Misleading graphs and statistics

Teacher guidance

Overview of task

This is an activity analysing misleading graphs and statistics, discussing why they are misleading and how they might be corrected.

Strand(s): Graphs; Statistics; Probability

Prior knowledge

Ways of displaying data, measures of statistics and basic probability theory

Relevance to Core Maths qualifications

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| --- | --- | --- | --- | --- |
| **AQA** | **C&G** | **Eduqas** | **Pearson/ Edexcel** | **OCR** |
| ✓ | ✓ | ✓ | ✓ | ✓ |

Suggested approaches

The task is suitable for group work, with the opportunity for discussion and debate.

Use news articles and other sources to start the work. Students could be encouraged to research their own misleading statistics stories.

Resources/documentation

We used Powerpoints 1–5 on the Suffolk Maths website as an initial stimulus (<http://www.suffolkmaths.co.uk/pages/Maths%20Projects/MisleadingData.htm>) for class discussion and debate about what each graph showed and why it was misleading. This led to a discussion of how we could change the graphs so that they were a ‘fair’ representation of the data. We then used the quiz Powerpoint 6 and asked students in groups to analyse and comment on the graphs and statistics.

We also used the story about the health dangers of eating bacon: <http://www.bbc.co.uk/news/health-28797106>, and the related Nrich article: <https://plus.maths.org/content/os/issue50/risk/index>.

Further material is available on David Spiegelhalter’s website, Understanding Uncertainty: <http://understandinguncertainty.org/node/233>

Relevant digital technologies

Use of spreadsheets to redesign graphs and make calculations.

Possible extensions

Students could produce reports, posters or blogs critiquing how graphs, statistics or risk are discussed in a news story or report. They could research a story and rewrite it with a correct graph or better assessment of the risk.

Acknowledgement

Resources developed from the Suffolk Maths and Nrich websites, used by Steven Nixon and Jon Finch at Priestley College.