

Instructions: Answer each question completely. Show all work for any computational questions.

1. How is a matched pairs experiment different from a block design?

Pairs are matched so they differ individually by as little as possible except in one feature

a block design relies on randomization to obtain groups of natural variation, but can be different sizes

2. Give two reasons why the placebo effect plays such an important role in medical research.

it is often used as a control to weed out effects of doing nothing, or bedside manner or other subjective aspects of medicine. It helps determine whether a medicine is effective or the result of thinking it will be.

3. What is the purpose of an Institutional Review Board?

to protect subjects in research studies from harm

4. The best way to determine causation is through an experiment. Why is it impossible, however, to determine experimentally if smoking causes cancer? Why are we left to observational studies only?

because it is unethical to ask people to start smoking if we have reason to believe it could be deadly.