**Research Methods**: Often, methodology questions take one of two forms: the “design your own experiment” form and the “identify the flaws” form. I am providing one example of each.

**Research Methods: Question 1: Design an Experiment**

Design an experiment that tests the hypothesis, “Cooperative learning is more effective in raising test scores than direct teacher instruction.” Use the following terms in your response:

Independent and dependent variables

Random sampling and assignment

Experimental and control grouping

Ethical considerations

An interpretation of what statistically significant results would mean for this experiment

**Rubric:**

Students must address the hypothesis given in the question. They cannot develop an experiment that does not address this hypothesis.

*Points 1 & 2: Independent & Dependent Variables*

Students must identify the variables correctly:

IV: type of teaching (cooperative learning vs. direct teacher instruction)

DV: increase in test scores

*Points 3 & 4: Random sampling and assignment*

Students must discuss ways in which they would conduct both random sampling (choosing participants from the population) and random assignment (assigning participants to groups). Any of the following ways can be used:

Random number generators

Choosing every    person from a list of all possible participants

Drawing names from a hat

Flipping a coin

Etc.

NOTE: Students cannot mix up sampling and assignment. These are distinct procedures. **They must talk about sampling and assignment separately to earn the points.**

*Points 5 & 6: Experimental and Control Groups*

Students must describe the two groups in their experiment. The experimental group contains participants who experience the independent variable (cooperative learning). The control group contains participants who do not experience the independent variable (direct instruction). Students must correctly identify the distinct groups in order to receive both points (one group cannot be inferred through discussion of the other group).

NOTE: Students can discuss that there would be 3 groups – two experimental (one with cooperative learning, the other with direct instruction) and one control group (those who have a teacher who has not received training in either method).

*Points 7 & 8: Ethical considerations*

Students must identify at least two distinct ethical considerations they took into account when planning the experiment. Some options include (but are not limited to):

Informed consent (which includes knowledge that one is in the study and ability to leave study without penalty)

Informed consent/assent for minors

Debriefing

Institutional review (IRB)

Limiting/not using deceptive practices

*Point 9: Interpretation of statistical significance*

Students must explain what the phrase “statistical significance” means. Students must at least discuss that results that are significant are not due to chance (and therefore due to the independent variable).

NOTE: Students may not just discuss p-values at the .05 level without discussing what the p=.05 means.