Data Questions

The 4-Step Strategy

THE QUESTION

- Which choice most effectively uses data from the **graph** (or **table**) to **complete the statement**?
- Which choice best describes data from the table that **support** (or **weaken**) the researchers' claim?

The right answer must pass two tests: it is **true** according to the graphic, and it gives **the data the passage calls for**. Every wrong answer fails at least one of them.

1 **Claim** · Pin down the claim and name the data it needs.

Find the sentence that matters (the blank, or the claim the stem names; usually the last sentence) and read everything before it as setup. Say what the data must show. Almost every question asks for one of six things:

DATA NEED	WHAT IT LOOKS LIKE	DATA NEED	WHAT IT LOOKS LIKE
One value	one bar, one cell, one point	Trend over time	rises, falls, or holds steady
Highest or lowest	the extreme in a set	Pattern across all	what holds for every case, and any exception
Two values compared	which is larger, and by how much	Two-factor comparison	two groups under two conditions; most common and usually hard

Read the words before the blank: after *for example*, one case is enough; after *since* or *given that*, supply evidence; after *suggests that*, state the conclusion. **Mark the conditions:** *Who and what? When? Compared with what? How much? How many?* (one exception sinks *all*). **Count the parts** of a two-part claim. And if the graph measures a **stand-in** (a proxy), translate it, and watch the direction: fewer minutes of work can mean *better* off.

2 **Frame** · Read the graphic's frame before its numbers.

Title, axis labels or column headings, units, and the legend. Find where the claim lives: the rows, bars, or points that match its group, period, and measure. Everything else is scenery. Watch **units** (percent vs. percentage points), the **direction of the axis**, the **legend**, and **look-alike columns**.

3 **Predict** · Say the answer before you read the choices.

Find the exact numbers Step 1 told you to look for and turn them into a sentence. For *support*, ask: if the claim were true, what would the graphic show? For *weaken*, flip it. When the passage names a control or a baseline, build it in: not "the treated plants grew 12 cm" but "they grew more than the untreated ones."

4 **Test** · Every choice: on target, then true.

On target? The right group, period, and measure, compared with the right thing, covering every part of the claim (check the words alone first). **True?** Check every number and every comparison word (*more, less, all, both, except*) against the graphic.

WRONG-ANSWER TRAPS: Misreads data (a wrong value, the wrong row or line, a rise read as a fall; the most common) · **Outside it** (true data the claim didn't ask for: another column, group, or period) · **Half of it** (one part of a two-part claim) · **Invented comparison** (the wrong pair, or the right pair on the wrong measure) · **Reverses it** (true numbers pointing the wrong way). On hard questions, many wrong answers read the graphic correctly, so the on-target test matters most.

Two Worked Examples

Example 1 · Two values compared, under a condition

Average Daily Orders of Four Lunch Dishes at a University Cafeteria

Dish	Labeled "locally grown"?	Price	Average orders per day
grain bowl	yes	$7.50	118
vegetable curry	yes	$6.25	96
pasta salad	no	$6.75	52
grilled wrap	no	$5.50	71

Many shoppers say they would pay extra for food grown nearby, but what people say in surveys does not always match what they buy. For one semester, a university cafeteria posted a small sign reading "locally grown" beside some of its lunch dishes and tracked how often each dish was ordered. Agricultural economist Dana Whitlock, who studied the cafeteria's records, argues that its diners favor dishes labeled "locally grown," even when those dishes cost more than unlabeled ones.

Which choice best describes data from the table that support Whitlock's argument?

A) The vegetable curry, which is labeled "locally grown" and costs $6.25, averaged 96 orders per day, whereas the pasta salad, which is unlabeled and costs $6.75, averaged 52.

B) The grilled wrap, the least expensive dish, averaged more orders per day than the pasta salad did.

C) The grain bowl, which is labeled "locally grown" and costs $7.50, averaged 118 orders per day, whereas the pasta salad, which is unlabeled and costs $6.75, averaged 52.

D) Each dish labeled "locally grown" costs more than each unlabeled dish, and each labeled dish averaged more orders per day than either unlabeled dish did.

CLAIM Whitlock argues that diners favor dishes labeled "locally grown" (1) *even when those dishes cost more* (2). Two parts: you need a labeled dish that outsells a *cheaper* unlabeled one.

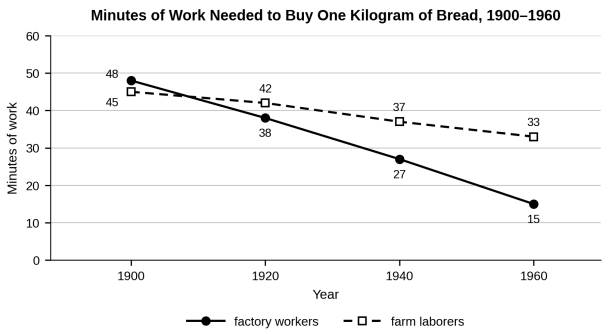
FRAME Four columns: the dish, its label, its price, and its average daily orders. The label and price are the conditions; orders are the measure.

PREDICT The grain bowl ($7.50, labeled) costs more than both unlabeled dishes, and its 118 orders beat both of theirs (52 and 71). So: a pricier labeled dish outsold a cheaper unlabeled one.

TEST C. On target: the label and the higher price sit on the same dish, and that dish wins. True: 118 > 52, and $7.50 > $6.75.

TRAPS A is half of it and the most tempting: true, but its labeled dish is the *cheaper* one. B is an invented comparison: two unlabeled dishes. D misreads data: the curry ($6.25) costs less than the pasta salad ($6.75).

Example 2 · Two-factor comparison, through a negative proxy



Because wages, not just prices, changed over time, prices alone say little about how well people lived in the past. Economic historian Mira Kovač therefore uses the number of minutes a worker had to labor to earn enough to buy one kilogram of bread as one indicator of living standards: the fewer minutes needed, the better off the worker. Kovač compared wage and price records for factory workers and farm laborers in one industrializing country. Her data suggest that _____

Which choice most effectively uses data from the graph to complete the statement?

A) both groups grew worse off from 1900 to 1960, factory workers more quickly than farm laborers.

B) both groups grew better off from 1900 to 1960, but the living standards of factory workers rose more quickly than those of farm laborers.

C) both groups grew better off from 1900 to 1960, but the living standards of farm laborers rose more quickly than those of factory workers.

D) factory workers were better off than farm laborers in every year shown.

CLAIM Kovač's stand-in: minutes of work needed to buy a kilogram of bread. It is a **negative proxy**: *the fewer minutes needed, the better off the worker*. The choices speak of living standards, so flip the direction as you translate back.

FRAME Minutes of work in 1900, 1920, 1940, and 1960; solid line for factory workers, dashed line for farm laborers.

PREDICT Factory: 48 → 15, a drop of 33. Farm: 45 → 33, a drop of 12. Both lines fall, so both groups grew better off, and the factory line falls faster.

TEST B. It matches both halves of the prediction, and its direction survives the translation.

TRAPS A reverses it, and is the most tempting for anyone who skips the translation: falling minutes mean *better* off. C misreads data: it swaps the groups. D misreads data: in 1900 factory workers needed more minutes (48 to 45), so "every year" fails.

Your Turn

Name _____ Date _____

Practice 1

Visitor Counts at the Association's Member Gardens

Garden	2021	2022	2023
Fernhill Garden	14,820	17,350	19,940
Saltmarsh Conservatory	9,610	11,240	10,870
Ridgeline Arboretum	41,300	43,950	46,120
Old Mill Gardens	5,480	6,020	6,710

Botanical gardens across the region have added evening concerts and lantern-lit tours in recent years. In its newsletter, a regional garden association claims that, thanks to such programs, attendance has risen every year since 2021 at each of its four member gardens. The association's own figures, however, contradict that claim: _____

Which choice most effectively uses data from the table to complete the text?

A) Old Mill Gardens drew fewer visitors in 2022 than it had in 2021.

B) Ridgeline Arboretum drew roughly seven times as many visitors as Old Mill Gardens in each year shown.

C) the gardens that added evening programs gained visitors the fastest.

D) Saltmarsh Conservatory had fewer visitors in 2023 than in 2022.

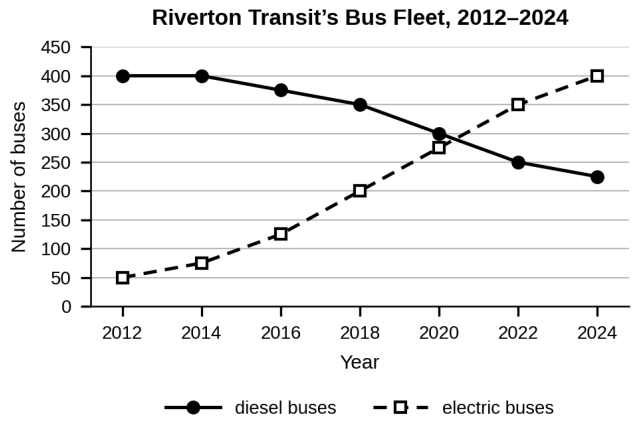
THE DATA THE CLAIM NEEDS: _____

CONDITIONS (WHO / WHEN / COMPARED WITH WHAT / HOW MANY): _____

YOUR PREDICTION: _____

Your answer: (A) (B) (C) (D)

Practice 2



In 2012, Riverton's transit agency adopted a plan to replace its diesel buses with battery-electric ones: as each diesel bus wore out, it would be retired, and every new bus bought would be electric. Because electric buses cost more up front, the plan was controversial at first. A city audit has now concluded that the plan has largely succeeded.

Which choice best describes data from the graph that support the audit's conclusion?

A) Electric buses, only a small fraction of the fleet in 2012, made up most of it by 2022.

B) The number of electric buses first rose above the number of diesel buses in 2020.

C) The fleet had more diesel buses than electric ones in every year from 2012 through 2020.

D) In 2014, the fleet had more than five times as many diesel buses as electric ones.

THE DATA THE CLAIM NEEDS: _____

CONDITIONS (WHO / WHEN / COMPARED WITH WHAT / HOW MANY): _____

YOUR PREDICTION: _____

Your answer: (A) (B) (C) (D)