From Big to Testable

Trace how a research question becomes workable.

11.6.W.1 "Students will formulate and refine a viable research question."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Number the three research questions in the order they appear, then underline the details in the last question that make it possible to investigate.

A Question at the Bus Loop

1. At dismissal, students waiting for the bus crowd beneath the one large oak beside the school loop. The asphalt beyond its branches looks just as dark, but it feels hotter underfoot. A student writing a research proposal begins with, "Can trees stop global warming?" That question matters, yet a school project cannot test a worldwide trend or isolate the effect of a single tree. She tries again: "Do trees make our school cooler?" This version names a place, but "cooler" could mean air temperature, surface temperature, or how people feel. It also leaves the time and comparison unclear.

2. She decides to compare surface temperatures rather than ask people to rate comfort. Her available tool is an infrared thermometer, which estimates a surface's temperature without touching it. She can reach two asphalt spots on the same bus loop, one shaded by the oak and one exposed to direct sun. She drafts: "At our school's bus loop, how do surface temperatures at two asphalt spots, one shaded by the oak and one in direct sun, differ at 3 p.m. on five clear school days?" The paired locations keep the pavement material consistent, while the repeated readings make the comparison less dependent on one afternoon.

3. Before settling on the question, she checks what the plan cannot show. The two spots may differ in more than shade, such as traffic or how long each spot has been in sunlight. She plans to record whether either spot is wet and to use the same thermometer and measurement distance each day. Her findings could describe a local pattern, but they could not prove that every tree cools every school. If access to the loop is denied, she will need another safe site and a revised question that names it. A useful question fits both the evidence and the time available.

2 ANSWER WITH EVIDENCE

Use the passage

1. Why is "Can trees stop global warming?" not a viable question for this school project? Give two reasons from the passage.

2. What remains unclear in "Do trees make our school cooler?" Identify two details the student still needs to specify.

3. Identify two details in the final question that make the investigation measurable and manageable. Explain how each helps.

4. Suppose the student changed "differ" in her final question to "prove that trees cool every school." Why would that weaken the question?

3 YOUR TURN

Your own words

Choose a different school-based topic you could investigate safely without surveying classmates. Write a broad starting question, a refined research question that names what you would measure or observe and where and when you would do it, and one sentence explaining why your refined question is feasible.

ANSWER KEY # From Big to Testable

GRADE 11 · 11.6.W.1

PART 1 · READ AND MARK

Number the three research questions in the order they appear, then underline the details in the last question that make it possible to investigate. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Why is "Can trees stop global warming?" not a viable question for this school project? Give two reasons from the passage.	**A school project cannot test a worldwide trend or isolate the effect of one tree.**
2	What remains unclear in "Do trees make our school cooler?" Identify two details the student still needs to specify.	**She must specify what "cooler" means, such as surface temperature, and when or against what she will compare it.**
3	Identify two details in the final question that make the investigation measurable and manageable. Explain how each helps.	**Surface temperature can be estimated with her infrared thermometer. Naming two asphalt spots, 3 p.m., and five clear school days sets a specific comparison and schedule.**
4	Suppose the student changed "differ" in her final question to "prove that trees cool every school." Why would that weaken the question?	**Measurements at two spots on one bus loop could describe a local pattern, not prove a claim about every tree or school.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Broad: Does our school waste paper? Refined: How many sheets of paper are placed in our classroom's scrap-paper tray during the last ten minutes of class on five school days? I can count the sheets in the tray with my teacher's permission, without surveying anyone.

Accept other passage-supported details for Questions 2 and 3. For Your Turn, accept a distinct, safe topic with an observable measure, a specific place and time, and a plausible explanation of feasibility.