REVISITING THE SCIENTIFIC METHOD!

NAME: _____ DATE: _____
SECTION: _____ REMARKS: _____

I. Intended Learning Outcomes

Students should be able to:

A. Review the different steps of the scientific method;
B. Identify the independent and dependent variables in an experiment; and,
C. Show responsibility and self-directedness in answering the assigned worksheet.

II. Instructions:

Identify each step of the scientific method through the given scientific experiment scenario. Then, answer the follow-up questions carefully.

Hypothesis	Results	Experiment
Data Collection	Question	Conclusion

Variables

A **variable** is something that is able to vary. Vary is another word for change, just as the weather can vary from day to day, and what we wear varies depending on the weather.

In an experiment, variables are what the scientist changes and what is changed by the experiment. The variable the scientist changes are called the **INDEPENDENT VARIABLE**. The variable that changes due to the experiment is called the **DEPENDENT VARIABLE**.

To better understand independent and dependent variables, review the example below.

1. Scientist Smith wonders what can make grass seeds grow grass faster. _____
2. He hypothesizes that if the grass is watered with a hose after the seeds are placed, the new grass will grow faster. _____
3. First, he divides a lawn into two equal parts. Both sides have the same type of dirt, get the same amount of sun, and are in the same yard. He uses a seeder to place the same brand of grass seeds evenly over both sides of the lawn. Both sides receive the same number of seeds and are done _____

INDEPENDENT VARIABLE:
Next, Scientist Smith uses a hose to water the grass seeds on only SIDE A, but he does not water SIDE B. The independent variable is him watering only one side. It is because he independently decided and did it.

DEPENDENT VARIABLE:
How tall the grass on each side grows is the DEPENDENT VARIABLE because it depends on whether it was watered or not.

4. Every three days for one month Scientist Smith measures how tall the new grass has grown for SIDE A and SIDE B. He records all measurements in a chart. _____

5. He finds that within one month, the grass on SIDE A in one month grew 7 inches tall while the grass on SIDE B only grew 5 inches. Also, the grass on SIDE A began

LIVEWORKSHEETS

sprouting within three days while the grass on SIDE B did not begin sprouting until 5 days. After that the grass on SIDE A was found to grow at a faster rate at every measurement. _____

6. Based on his data, Scientist Smith concluded that watering the grass after the grass seeds were placed made the SIDE A grows faster. Therefore, he concluded that watering the lawn after putting down the grass seeds is an effective way to make new grass grow faster. _____

*To review, in experiments the **INDEPENDENT VARIABLE** is what is done by the scientist to cause a change. The **DEPENDENT VARIABLE** is what will change because of what the scientist has done.*

Answer the following questions.



7. A student had trouble waking up on time in the morning. He only uses his phone alarm and did not always hear it. He decided to use a regular alarm clock to see if he would hear it better and wake up on time. He tried it for five days and woke up on time each day.

Which is the independent variable (IV) and which is the dependent variable (DV)?
- Whether he would wake up on time _____
- Using a regular alarm clock _____



8. Ann decided to study five days instead of three days per week for her weekly math test to see if it would increase her grades.

Which is the independent variable (IV) and which is the dependent variable (DV)?
- Studying five days per week instead of three _____
- Whether her math test grades would increase _____

CONSTANTS

A constant in an experiment is something that stays the SAME for all subjects in the experiment. For example, review the things that stayed the same for SIDE A and SIDE B of the lawn in the experiment done by Scientist Smith:

First, he divides a lawn into two equal parts, Side A and Side B. Both sides were the exact **same** size, had the **same** type of dirt, got the **same** amount of sun, were exposed to the **same** weather, and were in the **same** yard. He uses the **same** seeding machine to place the **same** brand of grass seeds evenly over both sides of the lawn. Both sides receive the **same** number of seeds and are done on the **same** day.

All the things that stayed the SAME in the grass experiment were the CONSTANTS. It is important to have constants so scientists know changes came from what they do in the experiment, not other factors.

9. There were nine constants in the grass experiment. List them:

a)	d)	g)
b)	e)	h)
c)	f)	i)

10. Why is it important for all experiments to have constants?

LIVEWORKSHEETS