

Monitor Evidence Check

Compare sources, methods, accuracy, and total cost before choosing.

8.4.B “make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility, accuracy, cost-effectiveness, and methods used; and”

NAME _____ DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline facts used to judge a model's accuracy or cost. Circle words that describe a testing method, then number the three sources 1, 2, and 3 from most to least credible for accuracy.

Choosing a Classroom Monitor

- ① Jefferson Middle School plans to buy carbon dioxide, CO₂, monitors for classrooms. Carbon dioxide is not a direct measure of every air pollutant, but rising CO₂ can show that a room needs more fresh air. The science club set four decision criteria: credible source, accurate readings, reasonable total cost, and a clear testing method. It compared evidence about three models rather than trusting the lowest price or a single online rating alone as proof of quality.
- ② The maker of Model A posted a product sheet saying its readings are within 50 parts per million, ppm, and that each unit costs \$89. This source is useful for price, yet it does not identify the instrument used for comparison, the number of units tested, or the CO₂ levels tested. Because the company sells Model A, its accuracy claim needs independent confirmation. It also provides no dates or raw measurements for reviewers to inspect.
- ③ An independent university lab tested 12 Model B monitors beside a calibrated reference instrument at four CO₂ levels, from 400 to 1,600 ppm. Its public report gave an average error of 25 ppm and described the procedure. Model B costs \$125 plus \$20 for yearly recalibration. A district pilot tested six \$70 Model C monitors for eight weeks. Four drifted more than 150 ppm and needed \$35 replacements. The club recommended Model B because its accuracy evidence and method were strongest, although it checked the higher ongoing cost.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Which source gives the strongest evidence about monitor accuracy? Use two details about its method to explain your choice.

2 Why is the Model A product sheet not enough evidence to accept its accuracy claim?

3 What results from the district pilot raise concerns about both Model C's accuracy and its cost-effectiveness?

4 Which model did the club recommend, and what cost trade-off did it accept?

3 YOUR TURN _____ Your own words

You are choosing a soil-moisture sensor for the school garden. Complete the table with three appropriate sources, including a manufacturer specification, an independent test, and a school trial. Judge each source's method, accuracy or total-cost evidence, and usefulness for a decision.

SOURCE	METHOD OR EVIDENCE	ACCURACY OR TOTAL-COST EVIDENCE	CREDIBILITY AND DECISION USE

PART 1 • READ AND MARK

Underline facts used to judge a model's accuracy or cost. Circle words that describe a testing method, then number the three sources 1, 2, and 3 from most to least credible for accuracy. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Which source gives the strongest evidence about monitor accuracy? Use two details about its method to explain your choice.	The independent university lab report. It tested 12 monitors beside a calibrated reference instrument at four CO₂ levels and described its procedure.
2	Why is the Model A product sheet not enough evidence to accept its accuracy claim?	The company sells Model A, and the sheet does not name the comparison instrument, number of units, CO₂ levels, dates, or raw measurements.
3	What results from the district pilot raise concerns about both Model C's accuracy and its cost-effectiveness?	Four of six Model C monitors drifted more than 150 ppm during the eight-week pilot and needed \$35 replacements. The low purchase price could lead to unreliable readings and added replacement costs.
4	Which model did the club recommend, and what cost trade-off did it accept?	The club recommended Model B. It accepted its higher \$125 purchase price and \$20 yearly recalibration cost because its accuracy evidence and testing method were strongest.

PART 3 • YOUR TURN (SAMPLE ANSWER)

SOURCE	METHOD OR EVIDENCE	ACCURACY OR TOTAL-COST EVIDENCE	CREDIBILITY AND DECISION USE
Manufacturer specification for Sensor L	Claims $\pm 3\%$ moisture accuracy and lists a \$45 price, but gives no test procedure	Purchase price is \$45, but accuracy cannot be checked	Useful for price, weak evidence for accuracy
Independent extension lab report on Sensor L	Tested 10 sensors against oven-dried soil samples at three moisture levels	Reported $\pm 4\%$ accuracy and a \$45 purchase price before batteries	Most credible accuracy evidence because the method and sample size are stated
School garden trial of Sensor L	Used two sensors for three weeks and compared readings with hand soil tests	One sensor needed an \$8 battery, so total cost can be more than \$45	Useful local cost evidence, but too small to prove accuracy; choose Sensor L using the lab report and budget for batteries

Accept rankings and judgments that cite the source's independence, possible interest, sample size, comparison tool, testing conditions, reported results, or full cost. For the open table, accept varied realistic evidence if all three source types are included and the student makes a supported credibility and decision judgment.