

Warm Up Grade 8

Date:

a) List 3 things you know from the graph.

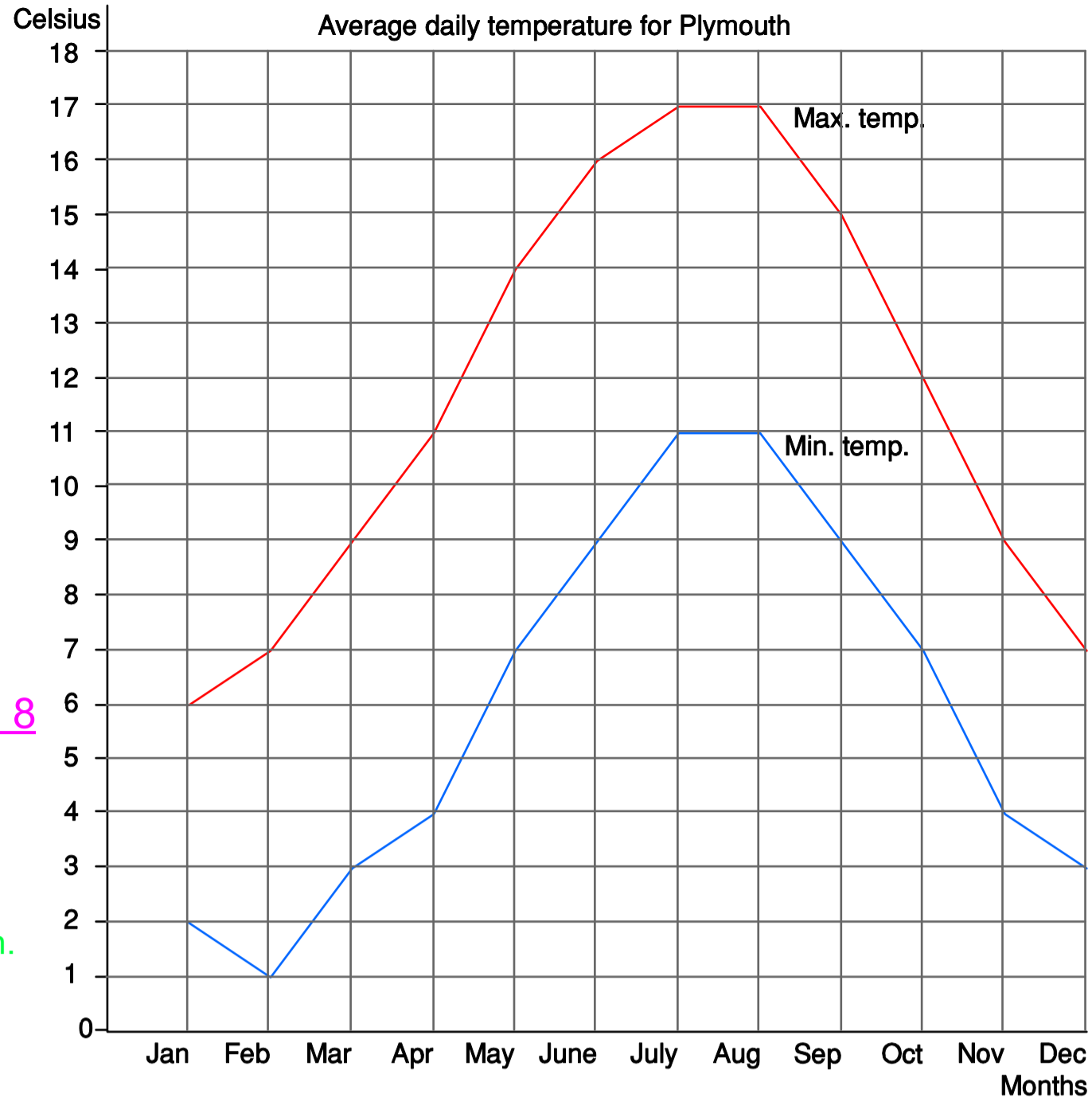
b) What is its advantage and its downfall?

- ① i) This graph displays "The average Daily temperature in Plymouth".
- ii) July & August has the highest Max temp. (of 17°C)
- iii) Lowest Min temp happens in Feb. (1°C)

b) Double line graph

Advantage → Shows changes in temp over time for Plymouth.

Disadvantage → Zig-zag can be confusion → 2 lines so must read color scheme.



Warm Up Grade 8

Date:

Mar. 18

a) List 3 things you know from the graph.

b) What is its advantage and its downfall?

- ①
- i) This graph displays the 'Average Daily Temperature for Plymouth'.
 - ii) The Max Temperature occurs in June and July.
 - iii) The Max temperature is 17°C for June and July.
 - iv) The lowest Min temp occurs in Feb with 1°C .

② i) This is a double line graph and its advantage is I can compare the min and max temperature for each month.

ii) Disadvantage \rightarrow Zig pattern confusing
 \rightarrow have to pay attention to color-scheme (confusing).

3. a) All groups spend at least 12 hours watching TV each week.
Adult men spend 21 hours watching TV each week.
Children spend 15 hours watching TV each week.
- b) Women 18 and over watch the most TV.
Teens watch the least TV.
Children watch more TV than teens.
- c) Choice of graph may vary. For example: Each square in the pictograph represents 4 h, so you have to multiply the number of squares (and fractions of a square) by 4 to determine the number of hours a group spends watching TV. It is easier to use the bar graph because the rectangles end on a grid line or between two grid lines, and the scale is labelled on every other line where it intersects the horizontal axis. So, the bar graph is the better choice.

4. a) The bar graph is easier to read.
The symbols in the pictograph reinforce the topic and make it more visually appealing.
- b) Neither graph shows the percent of students who littered each number of times.
- c) If you want to clearly show the number of students who littered each number of times, the bar graph is the better choice. If you want to show the number of students who littered each number of times in a visually appealing way, the pictograph is the better graph.

- d) Since the data were not collected over time, you should not use a line graph to display the data. Displaying the data in a circle graph is appropriate if you are interested in the proportion of students who littered each number of times.

5. a) The most common final grade was a B.
7 students got A as a final grade.
3 students got D as a final grade.
- b) The most common final grade was a B.
10% of the class got D as a final grade.
More students got C as a final grade than A.
- c) The bar graph shows the number of students who got each grade. The circle graph shows the proportion, not the number, of students who received each grade. So, the bar graph best shows the number of students who got B as a final grade.
- d) Mr. Sidley should show the bar graphs. He has 7 students who got an A and 10 students who got a B, while Ms. Taylor has 6 students who got an A and 8 students who got a B. They each have 3 students who got a D.
- e) Responses may vary. The question is debatable, partly because the class sizes are different. For example: Most students in Mr. Sidley's class got a B or a C, and most students in Ms. Taylor's class got an A or a B, so Ms. Taylor's class did better.
6. a) Each graph shows the Olympic winning times for men and women in the 400-m hurdles.

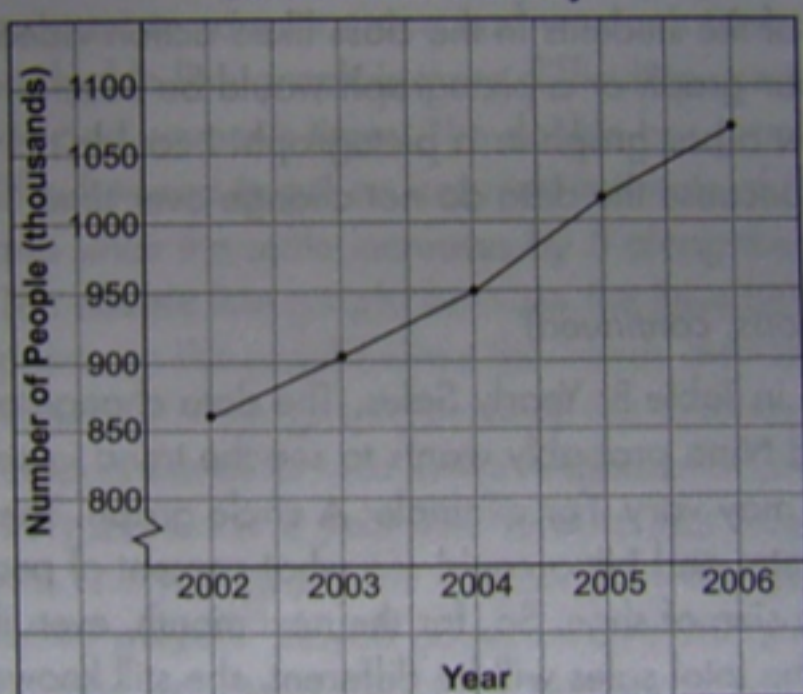
- b) The double line graph shows the trends from year to year for men and women; since the vertical axis displays data above 42 s only, it is easier to spread out the data for men and women to examine how the trends are different. The bar lengths in the double bar graph are helpful when you want to compare men and women's times.
- c) The double line graph is more difficult to use to compare men and women's times. The double bar graph is more difficult to use to get an accurate estimate of the winning times since the scale increases by 5 along the vertical axis.
- d) i) The double line graph, because the lines between the points on the graphs show the trends over time.
ii) The double bar graph, because the difference between times is the difference in the heights of adjacent bars.

7. a) T-shirt sales over a year involve data that change over time, and you may want to know the trend over the year.
- b) Hockey players' playoff points involve discrete data, and you may want to compare the number of points each player has.
- c) District test scores on a standardized test compared to provincial averages. This topic involves discrete data, and you may want to compare how well each district performed.
- d) Number of different types of books students have read. This involves discrete data, and a symbol like a book would instantly make the topic of the graph clear.
- e) Percent of waste generated by each wing of a school. This involves data where a percent of a whole is important, and it has few categories, so the graph will not be too complex.

8. a) The data in Table B: Yearly Sales. The data change over time, and Nina probably wants to see the trend in sales.
- b) Answers may vary. For example: A circle graph. The data are discrete, and Nina could see what percent of people buy each size of shoe. So, for the next month, even if she expects the total sales will be different, she still knows what proportion of each shoe size to have in stock.
9. a) The line graph clearly shows the trends in attendance over time. The bar graph lets you easily compare attendance in different years.
- b) The line graph does not let you easily compare the number of people in attendance in two different years. The bar graph doesn't show the trends in attendance as clearly as the line graph.
- c) The line graph is the better choice if you want to show the trend over time. The bar graph is the better choice if you want to compare the attendance in different years.

- d) A circle graph would not be appropriate because there is no obvious part-to-whole relationship.
10. a) I drew a line graph because the data change over time.

Number of People Employed in the Construction Industry



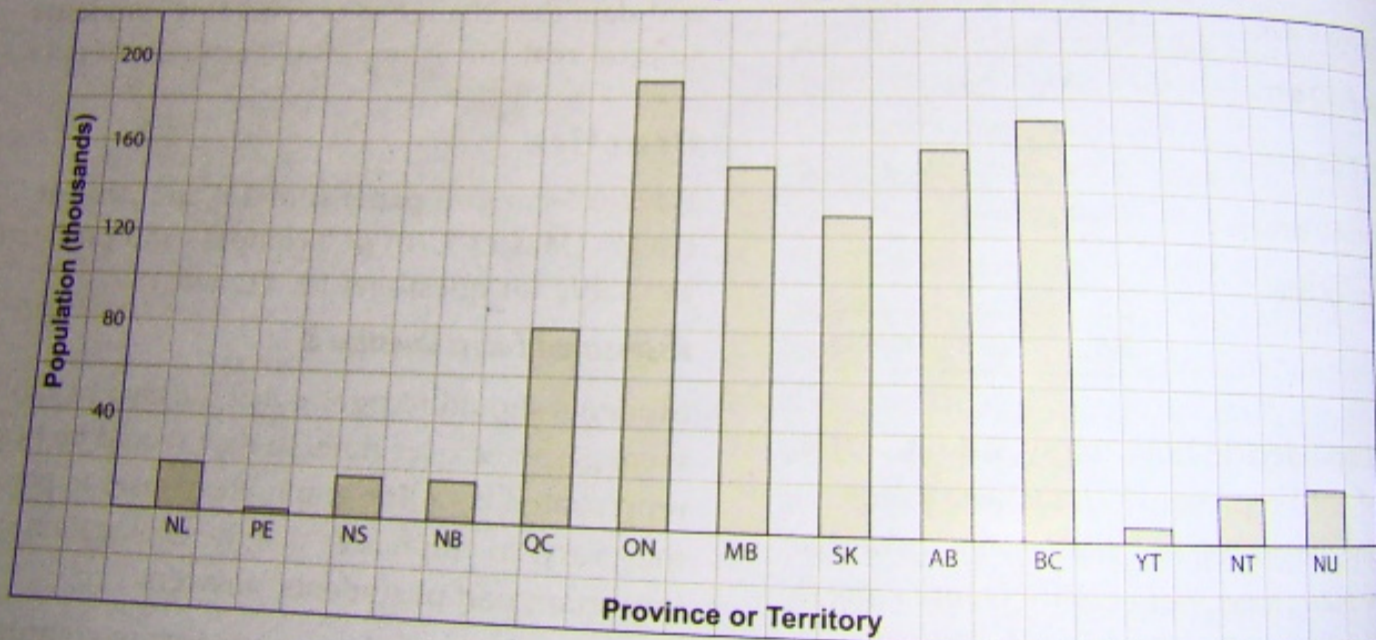
b) **Advantages:** The graph shows how the number of people employed in the construction industry increased each year from 2002 to 2006. I could use the trends to predict the number of people employed in the construction industry in 2007.

Disadvantages: The numbers are large, so it is not easy to read the number of people employed each year. Because the graph uses the zigzag symbol on the vertical axis, it is difficult to compare the results for different years.

11. a) I drew a bar graph. The data are discrete and I wanted to be able to compare the Aboriginal populations for different provinces or territories easily.

b) **Advantage:** The bar graph lets you easily compare the Aboriginal populations for different provinces or territories.

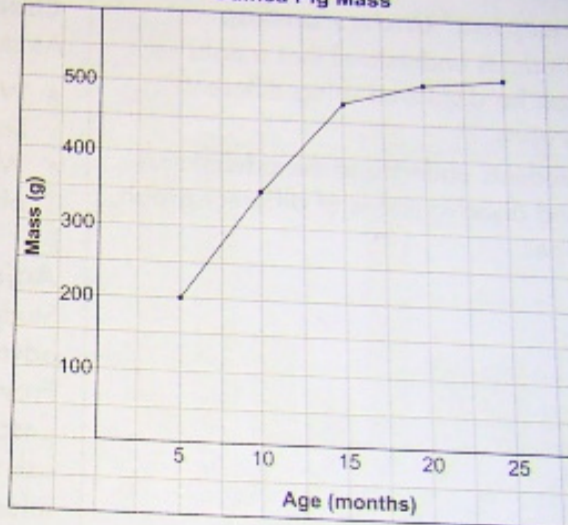
Canadian Aboriginal Population, 2001



Disadvantages: The numbers are large, so it is impossible to read the exact Aboriginal population in each province or territory. You can't see what percent of Aboriginal Canadians live in each province.

13. a) I drew a line graph. The data change over time (as the guinea pig grows).

Guinea Pig Mass

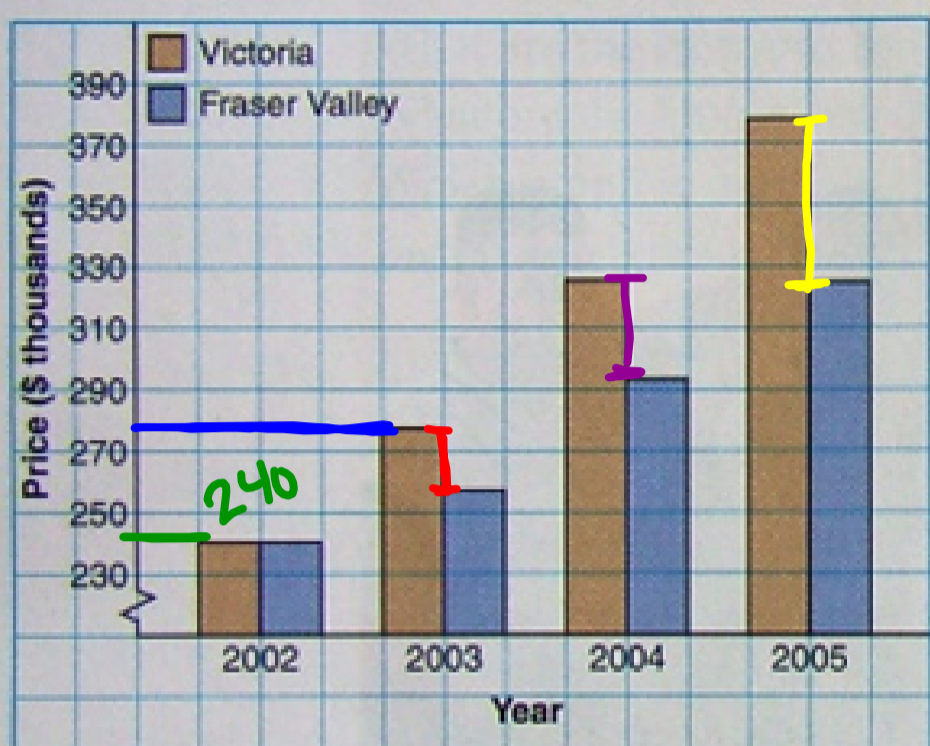


12. Graph choices may vary. For example:
- Pictograph. The data are discrete and I think Dinah would probably want to compare the number of times her dad fell asleep for different weeks. Dinah could use a bar graph or a line graph, but I think it would be more interesting if she used a pictograph.
 - Double bar graph. The data are discrete and I think Dinah would probably want to compare how many times each of her parent cooked each week.
 - Circle graph. The data are discrete and represent how much time Dinah's brother spends doing each activity out of the 24 hours in a day. She might have to include another category for time he spends doing other things.
 - Line graph. This data change over time, so a line graph is best. Also, Dinah could use the line segments to estimate the height of the tomato plant on days she didn't measure it.

Misrepresenting Data

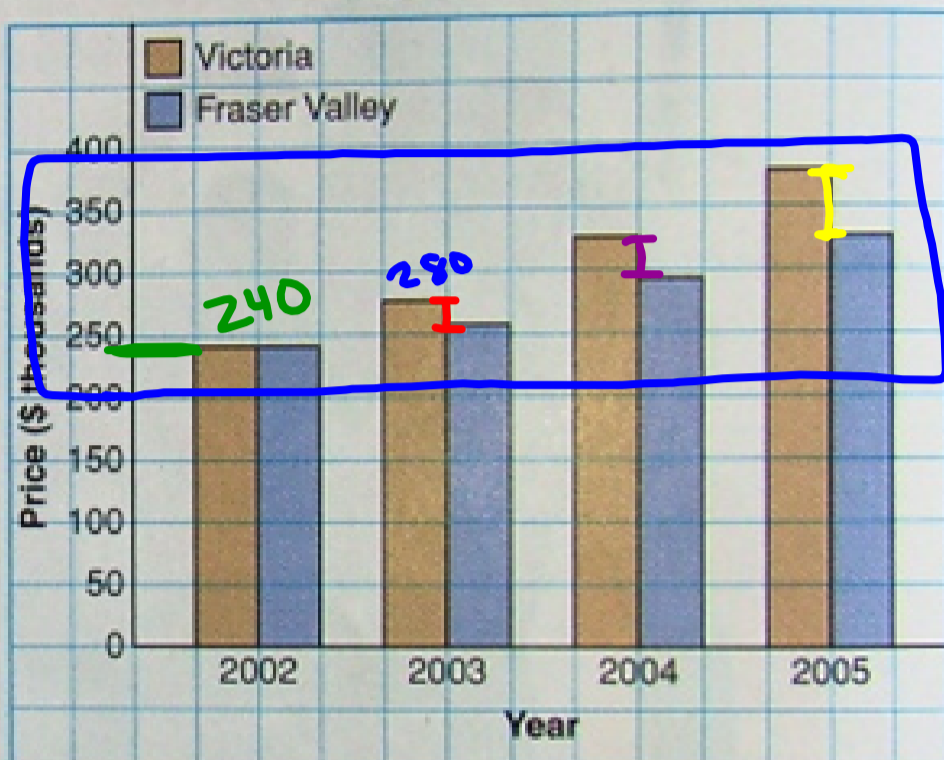
Graph A

Average House Prices



Graph B

Average House Prices



What does each graph represent?

The average price of a house in Victoria and Fraser Valley each year from 2002 to 2005

At first glance which graph appears to show the greater difference in house prices? Why?

A
The graph on the left. There is a greater difference in height for each pair of bars in this graph.

Do the graphs display the same data? **Yes**

e.

What is the scale of each graph?

A → starts with zig-zag 230 goes up by 20
B → starts with zero, goes up by 50

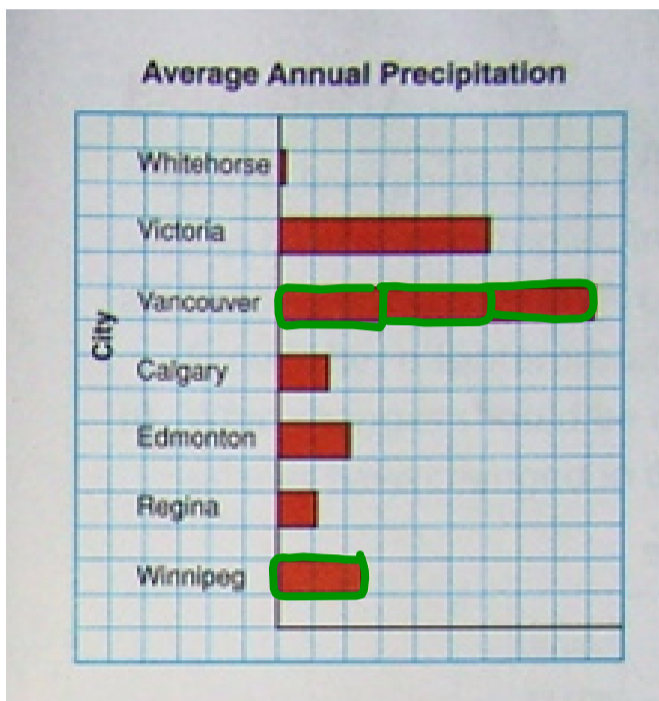
Does the scale on each graph start at zero? **No**

Is the graph on the left incorrect? Do you think someone who uses this graph to show the difference in houses prices is lying?

No. Both graphs represent the data. However, the graph on the left emphasizes the difference in the average price of a house in Victoria and a house in Fraser Valley.

No scale on y-axis

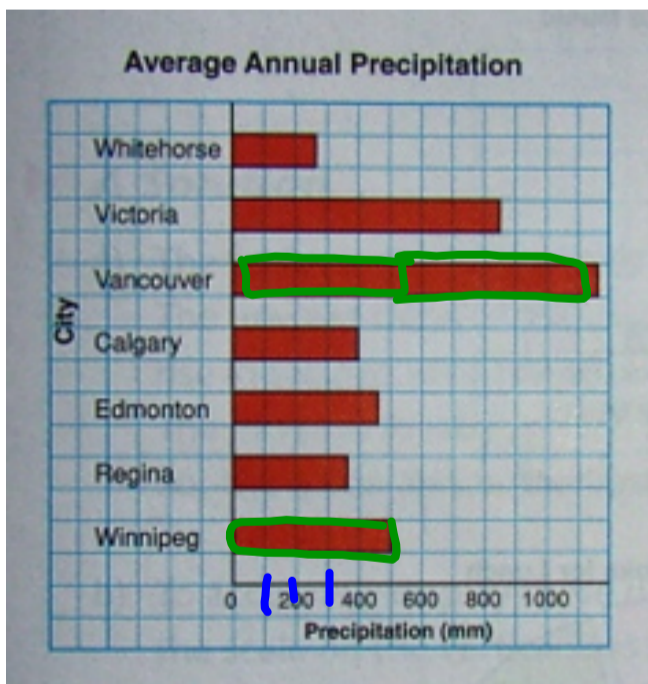
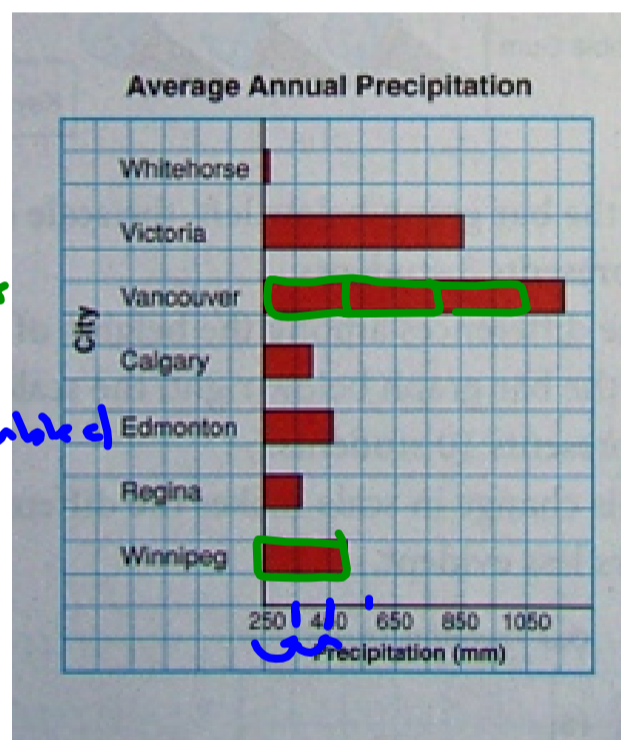
→ Look like Vancouver get about 3 X times more precip. than Winnipeg.



o Scale on y-axis ✓
but starts at 250
goes up by 100

Van → ≈ 1160 mm
Winn → ≈ 500 mm
x 3 = 1500

only Double amount
Doesn't look Double



o Scale on y-axis ✓
Starts at zero ✓
goes up by 100 ✓

look Doubled Now

There are many ways in which graphs can be drawn to **misrepresent data**. Graphs like these may be found in the media to create false impressions.


How could a circle graph be misleading?

- Sectors may be treated differently to draw attention to it

How could a pictograph be misleading?

- Different sized symbols
- No Key given

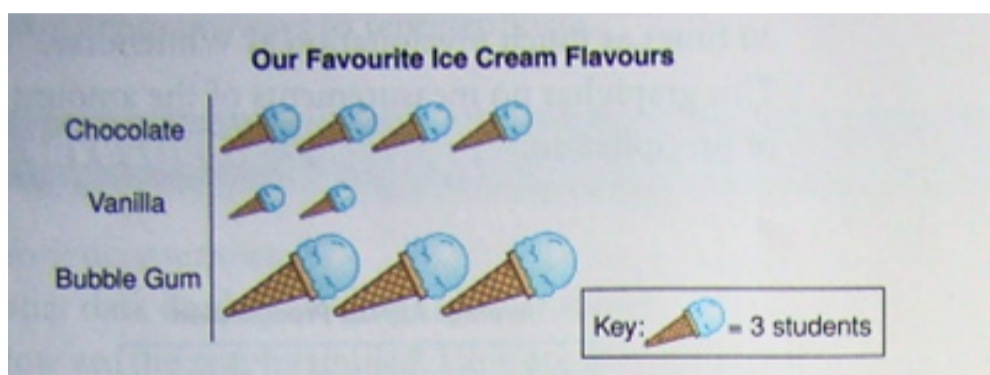
How could a bar graph be misleading?

- Different widths of bars 
- No Scale given
- Scale may be too large or too small

How could a line graph be misleading?

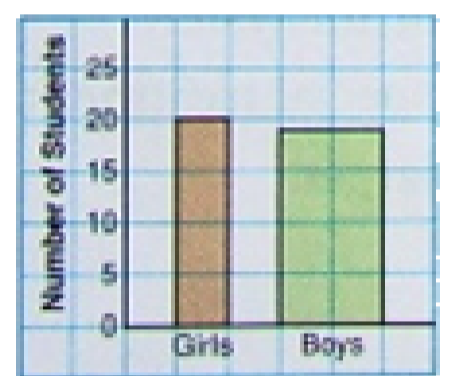
- Distance between points may not be proportional to the length of time between the recorded times.
- No Scale given
- Scale may be too large or too small

In this pictograph, the symbols have different sizes. The three large ice-cream cone symbols give the impression that bubble gum is the favorite flavour. When the key is used, chocolate is the favourite flavour.



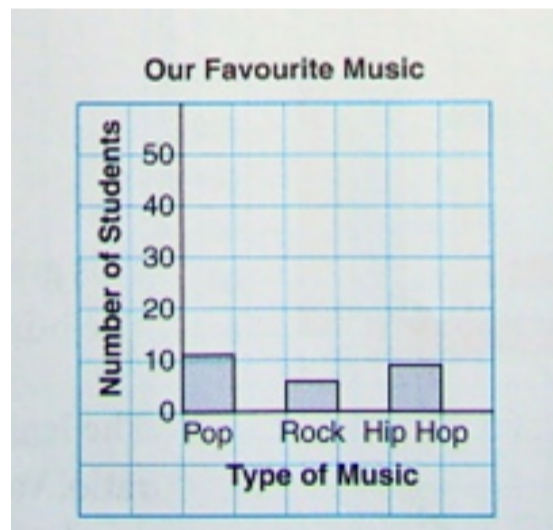
In this bar graph, the wider bar creates the impression that many more boys than girls scored higher than 80%. In fact, the number of girls who scored higher than 80% is greater than the number of boys.

Grade 8 Students Who Scored Higher than 80% on a Math Test



In the bar graph below left, the scale on the vertical axis is 1 square represents 3 students. The difference among the heights of the bars are easily seen.

In the graph below right, the scale on the vertical axis is 1 square represents 10 students. This change in scale makes the difference among the heights of the bars less evident.



A part of a graph may be treated differently to draw attention to it.

A milk company uses this circle graph to draw attention to the milk sector.

The sector for milk is not as large as the sector for water, but the special treatment makes it seem larger.



From this line graph, Shiva made the conclusion that salaries have almost tripled in 6 years.

a) Shiva's conclusion is not consistent with the data. Explain her misinterpretation.

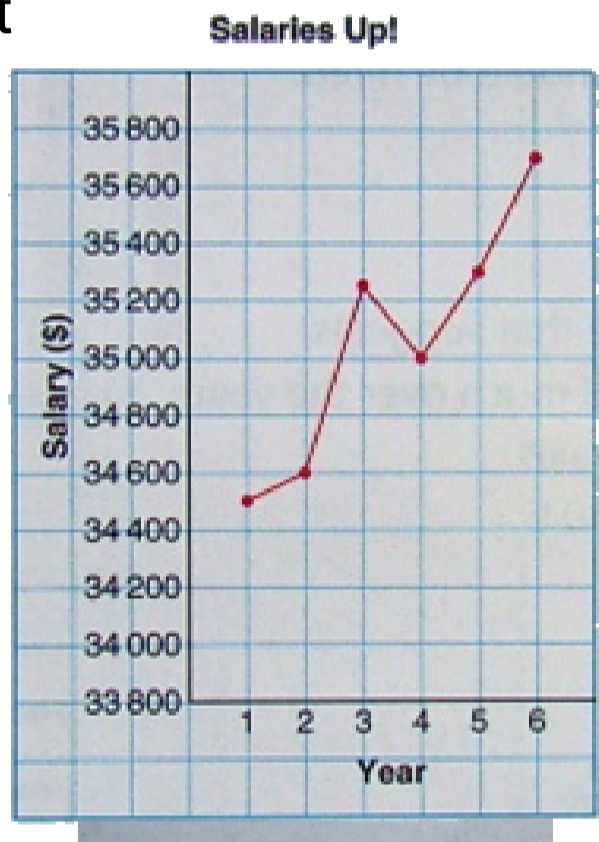
RANGE???

b) What changes should be made to the graph to accurately show how salaries have changed in 6 years?

RANGE 36 700 to 34500 NOT Triple

Scale on vertical axis should start at 0.

Use a scale of 1 square represents \$5000



Class/Homework

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#3,#4, #5,

Answer pg 528