WORKSHEET: SCIENTIFIC METHOD

Below are examples of scientific research, for each example describe the hypothesis, variable, control group and experimental group.

1. Scientists wanted to determine the effects of alcohol on muscle coordination. 2 groups of white rats were used. One group were given alcohol and then had to run through a maze. The time it took them to reach the end was recorded. The second group of rats were not given alcohol and had to run the same maze. Their time was also recorded.

a. Hypothesis:

b. variable:

c. control group:

d. experimental group:

e. What do you think the results of the experiment were?

2. Botanists (plant scientists) wanted to determine if the metal zinc was necessary for plant growth. 2 groups of tomato plants were used. The first group was grown in soil that had all the necessary nutrients except zinc. The second group had all nutrients including zinc. The plants were put in sunlight and their growth monitored. After 2 weeks the plants without zinc were shorter and covered with spots.

a. Hypothesis:

b. variable:

c. control group

d. experimental group:

e. What was the effect of not enough zinc on the plant?

3. Entomologists (insect scientists) wanted to know if bees had color vision. In order to test this they cut out pictures of flowers. Some of these pictures were in colors of yellow, red and orange while other pictures were in black and white. Bees were released and scientists counted how many bees went to each flower. The results showed that the bees went to those pictures that had color.

b. variable

c. control group.

d. experimental group:

e. How did this experiment show that bees have color vision?

4. In 1668 Francesco Redi wanted to prove that flies come from other flies and not from decaying meat. In order to prove this he used two groups of jars both with meat in them. In one group he left the lids off, in the second group he sealed the jars so the flies could not get to the meat. After 2 weeks he found that there were no flies in the sealed jars, but there were many maggots in the open jars.

a. Hypothesis:

b. variable:

c. control group:

d. experimental group:

e. How did this experiment prove Redi's hypothesis?

5. Recently a study was done to determine if exercise increased mental ability. Scientists studied two groups of people. The first group was put on a regular exercise program, the second group was not. After exercise the people were given a written quiz-the second group who did not exercise was also given the same quiz. The first group consistently got better scores than the second group.

a. Hypothesis:

b variable.

c. control group:

d. experimental group:

e. Why do you think exercise would increase your mental ability?