

ASSIGNMENT: Know Your Variables

Sunita has come up with a question!

Question: Will a baseball travel farther when hit with a wooden bat or aluminum?

Answer the questions below neatly, on a separate piece paper (using FULL sentences), to help her design this experiment correctly so that the results will be considered valid.

1. Restate her question in the form of a purpose. (To determine...) (1 mark)
2. Write a hypothesis. ('Remember it must be an if....then...because...statement) (2 marks)
3. What is the independent variable in this experiment? (What will be intentionally changed?) (1 mark)
4. What is the dependent variable in this experiment? (What will Sunita measure as a result of the change she made?) (1 mark)
5. Should Sunita use the same baseball with the wooden and aluminum bats, or a different one for the wooden bat and aluminum bat? Why or why not? (2 marks)
6. Should Sunita use different hitters each time and then measure how far the baseball travels? Why or why not? (2 marks)
7. Sunita has decided to use a pitching machine instead of a pitcher. Is the pitching machine a good idea? Why or why not? (2 marks)
8. The only available baseball diamond for Sunita to conduct her experiment is across the street at the outdoor Lyle Hallman diamond. Make a suggestion about what she should consider when conducting her experiment. (1 mark)
9. Based on your answers to questions 3 - 8, make a list (3 minimum) of the variables that must be controlled in Sunita's experiment. (3 marks)
10. Sunita plans to hit the baseball one time with the wooden bat and one time with the aluminum bat. She will measure the distance the baseball travels with each bat and record the results in a chart. Knowing that scientists repeat their experiment in order to get valid results, explain what Sunita should do differently from what she had planned. (1 mark)