

Practice Test
For
Scientific Inquiry # 1
with Scientific Ways
of Knowing # 1 and
2

Name _____

Period _____

Date _____

SM #1: List the six steps to the scientific method in order.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

READ THE FOLLOWING PARAGRAPHS. PLEASE NUMBER EACH PARAGRAPH (1 – 6) IN THE ORDER IN WHICH THEY WOULD BE PREFORMED IN AN EXPERIMENT.

7 _____ Linda called a space museum to see if she could find out about astronauts and their low gravity environment. She also went to the library to read about gravity.

8 _____ Linda noted that without water the spools of thread on a string stand tightly against each other. With water, the spools float upwards and there is some separation between them. Linda measured how much string was left when spools were not and were in water. She wrote these observations and measurements in her notebook.

9 _____ The woman at the space museum said she could try an experiment. These are the steps Linda followed.

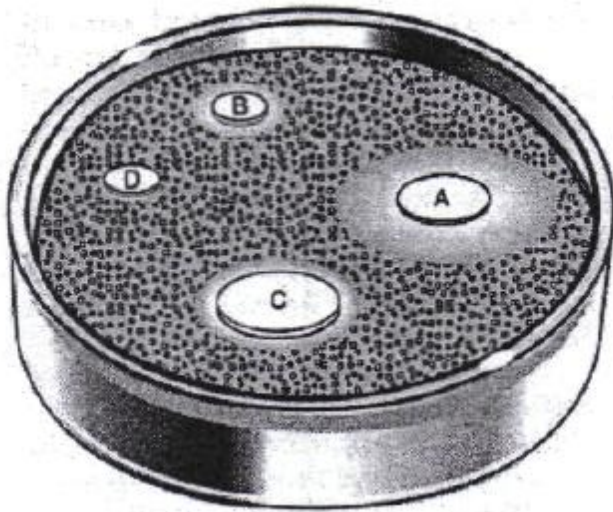
- A. Cut the bottom of a two-liter bottle.
- B. Place 6 spools of thread on an 18 cm string.
- C. Attach the string to the bottle cap and then turn the bottle upside down (cap end down, cut off bottom up).
- D. Hold the other end of the string up and watch what happens.
- E. Fill the two liter with water from the cut off bottom.
- F. Hold the other end of the string again and watch what happens.

10 _____ Linda and her class learned that gravity is a force that pulls objects towards the center of Earth. If gravity pulls everything down, then how does gravity effect human height?

11 _____ Linda learned that the spools of thread spread out and took up more length of the string in a low gravity environment. If the spools of thread were like the spinal column in a human, then, in a low gravity environment, the discs would spread out and a person would be taller.

12 _____ After studying her background information, she thought that gravity probably does effect human height.

Matching



13. _____ Sarah designed an experiment to find out which mouthwash was most effective against some bacteria. She cut out four different circles from a paper towel and soaked each circle in a different mouthwash. She put the circles on a nutrient agar-coated Petri dish that was covered with bacteria commonly found in the mouth. She then incubated the plate for 24 hours. The picture shows the results of this test. Which of the following should Sarah do to improve her experiment.

- A. Use the same size paper circles for all mouthwashes.
- B. Use the same type of mouthwash on each paper circle.
- C. Use different kinds of bacteria
- D. Use a smaller Petri dish.

14. _____ A student decided to set up an experiment to see if cats preferred skim milk or 2% milk. She put out a cup of milk for 5 kittens and then measured how much the kittens drank over the course of a day. The same kittens were used and the milk was served at the same temperature. The student discovered that the cats liked the 2% milk more than the skim milk. What is wrong with the above experiment?

- A. There is no independent variable.
- B. The milk should be served at different temperatures
- C. There are no constants present.
- D. Repeated experimentation is needed.

15. An experiment for a new asthma medication was set up into two groups. Group one was given the new drug for asthma, while group 2 was given a sugar pill. The sugar pill serves as a _____.

- A. Control
- B. Dependent Variable
- C. Experimental Variable
- D. Constant

16. A scientist plants two rows of corn for experimentation. She puts fertilizer on row 1 but does not put fertilizer on row 2. Both rows receive the same amount of water and light intensity. She checks the growth of the corn over the course of 5 months. What is a constant in this experiment.

- A. Amount of water
- B. Corn without fertilizer
- C. Corn with fertilizer
- D. Plant height

17. The measurable factor in an experiment is known as the:

- A. Control
- B. Independent Variable
- C. Constant
- D. Dependent Variable

18. A student decides to set up an experiment to see if detergent affects the growth of seeds. He sets up 10 seed pots. 5 of the seed pots will receive a small amount of detergent in the soil and will be placed in the sun. The other 5 seed pots will not receive detergent and will be placed in the shade. All 10 seed pots will receive the same amount of water, the same number of seeds, and the same type of seeds. He grows the seeds for two months and charts the growth every 2 days. What is wrong with his experiment?

- A. More than one variable is being tested.
- B. The student should have a larger number of pots.
- C. There is no way of measuring the outcome.
- D. There is no control set-up.

19. In a controlled experiment, the variable that is changed to test the hypothesis is called the –

- A. Controlled variable
- B. Responding variable
- C. Dependent variable
- D. Independent variable

20. A student has a wagon of a certain mass. He plans to investigate how the acceleration of the wagon changes as the force he exerts on it increases. In his investigation, the independent variable is—

- A. The acceleration of the wagon
- B. The force acting on the wagon
- C. The mass of the wagon
- D. The mass of the student.

21. What happens to the dependent variable in a controlled experiment?

- A. It changes as the independent variable changes.
- B. It changes as the responding variable changes.
- C. It does not change
- D. It is supported or disproved.

23. A student wants to conduct an experiment to find out how pulse rates changes as the length of time spent exercising increases. The dependent variable will be _____.

- A. breathing rate
- B. pulse rate
- C. time spent exercising
- D. the kind of exercise

24. A student hypothesized that the amount of sunlight a sunflower plant receives determines the number of sunflower seeds the plant produces. In her experiment, the number of seeds produces is the _____.

- A. dependent variable
- B. independent variable
- C. controlled variable
- D. manipulated variable

25. A student is planning an experiment to find out how the height from which he drops a ball affects how high the ball bounces. The dependent variable is the _____.

- A. diameter of the ball
- B. force acting on the ball
- C. height that the ball bounces
- D. height from which the ball is dropped

26. In an experiment studying how increasing amounts of acid rain affect pond water, which of the following would be the dependent variable?

- A. organisms in rainwater
- B. acid rain and non-acid rain
- C. a mixture of pond water and acid
- D. number of organisms in pond water

27. In a scientific investigation, conclusions are drawn directly after _____.

- A. the hypothesis is revised
- B. results have been communicated to other scientists
- C. data have been interpreted
- D. the hypothesis has been stated

28. In a controlled experiment, the independent variable is _____.

- A. the results of the experiment
- B. the variable that stays the same
- C. changed to test the hypothesis
- D. always time

Write a hypothesis for the following:

31. Manipulated variable: the age of the soda drink
Responding variable: the number of gas bubbles released

32. Manipulated variable: the depth of Lake Erie
Responding variable: water temperature

33. Manipulated variable: the amount of time studying science
Responding variable: grade on science test

Identify the independent and dependent variable for the following hypothesis?

Raising the average temperature of the earth's atmosphere will cause the polar ice caps to reduce in size.

34. _____ is the independent variable

35. _____ is the dependent variable

If the sugar amount increases then the candy bar will taste sweeter.

36. _____ is the independent variable

37. _____ is the dependent variable.

Use the following experiment to answer questions 39-41.



Smithers thinks that a special juice will increase the productivity of workers. He creates two groups of 50 workers each and assigns each group the same task (in this case, they're supposed to staple a set of papers).

Group A is given the special juice to drink while they work. Group B is not given the special juice. After an hour, Smithers counts how many stacks of papers each group has made. Group A made 1,587 stacks, Group B made 2,113 stacks.

39. What is the control group? _____

40. What is the independent variable? _____

41. What should Smithers's conclusion be? _____

Use the following experiment to answer questions 42-46.



Homer notices that his shower is covered in a strange green slime. His friend Barney tells him that coconut juice will get rid of the green slime. Homer decides to check this out by spraying half of the shower with coconut juice. He sprays the other half of the shower with water. After 3

days of "treatment" there is no change in the appearance of the green slime on either side of the shower.

42. What do you think Homer's experimental question was? _____

43. What was the control group? _____

44. What was the independent variable? _____

45. What was the dependent variable? _____

46. What would be a valid hypothesis for Homer's experiment? _____

Matching

- | | |
|-----------------------|-------------------------------|
| a. Hypothesis | f. Dependent variable |
| b. Control | g. Experiment |
| c. Draw Conclusions | h. Gather and Analyze Results |
| d. Gather information | i. Independent Variable |
| e. Question | |

47. _____ What is being tested in an experiment. The only difference between the experimental groups. What you control.

48. _____ What is being affected during the experiment. What you will look at to get the results of the experiment.

49. _____ A detailed list of steps or procedures used to test the hypothesis.

50. _____ Statements that accepts or rejects the hypothesis based on analyzed data.

51. _____ Test group that has nothing changed. It is what the experimental group is compared to.

52. _____ Obtaining information from research and observation to form a hypothesis.

53. _____ The information obtained from the experiment and determining what they say.

54. _____ An educated guess to what the results of the question will be.

55. _____ What you will be solving through scientific experimentation.

List three variables that would affect the attendance at a football game.

56. _____

57. _____

58. _____

List three variables that would affect the number of apples that an apple tree produces.

59. _____

60. _____

61. _____