

Experimental Design Practice:

1. Sam wished to investigate how fertilizer run-off affects the growth of algae in freshwater lakes and streams. He set his experiment up this way. He placed 900ml of water into each of five 1000ml glass beakers. To each beaker, he added 5 ml of water from an aquarium which contained a large concentration of algae. The beakers were placed under a grow light which was timed to provide 12 hours of light each day. Liquid fertilizer was added to the beakers in the following amounts: beaker 1- no fertilizer, beaker 2- 2 ml fertilizer, beaker 3- 4ml of fertilizer, beaker 4- 6ml of fertilizer, beaker 5- 8 ml of fertilizer. Each week a random sampling from each of the beakers was examined under a microscope to get a count of the numbers of algal cells present.

Independent variable _____

Dependent Variable _____

Experimental Group _____

Control Group _____

Constants _____

2. Brittany wanted to find out which wheels were best for her skateboard. She purchased 4 sets of new wheels of different brands. She and a friend set up a slalom course on her driveway. ~~Brittany rode through the course 5 times on each set of wheels. Her friend timed her with a stopwatch and recorded the times. They then averaged the times for each wheel.~~

Independent Variable _____

Dependent Variable _____

3. Sara and Michael tested electromagnets to see if the size of the wire they used would make the magnets stronger. They selected 6 steel nails of the same size to make the magnets. Using 6 different sizes of insulated wire, they put 50 turns around each nail. Then each nail was hooked to a 2 D cell battery to make electromagnets. The strength of each magnet was tested by counting the number of paperclips which could be picked up by the electromagnet.

Independent Variable _____

Dependent Variable _____

Constants _____

4. John's parents would not let him study while listening to music in his room. They told him that he could not concentrate with the background noise. He decided to test this idea with an experiment on his class. Each Friday, his English teacher took a vocabulary quiz on 25 new words learned that week. John got his teacher's permission to try his experiment. On the first Friday of his test he played a rock song in the classroom while the class took the test and the following week the class took the test with the normal quiet atmosphere of a classroom. John calculated the average score on the two vocabulary tests.

Independent variable _____

Dependent Variable _____

Experimental Group _____

Control Group _____

Constants _____

5. Stephanie conducted an experiment to determine if the color of a maze would affect the time it took for a mouse to learn to run through it. She constructed 5 identical mazes of plywood. She painted them white, yellow, red, blue, and green. She purchased 10 young mice at a local pet store. She ran 2 mice through each maze until the mice could run it twice without making an error. She then compared the number of runs it took the mice in each color maze to learn it.

Independent Variable _____

Dependent Variable _____

Constants _____

... she recorded how many of his people actually picked the coin which they said was their favorite.

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