STATISTICS EXPLANATION
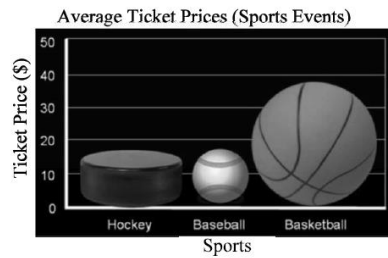
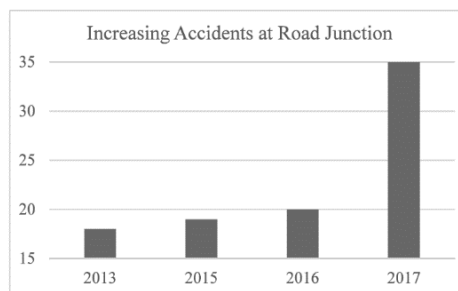|	
1

Average Ticket Prices (Sports Events)

State one aspect of the above graph that may be misleading and explain how this may lead to a misinterpretation of the graph.

Ans: The three objects are all not the same shape. One is a cylinder and the other two are spheres. It is not clear how ticket prices can be determined as readers can have different interpretations. For Hockey, one can look at the centre of the top of the cylinder or the top of the diagram. For Baseball and Basketball, one may consider the centre of the objects or the top of the circles. |
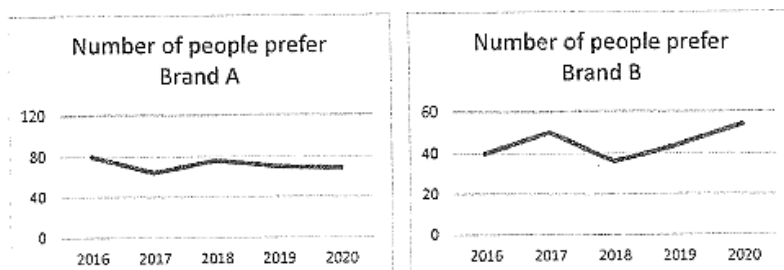| 2 | The graph shows the number of accidents occurring at a road junction over a number of years. State one aspect of the graph that may be misleading and explain how this may lead to a misinterpretation of the graph.

Increasing Accidents at Road Junction

Ans: The number of accidents in the year 2014 is left out. We cannot conclude that there is an increasing trend of accidents from 2013-2017 accurately. The title could be biased and may mislead the reader if the number of accidents in 2014 has a contrasting result of low accidents. |
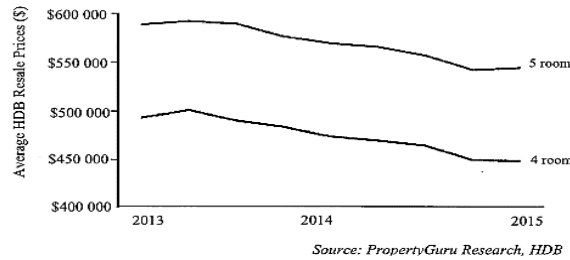| 3 | The graphs below show the result of sales of two competing brands over a few years.

Number of people prefer Brand A / Number of people prefer Brand B

State one aspect of the graphs which may be misleading and explain how this may lead to a misinterpretation of the graphs.

Ans: The scale of the y-axis for both graphs are different. Brand B looks like the preferred brand as the graph appears higher compared to Brand A. |
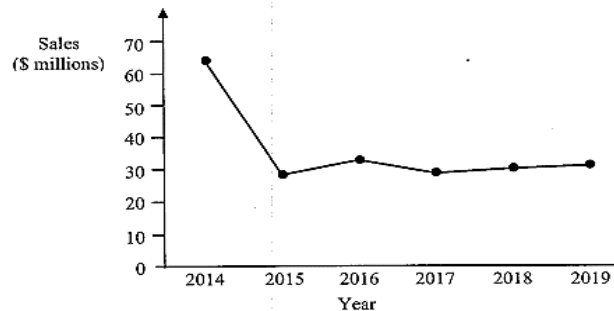
| 4 | Average resale price of 4 room and 5 room HDB flats from 2013 to 2015.

Source: PropertyGuru Research, HDB

Mr. Lim says that the price of a resale 5 room flat is thrice the price of a resale 4 room flat in 2015. Is Mr. Lim correct? Explain.

Ans: The vertical scale does not start from zero. This gives a false impression that the 5-room flat is more than twice the price of a 4-room flat. However, in reality, the price of 5-room flat is approximately only 1.2 times the price of a 4-room flat. |
|---|---|
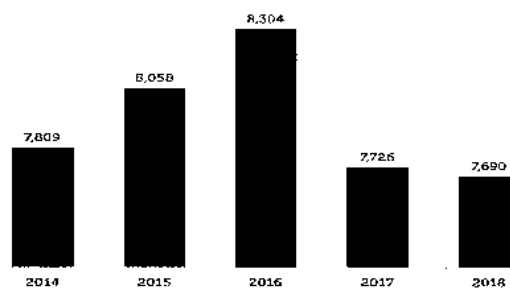| 5 | The graph shows the sales at a particular mall.

Explain why the mean sales are not a good indication as a central measure.

Ans: Mean is not a good indicator as there is an outlier in the year of 2014, distorting the measures of central tendency. |
| 6 | The bar chart shows the number of traffic accidents resulting in injury from 2014 to 2018.
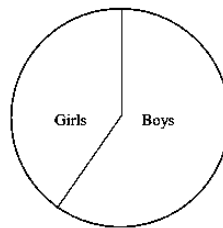

State how this bar chart can be misleading to reader.

Ans: The bars in the bar chart do not start from zero. The relative heights of the bars cam mislead the reader into thinking the differences are larger than what is actually given. For example, the frequency for 2016 is 8304 and the frequency for 2017 is 7726, so the difference is 578, but the height of the 2016 bar is twice that for the 2017 bar. |
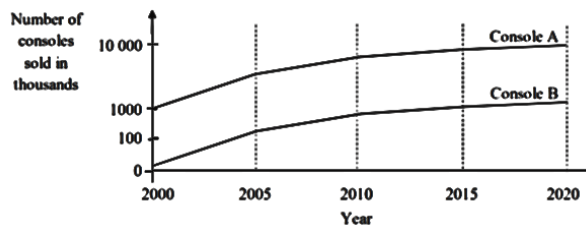
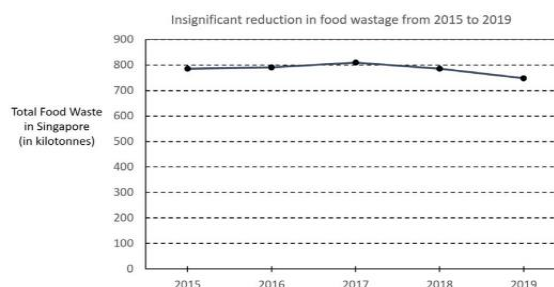| 7	The pie chart shows the number of girls and boy who scored full marks in Mathematics test. Based on the chart, June concluded that on average, boys did better than girls in Mathematics. Explain why June made that conclusion and why she may be wrong.
	Students who scored full marks in Mathematics Girls Boys
	Ans: From the pie-chart, angle/area of the sector/portion of circle representing boys who scored full marks is bigger than the angle of the sector representing girls who scored full marks. Why wrong: It only shows that there are more boys than girls who scored full marks but we cannot infer the performance of the boys as compared to the girls with just this information.
8	The graph shows the sales figures of 2 gaming consoles manufactured by a company. A sales executive from the company claimed that the chart showed comparable growth in the sales of the 2 gaming consoles. Do the chart support his claim? Justify your answer with reference to the chart.
	Ans: No because the scale for the vertical axis is inconsistent. It gives the impression that there is comparable growth in sales of the 2 gaming consoles.
9	State one aspect of the graph that may be misleading and explain how this may lead to a misinterpretation of the graph.
	Ans: The scale chosen for the vertical axis is inappropriate as the data are between 700 to 900 kilotons. This will result in the differences of the food wastage across the years to look less significant than it should be, making it difficult to make an analysis on the trend of food waste from 2015 to 2019.