

Cover Test Detectives

Use measurements to compare designs and support a conclusion.

3.1.d “constructing and critiquing conclusions and explanations use evidence (measurements, observations, patterns) to construct or support an explanation generate and/or compare multiple solutions to a problem describe how scientific ideas apply...”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline every temperature measurement. Circle each sentence that uses measurements to support or limit a conclusion.

Which Cover Works Best?

- ① A class wanted to keep a cup of cold water from warming during recess. They made three covers: felt, bubble wrap, and aluminum foil. Each cover wrapped one same-size cup. The students poured 200 milliliters of water at 10°C into each cup. After 20 minutes, they measured each water temperature.

CUP COVER TEST RESULTS

Cover	Starting Temperature	Temperature After 20 Minutes
Felt	10°C	13°C
Bubble wrap	10°C	16°C
Foil	10°C	19°C

- ② The felt cup was 13°C after 20 minutes. Bubble wrap was 16°C, and foil was 19°C. All cups began at the same temperature and waited the same time. The evidence shows that felt slowed warming the most. A fair test needs these controls, so the class can compare the covers.
- ③ Mina said, “Felt is best because it is soft.” Her reason does not use measurements. Joel said, “Felt is the best cover we tested because its water warmed only 3°C.” Joel used evidence, but his conclusion is limited to this test. For a lunch box, use felt inside a waterproof outer layer.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Which cover slowed the warming the most? Use a measurement to support your conclusion.

2 Which cover slowed the warming the least? Explain with the test data.

3 Why is Joel's conclusion stronger than Mina's conclusion? What limit does Joel's conclusion have?

4 What lunch box design does the passage suggest? How does the test result support that design?

3 YOUR TURN _____ Your own words

Design a cover for a cold snack. Write four sentences: name two possible designs, choose one design, use the cup-test measurements to explain your choice, and tell one thing you would keep the same when testing both designs.

PART 1 • READ AND MARK

Underline every temperature measurement. Circle each sentence that uses measurements to support or limit a conclusion. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Which cover slowed the warming the most? Use a measurement to support your conclusion.	Felt. Its water was 13°C after 20 minutes, so it warmed only 3°C from 10°C.
2	Which cover slowed the warming the least? Explain with the test data.	Foil. Its water reached 19°C, so it warmed 9°C, the most of the three covers.
3	Why is Joel's conclusion stronger than Mina's conclusion? What limit does Joel's conclusion have?	Joel uses the measurement that felt warmed only 3°C. His conclusion is limited to the three covers in this 20-minute test.
4	What lunch box design does the passage suggest? How does the test result support that design?	Use felt inside a waterproof outer layer. Felt slowed the water's warming more than bubble wrap or foil.

PART 3 • YOUR TURN (SAMPLE ANSWER)

I could make one snack cover with felt and one with bubble wrap. Both covers could have a waterproof outside. I would choose the felt cover because its cup warmed to 13°C, while the bubble-wrap cup warmed to 16°C. I would use the same amount of cold food in each cover.

Accept conclusions that correctly compare the temperatures or temperature changes. For the open response, accept varied designs if the student names two solutions, uses accurate passage evidence, and identifies a fair-test control.