

Name: _____

Class: _____

Science Summer Packet

Direction: For each of the following scenarios answer the following questions A-D.

- a. *Identify the independent variable, levels of independent variables, dependent variable, number of repeated trials, constants, and control (if present)*
- b. *Identify the hypothesis of the experiment. If the hypothesis is not explicitly stated, write one for the scenario.*
- c. *Draw an experimental design diagram, which includes an appropriate title and hypothesis.*
- d. *State at least two ways to improve the experiment described in the scenario.*

Scenario 1

1. Frankie and Joshua used 4 identical cartons and punched the same size hole in each. The hole was placed at a different height on one side of each containers. The height of the holes varied in increments of 5 cm, ranging from 5 cm to 20 cm from the base of the carton. They put their fingers over the holes and filled the cartons to a height of 25 cm with a liquid. When each carton was filled to the proper level, they placed it in the sink and removed his finger. They measured how far away from the carton's base the liquid had squirted when it hit the bottom of the sink.

Scenario 2

2. Jessica and Stephanie heard that plants compete for space. They decided to test this idea. They bought a mixture of flower seeds and some potting soil. Into each of 5 plastic cups she put the same amount of soil. In the first cup she planted 2 seeds, in the second cup she planted 4 seeds, in the third cup 8 seeds, and in the fourth cup she planted 16 seeds. In the last cup she planted 32 seeds. After 25 days, they determined which set of plants looked best.

Scenario 3

3. Yocheved became interested in insulation while his parent's new house was being built. He decided to determine which insulation transferred the least heat. He filled each of 5 jars half-full with water. He sealed each jar with plastic lid. Then he wrapped each jar with a different kind of insulation. He put the jars outside in the direct sunlight. Later, he measured the temperature of the water in each jar.