LESSON MAKER PRO

Spot the Graph Trick

Find scales, labels, and titles that can fool a reader.

GRADE 8 · 8.PS.2.j

8.PS.2.j "Identify components of graphical displays that can be misleading."

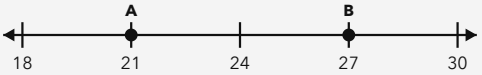
NAME _____ DATE _____

READ BEYOND THE PICTURE

Check where an axis starts, whether intervals are equal, and whether labels match the data. A truncated scale, uneven intervals, or an exaggerated title can make a small difference seem much bigger.

WORKED EXAMPLE

The scale below is used as the vertical axis of a comparison graph. A is at 21 and B is at 27. Find the actual difference. Then name the scale feature that could make the difference look large.



1. Subtract: 27 - 21 = 6.
2. The scale starts at 18, not 0.
3. A shortened scale can exaggerate the gap.

Answer: The difference is 6. The truncated scale, which starts at 18, could make the gap look large.

PRACTICE 4 problems

1 A bar graph starts its y-axis at 60. Two bars show 64 and 68. What component is misleading, and why?

ANSWER _____

2 A graph has equally spaced y-axis marks labeled 0, 8, 16, and 40. What is wrong, and how could it be fixed?

ANSWER _____

3 A survey graphic is titled "All Students Prefer Soccer," but 17 of 25 surveyed students chose soccer. What component is misleading?

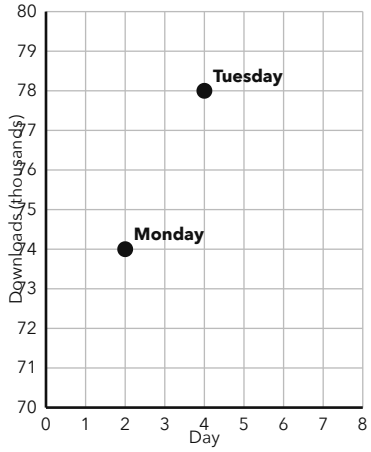
ANSWER _____

4 A line graph has a y-axis labeled "Screen time" and data values of 12 and 15. What label detail is missing?

ANSWER _____

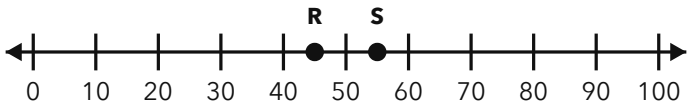
APPLY IT Show your work

1 A game club posts this downloads graph and says, "Downloads nearly doubled!" Find the increase. Then identify the graph component that makes the change look larger than it is.



ANSWER _____

2 A music poll uses the scale below. R has 45% support and S has 55% support. A headline says, "S Has Twice the Support of R." Which component is misleading, the headline or the scale? Explain.



ANSWER _____

CHALLENGE One step up

Two bar graphs show 82 votes and 88 votes. Graph A starts its y-axis at 0. Graph B starts its y-axis at 80. A student says Graph B is always dishonest. Do you agree? Explain when Graph B could mislead a reader.

WORK SPACE AND ANSWER

ANSWER KEY

Spot the Graph Trick

GRADE 8 · 8.PS.2.j

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A bar graph starts its y-axis at 60. Two bars show 64 and 68. What component is misleading, and why?	**The truncated y-axis is misleading. It can make a difference of 4 look much larger.**
2	A graph has equally spaced y-axis marks labeled 0, 8, 16, and 40. What is wrong, and how could it be fixed?	**The intervals are unequal even though the marks are equally spaced. Space 40 farther away or use equal increases of 8.**
3	A survey graphic is titled "All Students Prefer Soccer," but 17 of 25 surveyed students chose soccer. What component is misleading?	**The title is misleading because the survey included only 25 students, not all students.**
4	A line graph has a y-axis labeled "Screen time" and data values of 12 and 15. What label detail is missing?	**The unit of time is missing.**

PART 2 · APPLY IT

1. **The increase is 4 thousand downloads. The y-axis starts at 70 instead of 0, so the truncated scale exaggerates the change.** Subtract 74 from 78 to find an increase of 4 thousand. Notice that the vertical scale begins at 70, which makes the plotted gap appear large.
2. **The headline is misleading. S has 55% support and R has 45% support, so S does not have twice as much support.** The scale begins at 0 and uses equal intervals. Compare 55% with 45%, then reject the claim that 55% is twice 45%.

CHALLENGE

No. A graph may use a truncated axis if it is clearly labeled, but Graph B can mislead when it makes the 6-vote difference look much larger than it really is or suggests a huge difference.

Accept equivalent wording such as shortened axis or nonzero baseline for truncated scale. For the challenge, accept answers that explain both that a truncated scale can be labeled accurately and that it can exaggerate a small difference.