# PRACTICE III

1. A researcher wants to determine if watching TBV from five feet or closer damages a person's eyes. The researcher wants to know if this is the truth or a myth.

   (a) How can an observational study be performed?

   (b) How can an experiment be formed?

   (c) Which is more appropriate here? Explain.

   (d) If an experimental design was implemented, give an ethical consideration that would cause the researchers to halt the experiment early

2. High A1C levels (a test for diabetes). can be reduced by either a low-fat diet or a medication such as metformin. Researchers would like to test the effectiveness of metformin and to note whether the effectiveness, if any, is enhanced by diet. A random sample of adults with high A1C levels, on no special diets, and not on medication, are recruited for a study.

   (a) Conclusions will apply to what population?

   (b) Explain how you would design a completely randomized experiment.

   (c) How might you incorporate blocking and for what purpose?

   (d) How might blinding be incorporated in this study and for what purpose?

3. A company efficiency expert believes that employees who eat at least 1000 calories at breakfast have higher productivity levels at work. She interviews a random sample (SRS) of 30 employees who claim to eat under 1000 calories at breakfast and an SRS of 25 employees who claim to eat over 1000 calories at breakfast. In each group, she looks up productivity levels on the job.

   (a) Explain why this is an observational study and not an experiment.

   (b) Give an example of a possible confounding variable with an explanation in the context of the study.

   (c) If the employees who eat over 1000 calories have higher productivity records, is it reasonable to encourage all employees to eat larger breakfast? Explain.

   (d) How could the efficiency expert design an experiment to study caloric intake at breakfast with productivity in the workplace?