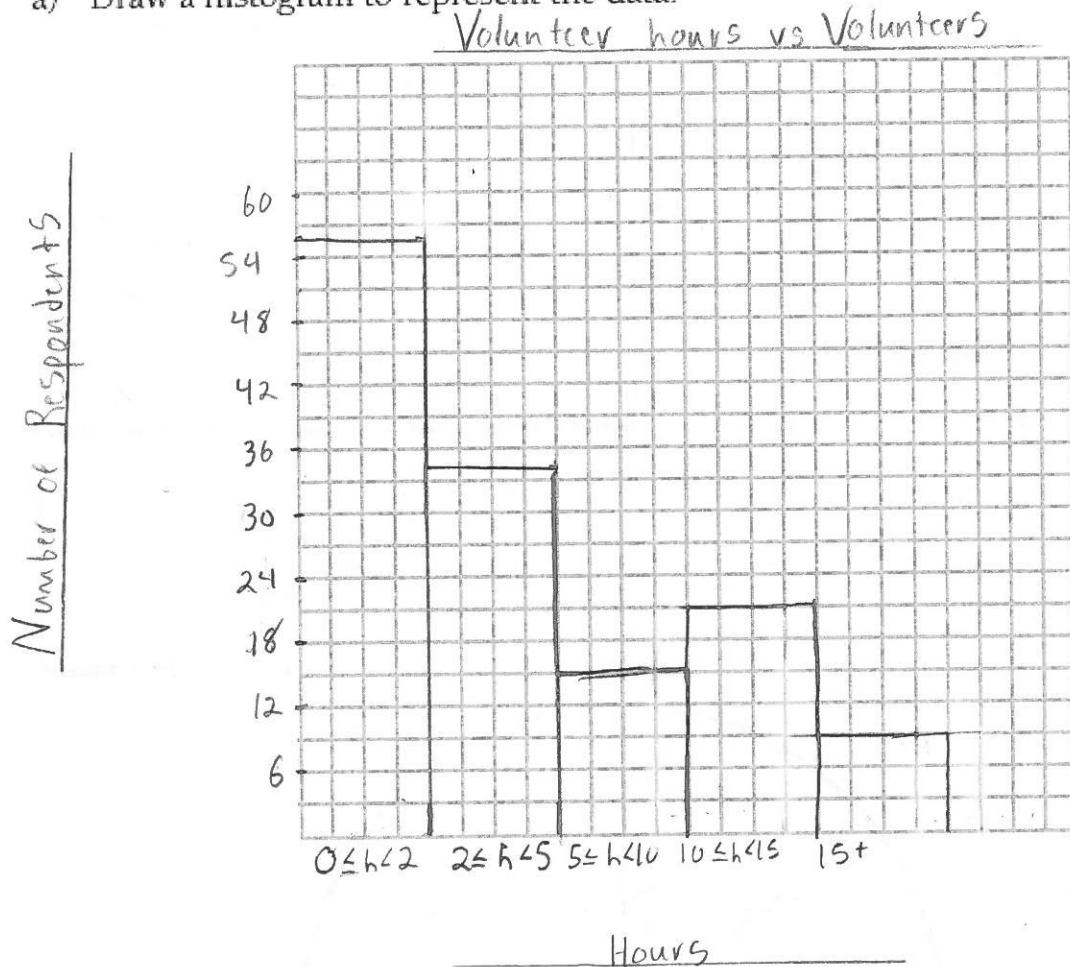
Hours

b) How many respondents volunteer less than 5 hours per month?

90

c) What percentage of respondents volunteers at least 5 hours per month?

Total = 135   At least 5 hr =

$\% = \dfrac{45}{135} \times 100 = 33.33\%$

1. The following data is a compilation of game time for Mr. Wadson (in years). Fill in the table and create a Circle Graph.

Game Name	Number	Percent (rounded to one decimal place)	Degrees (rounded to the nearest degree)
League of Legends	5	17.2 %	62
Halo (1-4)	7	24.1 %	87
Starcraft (1+2)	16	55.2 %	199
Lords Mobile	1	3.4 %	12
Total	29	99.9	360