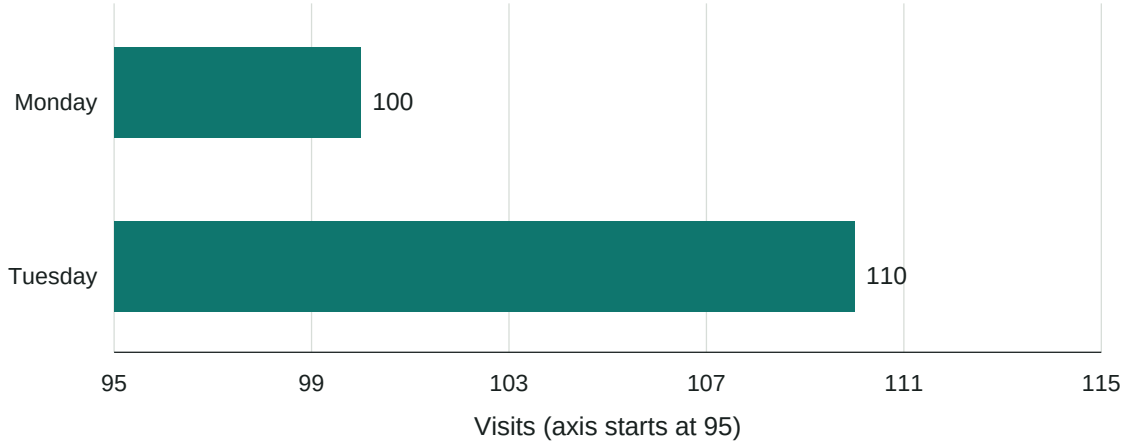
Reading critically: worked examples

Name: _____ Class: _____ Date: _____

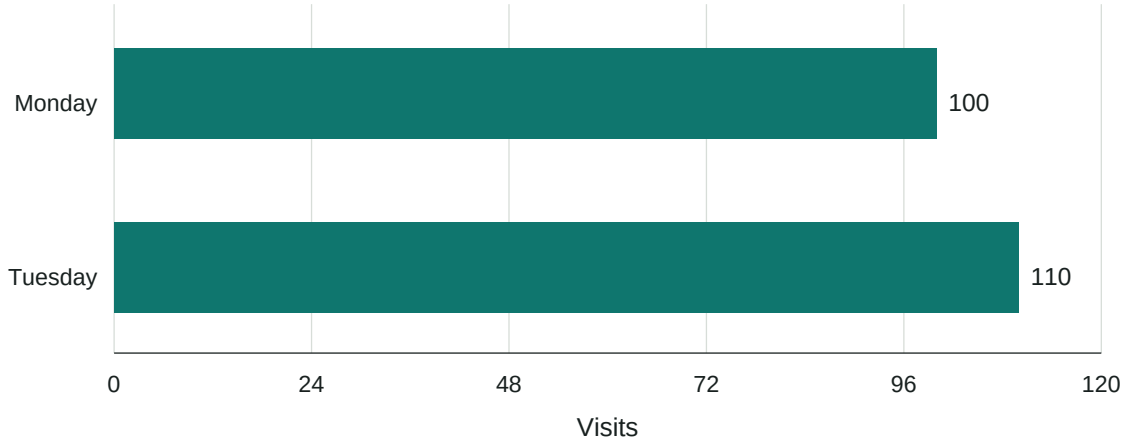
A graph can use correct numbers yet give a misleading impression through its scale, chart type, labels or missing context. Check the axis baseline, intervals, units, full data range and source before accepting the visual message.

Two accurate counts, an exaggerated impression



A fictional library records 100 visits on Monday and 110 on Tuesday. This deliberately problematic bar chart starts its horizontal axis at 95 instead of zero.

Redraw the same data with a zero baseline



Use exactly the same counts, title and units, with the horizontal axis running from zero to 120. No observations have been removed or changed.

Original fictional data. Full explanations and copyable datasets: chartmaker.tools/lessons/misleading-graphs

Five practice questions

Name: _____ Class: _____

1. What is the absolute increase in library visits from Monday to Tuesday?

2. Calculate the percentage increase using Monday as the baseline.

3. Why does the truncated chart make Tuesday's bar look three times as long?

4. Does a zero-baseline chart of these two days prove that visits are increasing over the whole year?

5. Name two checks besides the axis baseline that would help you assess a graph.

Teacher answers and working

Misleading Graphs: Seven Common Mistakes and How to Spot Them

Keep this page separate when handing out student pages 1-2.

Question 1

110 - 100 = 10 visits.

Question 2

(110 - 100) / 100 x 100 = 10%.

Question 3

Its baseline is 95. The visible lengths are 100 - 95 = 5 and 110 - 95 = 15; 15 / 5 = 3, which is not the ratio of the actual counts.

Question 4

No. It describes only two days. A yearly trend requires observations covering a suitable longer period.

Question 5

Examples include checking units, equal scale intervals, the complete time range, the source, sample size, denominator, and whether the chart type fits the data.

Teaching notes

Judging a percentage increase from the apparent bar-length ratio without reading the baseline.

Assuming that a clearer redesign proves a causal explanation.

Calling every non-zero line-graph axis deceptive without considering its labels and purpose.

All data is fictional. Accept equivalent notation and explanations. Encourage students to show calculations, units and the conventions used.