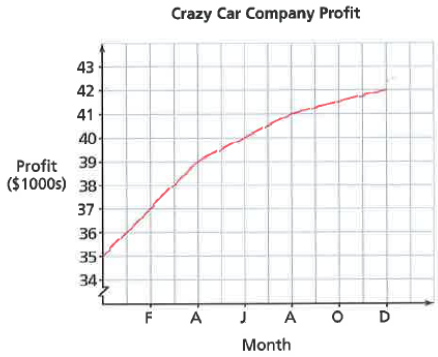
Section 1.7 Worksheet – Misrepresentations of Data

MDM4U
Jensen

1) The two graphs below show the profits of the Crazy Car Company.



a) How are the graphs similar? How are they different?

The two graphs show the same set of data, but using different scales.

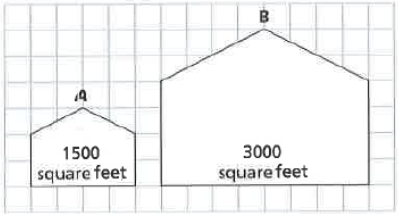
b) How much has the profit increased on each graph?

Both graphs show the same profit from $35 000 to $42 000 over 12 months.

c) What false impressions are conveyed by the two graphs?

The first graph uses a truncated y-axis to try and show a large profit growth over the year. The second graph shows very little profit over the year by using a large scale.

2) The increase in the size of homes purchased is shown in the graph below.



a) What is similar about the homes?

The homes are identical in shape except in size.

b) Using the tiles of the graph, how many times bigger is the area of the shape of house B than the area of house A?

The area of house B is 4 times larger than the area of house A.

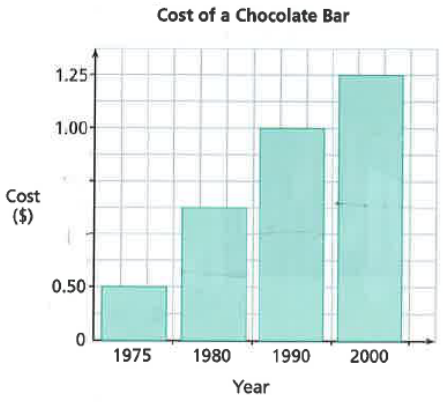
c) By how much has the actual size of the home increased.

Home size increased from 1500 square feet to 3000 square feet. It has increased by a factor 2.

d) List any false impressions conveyed by the graph.

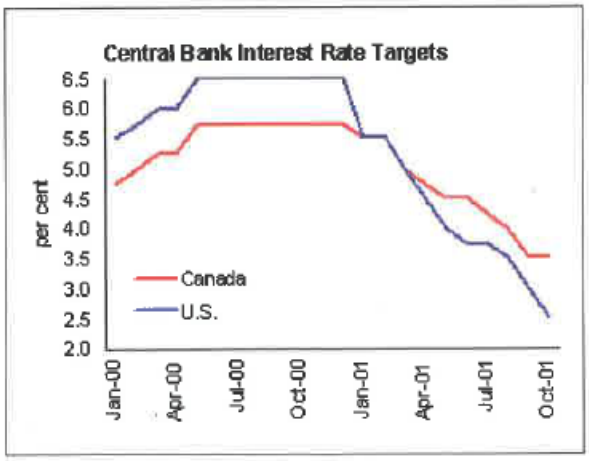
Because the area of the second house is so much larger than the first house, it appears that the size of homes has increased tremendously.

3) List the false impressions conveyed by this graph. How could you change the graph to correct the false impressions?



It seems that the price in 1980 is 2.5 times the price in 1975, but really it is only 1.5 times. The price in 1990 seems 4 times the price in 1975, but really it is only 2 times. Also, it does not look like a steady increase in price, although it is a steady increase. We can change the graph to correct the false impressions by changing the vertical scale (cost) so that is has regular intervals.

4) Examine the graph below.



Source: Phillips, Hager & North Investment Management Ltd.

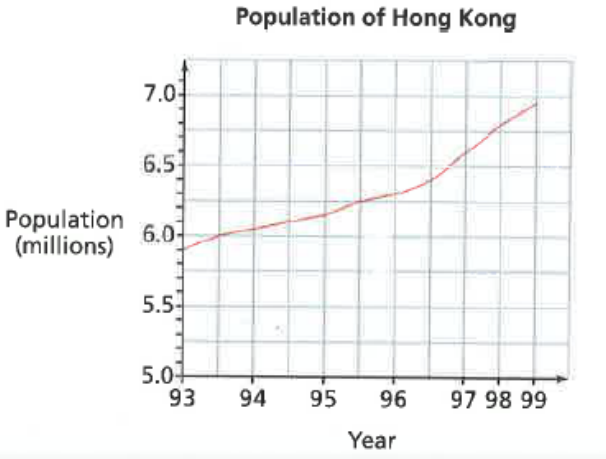
a) Has the data been misrepresented to bias the reader? Give reasons.

Yes; the vertical scale (percent) is truncated. The differences look larger.

b) How could you modify the graph to display the data accurately?

Can modify the graph by using correct scales (start at 0 on the y-axis and increase at equal and evenly spaced intervals)

5) The graph below shows the population of Hong Kong from 1993 to 1999. Explain why this graph would cause incorrect interpretations of the data.



The graph would cause incorrect interpretations of the data because the horizontal scale (year) does not have regular intervals AND the y-axis is truncated

6) Suppose that in a recent magazine article, the graphic below was used to show how the use of cell phones changed between 1994 and 1998. Explain why this picture is misleading.

420/71= 5.9 In 1998, the use of cell phones has increased approximately by a factor of 6 compare to 1994. The graphic in the margin shows the 1998 cell phone to be much larger than the 1994 cell phone. The 1998 cell phone size appears to be 25 times larger than the 1994 cell phone.