EXPERIMENTAL DESIGN

Directions: Read the following experiments and fill in the blanks that follow. For 3 and 4 answers,
there is not a control group listed in the example.

1. A study was created to test the effects of jazz on people's sleep
patterns. The hypothesis of the experiment was that if people listened to
jazz music as they fall asleep, they will sleep for longer periods of time.
For the experiment, 2 groups of people were created. One group was
placed in a quiet room where they went to sleep and they were timed on
how long they slept. The other group was placed in a room where jazz
music played softly as they began to sleep and played throughout the
night. As each group awoke, their sleep times were monitored.
Dependent Variable: __The sleep pattern_____
Control Group: __The people who were put to sleep in quiet
room._____
Independent Variable: __ jazz music._____
Experimental Group: _____The people who were put in a room where jazz music played softly.
_____

2. A study was created to test the effects of fear in children. The hypothesis
of the experimenters was that if babies were exposed to fuzzy bunnies and at
the same time a loud cymbal was struck close behind them, then that child
would be afraid of all fuzzy things. Another group of children would be
exposed to bunnies without any loud noises. The study was carried out as
planned and as a result, hundreds of young children developed fear of all cute
furry bunny rabbits.
Dependent Variable: ___fear of fuzzy bunnies in babies_____
Control Group: _____The group of babies exposed to bunnies without any
noises._____
Independent Variable: _____fuzzy bunnies with scary noises._____
 Experimental Group: ____The group of babies exposed to fuzzy bunnies with scary
noises._____

3. Shortly after Ms. Berndt's cat, Revere, was born, Ms. Berndt realized
Revere wasn't eating enough. She went to the pet store and bought many
different kinds of food and fed Revere different types every day. Each day she
noted the type of food and how much Revere ate out of his dish. Eventually
Revere ate a lot of the CreppyCat brand food and Ms. Berndt bought that for
him from then on. Revere is the best worst cat ever.

Dependent Variable: __how much food the cat ate_____

Independent Variable: ___The different kind of cat food_____

 Experimental Group: _____Revere_the cat_____

4. At a daycare, the staff has had problems with the children behaving badly every day. They begin to test to see how the children react if the staff gives them large amounts of candy when they are good and no candy when they are bad. The staff hopes that the incentive for the children will improve their behavior.

Dependent Variable: _____The children behavior_____

Independent Variable: _Large amount of candies_____

Experimental Group: _____The children who are given candies when they are good._____

Situations: Read the situation below and design an experiment.

A: John Smith has been hired by the city of Virginia Beach to investigate the recent shark attacks off the resort's coast. He has a budget of $40,000, a 25 foot boat, and three graduate student assistants to help him. A helicopter has also been donated by a local television station, should he need one.

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1. List 2 hypotheses John and his crew may have come up with for the recent shark attacks.

a. If___shark attacks are related to the number of elephant seals in a certain area, then shark attacks will increase as elephant seal numbers increase._____,

 increase._____

b._____, then

_____

2. Pick one of the two hypotheses and determine the following:

a. Control Group: time of year when elephant seals are not present or another area with no elephant seals

b. Experimental Group: times/areas when/where elephant seals vary

c. Dependent Variable:_____+_____The shark attacks._____

d. Independent Variable:_____the seals _____

3. What type of data do you think John will collect (What will be the results of the experiment)?

Shark attacks versus the number of elephant seals

4. What conclusions will John be able to make from the results of the experiment?

John will make the conclusion that the more elephant seals increase in numbers the more shark attacks are expected.

B: Suzie Q wants to know the effect of different colors of light on the growth of plants. She believes that plants can survive best in white light. She buys 5 ferns of the same species, which are all approximately the same age and height. She places one in white light, one in blue light, one in green light, one in red light and one in the closet. All of the ferns are planted in Miracl-Grow and given 20 mL of water once a day for 2 weeks. After the two weeks, Suzie observes the plants and makes measurements.
Hypothesis: If plant growth is affected by color of light, then white light will produce the most plant growth.
Independent Variable:The light color.
 Dependent Variable: The plant's growth.
Control Group: the plant placed in the closet.
 Experimental Group:The plants placed in white light.
What could be the controlled variables? The miracle growth and 20 ml of water.

What types of measurements can Suzie make on the plants to determine how they did in different types of light?
Suzie can measure the plants to see how much they grew. And she should also compare the growth of each plant placed in different light. If the plants growth is affected by the color of the light the hypothesis is supported.