Name: _____ Date: _____

The Bar Graph That Cut Off the Bottom

Circle group

The school newsletter had a bar graph of a cookie sale. Room 4 sold 52 boxes. Room 5 sold 55 boxes. On the graph, the Room 5 bar was more than twice as tall as the Room 4 bar. Room 5 cheered. Room 4 groaned. But the numbers show the rooms were almost tied.

The trick was the vertical axis, the number line up the side. It did not start at 0. It started at 50. The cut-off bottom made Room 4's bar only 2 units tall. Room 5's bar was 5 units tall. A bar graph shows an amount by its length. So a cut-off bottom makes small gaps look huge.

Draw the same data with an axis that starts at 0. Now the bars look almost the same. That picture is more true. Room 5 sold just 3 more boxes.

Some graphs cut the axis for a good reason. It can show a small change that matters, like a few degrees of body temperature. Honest graph makers say so.

Check three things. Find where the axis starts. Read the labels. Compare the real numbers, not just the bars.

Questions

1. How many boxes did Room 4 sell?

_____

_____

2. Where did the vertical axis start?

_____

_____

3. Why did the Room 5 bar look more than twice as tall?

_____

_____

4. How many more boxes did Room 5 really sell?

_____

_____

5. When can a cut axis be useful?

_____

_____

6. Why should readers look at the labels and not just the bars?

_____

_____

Words to know

axis: the number line along the side or bottom of a graph
vertical: going straight up and down
data: facts and numbers collected about something
tied: having the same score or nearly the same amount
honest: truthful and fair

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

The Bar Graph That Cut Off the Bottom

Triangle group

The school newsletter printed a bar graph of a cookie sale, in which Room 4 sold 52 boxes and Room 5 sold 55 boxes. On the graph, the Room 5 bar towered over the Room 4 bar, standing more than twice as tall, so Room 5 cheered and Room 4 groaned. But the numbers say the two classes were nearly tied.

The trick was in the vertical axis, the number line running up the side of the graph. Instead of starting at 0, it started at 50, and this cut-off bottom made Room 4's bar only 2 units tall and Room 5's bar 5 units tall. A bar graph shows an amount by its length, so cutting off the bottom makes small differences look enormous.

When the same data is drawn with an axis that starts at 0, the bars look almost the same height. That picture matches the truth better: Room 5 sold just 3 more boxes.

Graphs are not always drawn to fool anyone. Sometimes a cut axis helps to show a small change that matters, such as a few degrees of body temperature. In those cases, honest graph makers say so clearly.

Good readers check three things before trusting a graph. First, find where the axis begins. Second, read the numbers on the labels. Third, compare the real values, not only the heights of the bars.

Questions

1. How many boxes did Room 4 sell?

_____

_____

2. Where did the vertical axis start on the newsletter graph?

_____

_____

3. Why did the Room 5 bar look more than twice as tall?

_____

_____

4. How many more boxes did Room 5 really sell?

_____

_____

5. When can a cut axis be useful?

_____

_____

6. Why should readers look at the labels and not only the bars?

_____

_____

Words to know

axis: the number line along the side or bottom of a graph
vertical: going straight up and down
data: facts and numbers collected about something
tied: having the same score or nearly the same amount
honest: truthful and fair

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

The Bar Graph That Cut Off the Bottom

Square group

The school newsletter printed a bar graph summarizing a cookie sale. Room 4 had sold 52 boxes, and Room 5 had sold 55. On the graph, however, the Room 5 bar towered over the Room 4 bar, standing more than twice as tall. Room 5 cheered, and Room 4 groaned, even though the figures reveal that the two classes were very nearly tied.

The deception lay in the vertical axis, the number line running up the side of the graph. Instead of beginning at 0, it began at 50. This cut-off bottom reduced Room 4's bar to a mere 2 units and raised Room 5's bar to 5 units. Because a bar graph communicates an amount through the length of each bar, removing the bottom causes small differences to appear enormous.

When the identical data is plotted on an axis that begins at 0, the two bars look nearly the same height. That picture corresponds much more closely to the truth, which is that Room 5 sold only 3 more boxes.

Graphs are not always drawn to mislead anyone. Occasionally a cut axis is helpful for revealing a small change that genuinely matters, such as a few degrees of body temperature. In such cases, honest graph makers state it plainly.

Discerning readers verify three things before trusting a graph. First, locate the point where the axis begins. Second, study the numbers on the labels. Third, compare the actual values instead of relying solely on the heights of the bars.

Questions

1. How many boxes did Room 4 sell in the cookie sale?

_____

_____

2. Where did the vertical axis begin on the newsletter graph?

_____

_____

3. Why did the Room 5 bar appear more than twice as tall as the Room 4 bar?

_____

_____

4. How many more boxes did Room 5 actually sell?

_____

_____

5. When might a cut axis be helpful?

_____

_____

6. Why should readers examine the labels and not only the bars?

_____

_____

Words to know

axis: the number line along the side or bottom of a graph
vertical: going straight up and down
data: facts and numbers collected about something
tied: having the same score or nearly the same amount
honest: truthful and fair

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: The Bar Graph That Cut Off the Bottom

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: The Bar Graph That Cut Off the Bottom

Easier · 177 words · Flesch-Kincaid grade 1.5

1. 52 boxes.
2. At 50, not 0.
3. The axis was cut off at 50, which made small gaps look huge.
4. 3 more boxes.
5. When it shows a small change that matters, and the graph says so.
6. The real numbers can be much closer than the bars look.

Triangle: The Bar Graph That Cut Off the Bottom

This passage · 215 words · Flesch-Kincaid grade 5.4

1. 52 boxes.
2. At 50 instead of 0.
3. The axis was cut off at 50, which made small differences look huge.
4. 3 more boxes.
5. When it shows a small change that matters, as long as the graph says so clearly.
6. The real values can be much closer than the bar heights make them seem.

Square: The Bar Graph That Cut Off the Bottom

Harder · 235 words · Flesch-Kincaid grade 7.2

1. 52 boxes.
2. At 50 rather than 0.
3. The cut-off axis made a small difference look enormous.
4. 3 more boxes.
5. When it reveals a small change that matters, provided the graph states it plainly.
6. The actual values can be much closer together than the bar heights suggest.