Experimental Design Scenarios

Read the following scenarios and design a hypothesis, identify two constants (controlled variables), identify the variable being tested (IV), and the variable data being collected (DV). Record your answers on your worksheet.

Scenario 1
Kelly and Jack are playing in the park. Jack rolls a marble down the small playground slide. Kelly proposes the idea that the marble would travel at a faster pace if it is rolled down the longer slide. This discussion leads to the following investigative question. After reading the investigative question write a hypothesis, identify the independent and dependent variables, and the controlled variables in the experiment. Record your answers on your worksheet.

Investigative Question: What happens to the speed at which a marble travels when the height of a ramp is changed?

Hypothesis:

IV:

DV:

2 Constants:

Scenario 2
Marissa is an extremely curious sixth grader. During a snow day she noticed a truck spreading salt all over the road. After the truck went past Marissa’s house, she put on her snow boots, hat, and gloves and went to the edge of her driveway and made an observation. From her observation, Marissa designed the following investigative question and hypothesis for an experiment she later conducted. Write a hypothesis, identify the IV and DV, and identify the controlled variables.

Investigative Question: What will happen if salt is added to ice?

Hypothesis:

IV:

DV:

2 Constants:

Scenario 3
Will works for a greenhouse in his local town. He learned how to conduct a controlled experiment in his science class. He decides to practice this newly gained scientific knowledge and design a controlled experiment that deals with the proper conditions to grow seeds. Will writes down the following investigative question.

Investigative Question: What conditions affect the growth of seeds?

Hypothesis:

IV:

DV:

2 Constants:
Scenario 4

Mr. C., a sixth grade science teacher notices that Harry, one of his students, is making a paper airplane in his class. As a punishment, Mr. C. gives Harry the following investigative question and instructs him to design an experiment to find the "best" airplane. Mr. C. does not give him any directions on how to accomplish this task, or what the word "best" means. Look at following investigative question and help Harry in his quest to design the "best" airplane by writing him a hypothesis (identifying IV and DV), and identifying the constants.

Investigative Question: What can affect the flight of a paper airplane?

Hypothesis:

IV:

DV:

2 Constants:

Scenario 5

Bob is a Cub Scout and his trying to create a winning "Pine Wood Derby" race car. The kit that he receives from Scout Master contains many different size wheels. Because of Bob's desire to win, he decides that he will design an experiment to see which set of wheels will give his car the highest velocity. To start his experiment he writes the following investigative question. After reading the investigative question, design a hypothesis, identify the IV and DV, and identify the constants.

Investigative Question: Does the size of the wheel affect the velocity of the car when rolled down a ramp?

Hypothesis:

IV:

DV:

2 Constants:

Scenario 6

Biologist Bill is is planning to conduct a long term study dealing with the preferred habitat of earthworms. Before beginning the experiment Bill writes the following investigative question. After reading the investigative question, write a hypothesis (identify the IV and DV), and identify any constants.

Investigative Question: What habitat will an earthworm prefer?

Hypothesis:

IV:

DV:

2 Constants: