Redbridge Tuition

Maths Lesson Pack

CW, HW & MARK SCHEMES Year 8 Pack 18

Student Name: _____

Instructions For Parents:

Mark schemes are attached. Please ensure your child's work is marked. Please write down your child's scores and email us any comments or concerns you may have.

Topic	Completed	Mark Scheme
• Misleading Graphs	YES/NO	YES

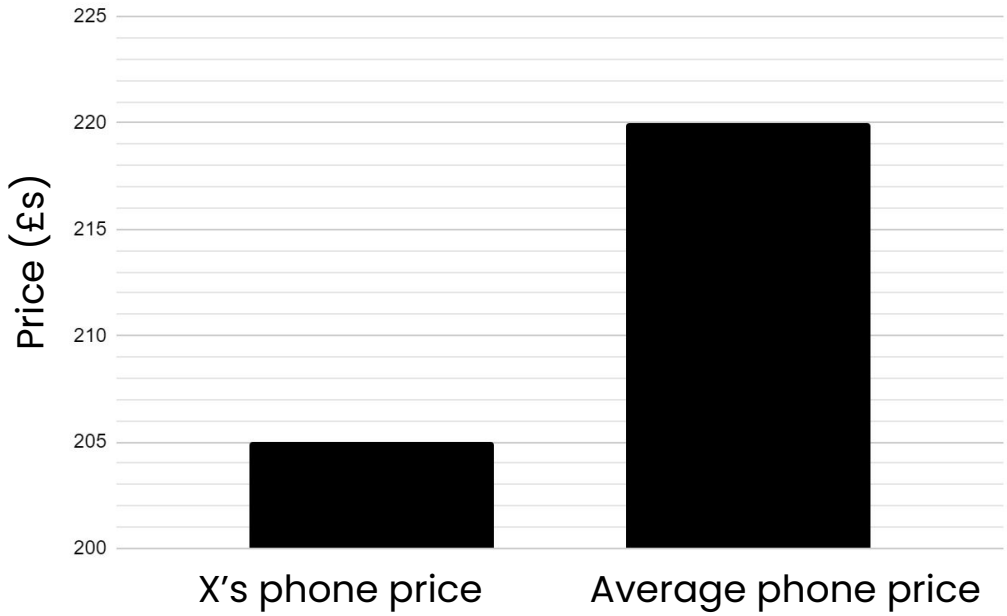
Think beyond
Act beyond
Be beyond.

Misleading Graphs

Graphs can be used to mislead people. For example, companies may use graphs to make customers buy their product.

Example 1:

A phone company "X" uses a bar chart to show that their phone prices are much below average.

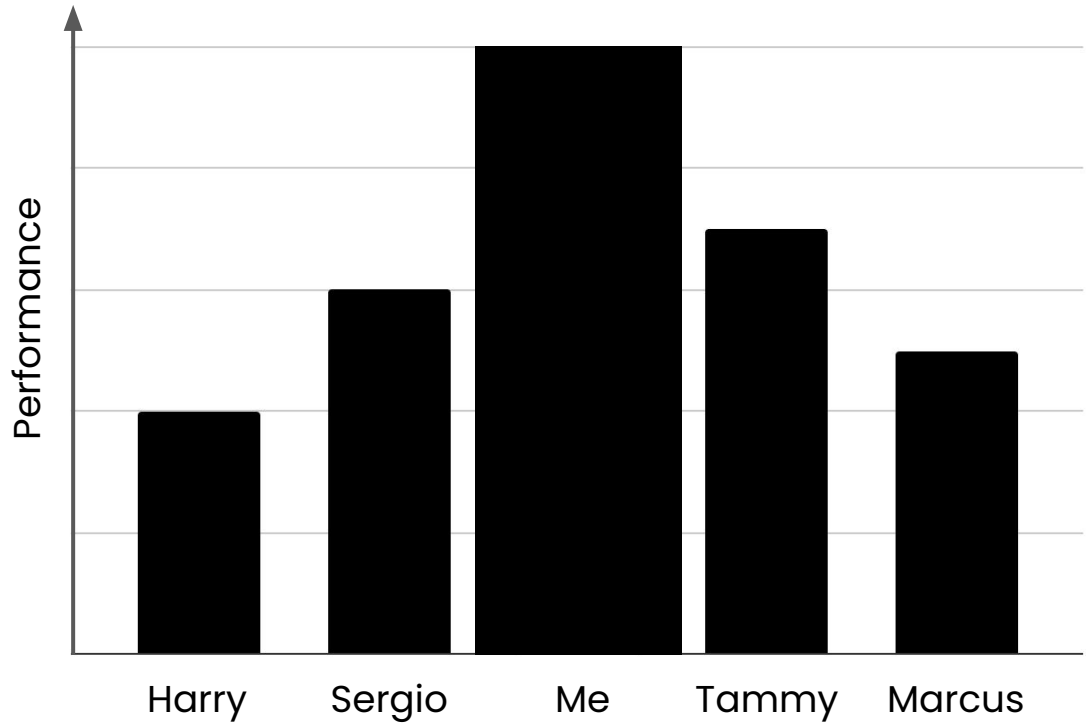


It may seem like X's phone price is much cheaper than the average phone price. However, taking a closer look, we can see that the y-axis begins at 200 instead of 0. The y-axis also has a small range from 200 to 225 with a very small scale.
This makes X's phone seem much cheaper than the average phone price but it is only £15 cheaper. £15 is a relatively small proportion of the total price £220 therefore X's phone price is not significantly cheaper than average.

Misleading Graphs

Example 2:

A football player competes against 4 other for the position of first-choice striker. To convince the manager to pick him, he presents the graph below comparing himself with the four other players.



What is misleading about this graph?

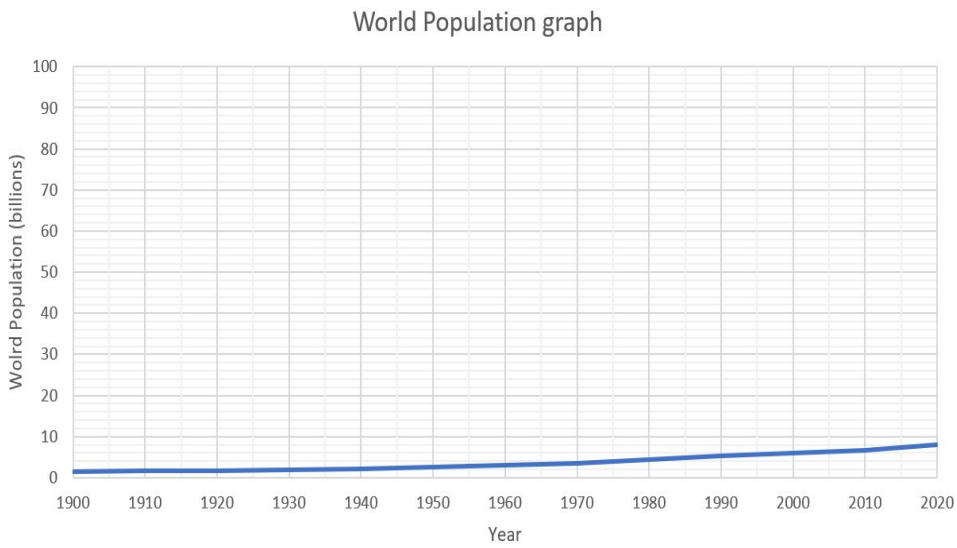
Firstly, they have made their bar wider than the others to suggest they are somehow better. We can also see that the y-axis has no units, so we can't compare values directly. Furthermore we don't know how "performance" is measured, if it is indeed measured at all.

Graphs can be manipulated to make the data seem to suggest something which may not be true. There are various methods of misleading people using graphs, many of which can be identified by looking closely at the scale of the axes, sample size and other details.

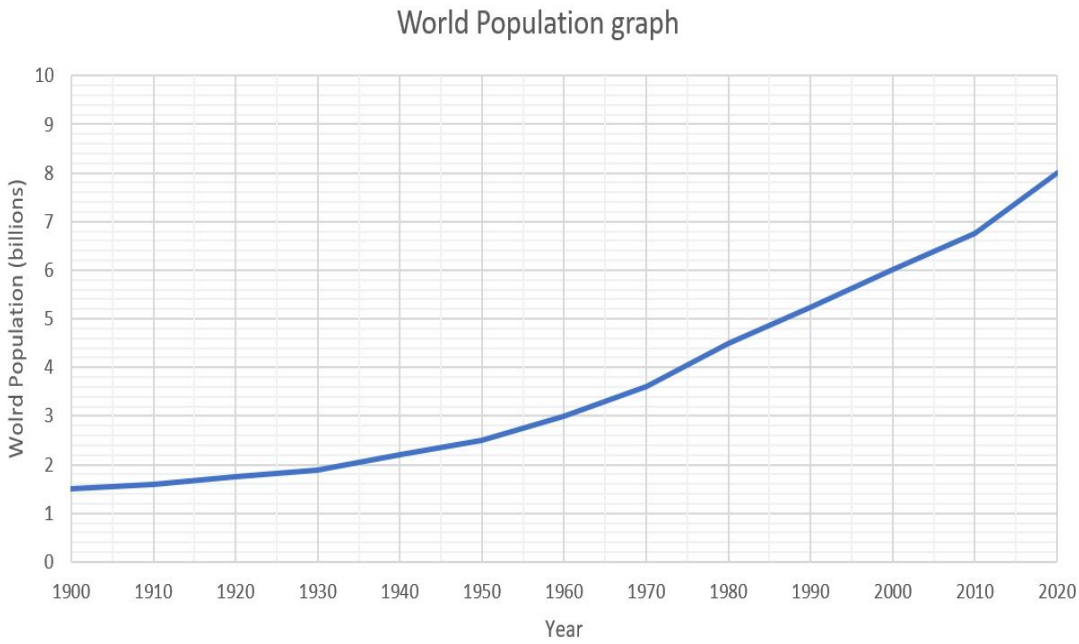
Questions - Intermediate

Which of the following graphs are misleading? Write “yes” or “no”. If “yes”, provide reasoning why it is misleading.

1)

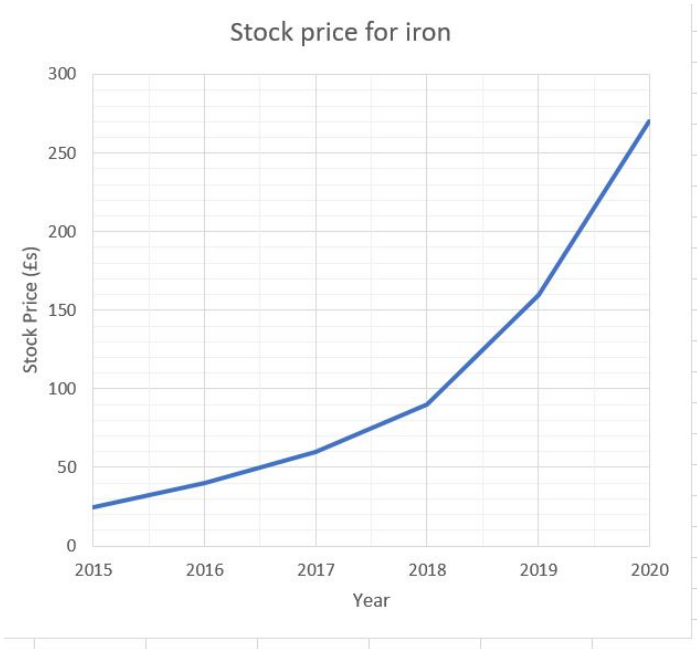


2)

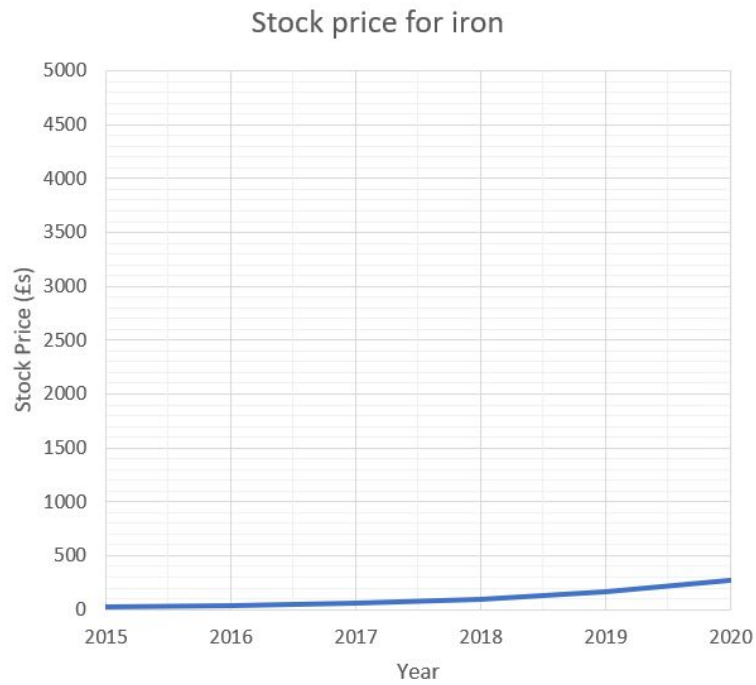


Questions - Intermediate

3)



4)



Questions - Advanced

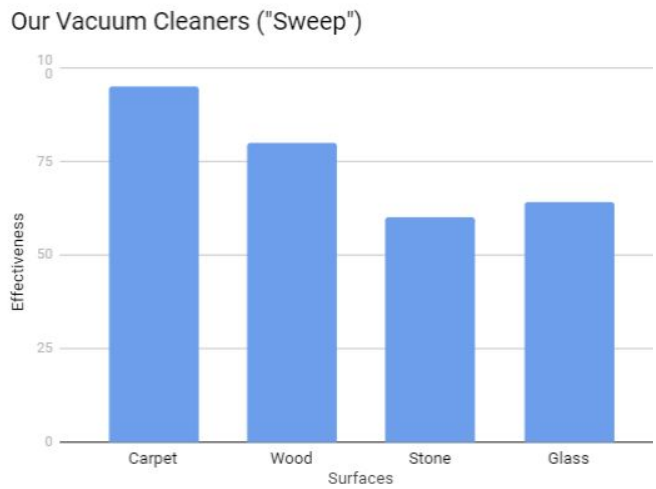
1. Draw a graph to represent the following table. Make sure to use a suitable range for the axes in order to accurately represent the data.

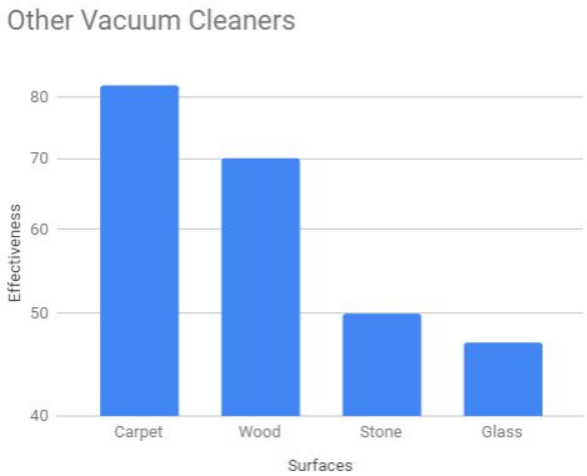
Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Rainfall (mm)	700	600	550	500	400	200	50	50

2. Draw a graph to represent the same table. However, this time use a range for the axes in order to MISLEAD the readers into thinking that there is no significant change in rainfall.

Questions - Mastery

1) A company called Sweep used the following graphs to promote the sales of their vacuum cleaners.





a) Find 3 things which are misleading about the graphs above.

_____

_____

_____

_____

_____

b) Why would the company use misleading graphs?

_____

_____

c) Are Sweep's vacuum cleaners better than others?

_____

_____

Mark Schemes

Beginner

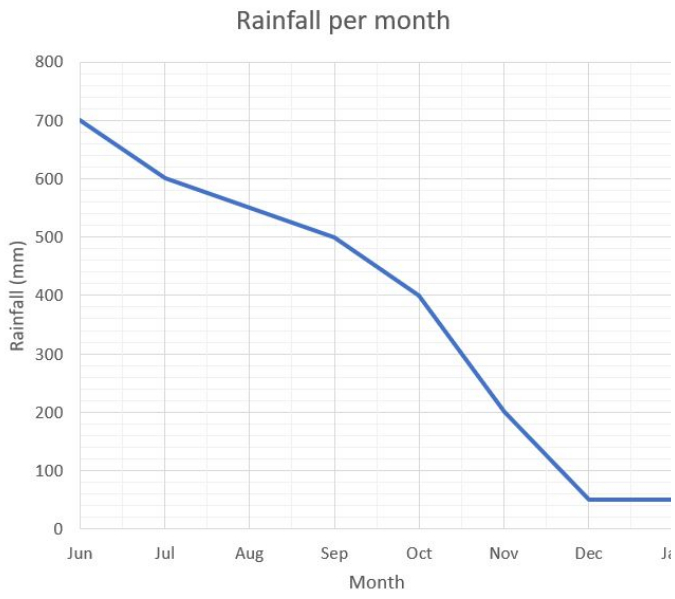
1) 0.25 years
2) No
3) The range of the y-axis is very small and it starts from 30.
4) Increase the range of the y-axis and start from a smaller number (e.g. 0)
5) The average age for marriage did not change greatly between 2015 and 2020.

Intermediate

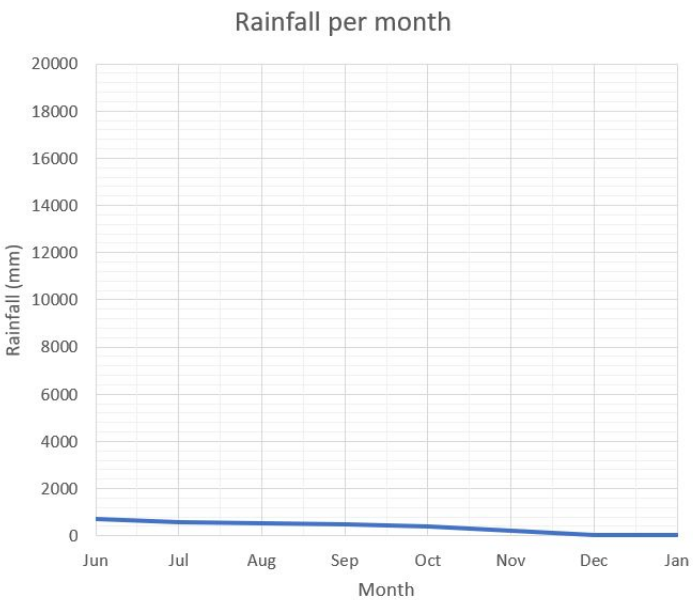
1) Yes, because the range of the y-axis is too large. This causes the population increase to seem insignificant.
2) No
3) No
4) Yes , because the range of the y-axis is too large. This causes the rise in stock price to seem insignificant

Advanced

1)



2) (must have large range for y-axis)



Mastery

1)

a) The range of the y-axis is from 0-100 for Sweep's vacuums but 40-80 for others. This makes Sweep's vacuums seem more effective.

The scale for effectiveness is not constant for the other vacuum cleaner's graph whilst it is constant for Sweep's graph. This makes Sweep's vacuums seem more effective (especially on stone and glass surfaces).

The effectiveness has no units of measurement therefore we do not know how they measure effectiveness.

b) Using misleading graphs makes people think that Sweep's vacuums are more effect than others. This makes them want to buy their vacuum over others.

c) According to the graphs, Sweep's vacuums are more effective and therefore better than other vacuums. (However, this depends on how the "effectiveness" of vacuums are measured since there are no units.)

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Act beyond
Be beyond.

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