

Real Misleading Graphs
Lesson Plan

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Goal: To use internet websites to show some real life and some fictitious misleading graphs, in order to understand what makes them misleading.

Grade and Course: Math 7th grade

KY Standards:

MA-7-DAP-S-DR6

Students will make decisions about how misleading representations affect interpretations and conclusions about data (e.g. changing the scale on a graph).

MA-7-DAP-S-CD1

Students will make predictions, draw conclusions and verify results from statistical data and probability experiments.

Objectives: The students will understand what makes a graph misleading, be able to draw a misleading graph, and be able to draw a non-misleading graph.

Resources/materials needed:

worksheets

Smart board

Description of Plan: Begin by handing out the worksheets. Be sure to have your websites already looked up on the smart board. Begin with the first website on the list, this is an example where in real life CNN.com posted misleading graphs, this will give reasons for a bar graph to be misleading. The third website is from AOL news, another real life misleading graph. This will give reasons for a line graph to be misleading. The second website (which was operational at the time of instruction), will fill in the other reasons, with regard to line graphs, bar graphs, and histograms. After this initial introduction, have the students individually do the two problems on misleading graphs. Remind them that they are both from real life situations. Then go over the students answers, as well as the correct answers. Then have them use the data on gas prices from their city to make both a misleading and non-misleading graph.

Lesson Source: No previous sources.

Instructional Mode: Worksheets, Smartboard/Whiteboard, Discussion

Date Given: March 21, 2008

Estimated Time: 1.5 hours

Date Submitted to Algebra : August 26³th, 2008

Form 8-18-07

Misleading Graphs

What can cause a chart to be misleading? We are going to look at several examples on the internet. Some of them were published, some were made up. Mrs. Sullivan will distinguish between the two.

What can make a graph misleading?

1. If the scale is too narrow or there is not a big enough range. Data looks like it has a big difference really does not.
2. If there is no scale at all.
3. If the bars are not equal widths.
4. If the intervals on the graph are not equal, but are depicted as equal.
5. Graphs can also be misleading if there is missing information.

What can make a pictogram misleading?

1. If all of the pictured items are not the same size.

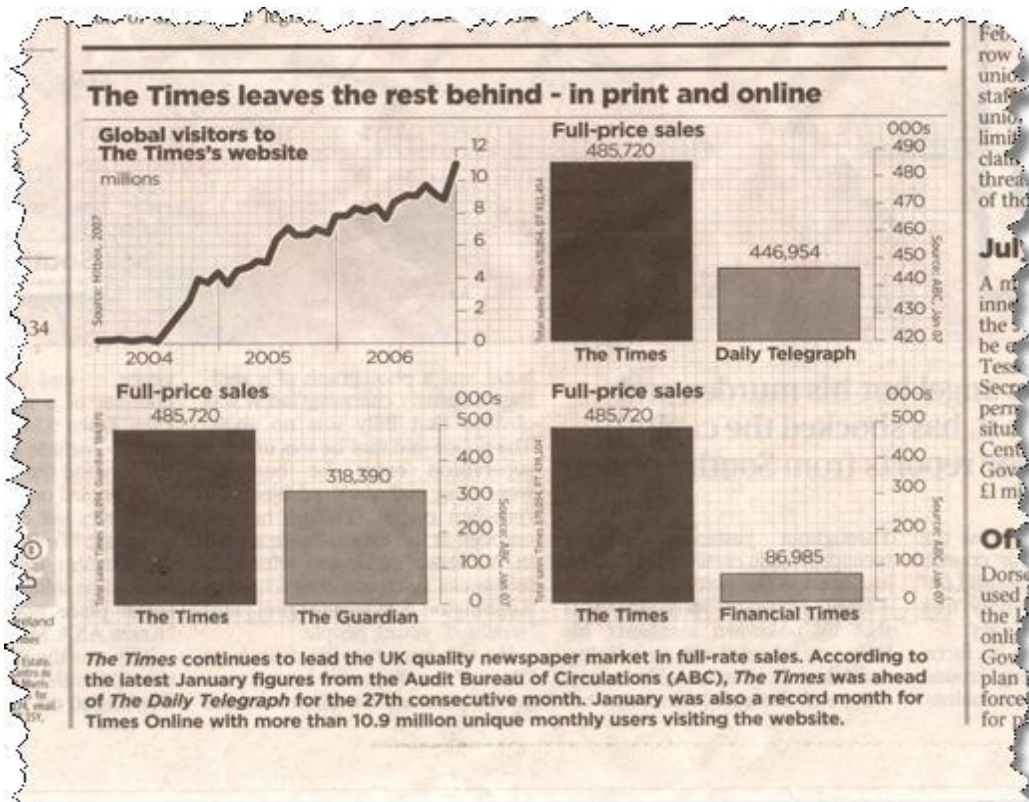
References

1. <http://mediamatters.org/items/200503220005> (CNN)
2. <http://www.coolschool.ca/lor/AMA11/unit1/U01L02.htm#>
3. <http://thinkprogress.org/2006/03/15/aol-chart/>
4. bigpicture.typepad.com/comments/2005/08/misleading_wsj_.html
5. <http://ianfnelson.com/blog/spot-the-misleading-graph/>
6. http://www.motortrend.com/gas_prices/33/kentucky/bath/owingsville/





Identify bias for yourself. This graph is from the wall street journal.



What about this graph is misleading?



Which one of these graphs are misleading? Why is it misleading?

Gas Station	Regular	Plus	Premium	Diesel
Unbranded 19 Brendan St Owingsville , KY 40360	\$3.299	N/A	N/A	\$3.999
Marathon Ashland 822 E Highway 60 Owingsville , KY 40360	\$3.299	N/A	N/A	N/A
Marathon Ashland 1147 Slate Ave Owingsville , KY 40360	\$3.299	\$3.379	N/A	N/A
Chevron I-64 & Us-60 Owingsville , KY 40360	\$3.349	N/A	N/A	\$4.109
Marathon Ashland 302 W Main St Owingsville , KY 40360	 \$3.139 Lowest Price	N/A	N/A	N/A
BP 9640 E Highway 60 Salt Lick , KY 40371	\$3.259	N/A	N/A	N/A
Texaco 1104 Camargo Rd Mount Sterling , KY 40353	\$3.199	N/A	\$3.409	 \$3.899 Lowest Price
Texaco 2000 Winchester Rd Mount Sterling , KY 40353	\$3.299	N/A	\$3.499	N/A
Pilot 3060 Owingsville Rd Mount Sterling , KY 40353	\$3.199	 \$3.299 Lowest Price	 \$3.399 Lowest Price	\$3.979
Marathon Ashland 207 E Main St Mount Sterling , KY 40353	\$3.299	N/A	N/A	N/A

Use the data from above to create a misleading graph. It could be a line graph or bar chart or pictogram. Make it as misleading as possible while still staying true to the data (don't make up numbers).

After you have created your misleading graph, create a graph that is accurate, using the same type of graph. Be sure to use the same colors and to make it the same relative size.

Misleading Graphs

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What can make a graph misleading?

- 1.
- 2.
- 3.
- 4.
- 5.

What can make a pictogram misleading?

- 1.