The Scientific Method

Name: _____ Date: _____ Core: _____

LT: I can describe the steps of the Scientific Method.

Step 1: _____

The question must be …. Testable / Untestable (circle one)

Testable means that you can _____, _____,

and _____ to answer the question.

Practice: Remember -the key to a good research question is that it can be tested. If the question is based on opinions or personal preferences, then it is not testable.

Read each research question below. If it is testable, circle "YES". If it cannot be tested, circle "NO".

1. Does the amount of fertilizer affect how tall a flower grows? YES NO
2. Are roses prettier flowers than tulips? YES NO
3. How can we make cut flowers stay fresher for a longer time? YES NO
4. Can daisies grow in different types of soil? YES NO
5. Do daffodils smell better than carnations? YES NO

Step 2: _____

Find information about your topic and determine your variables.

A variable is _____

_____

There are 3 types of variables:

1. IV or _____. This is the _____ factor that the _____.
2. DV or _____. This is the factor that can be _____ or _____ as a result of changing the _____. This is the factor we _____.
3. CV or _____. These factors are kept the _____ during an experiment.

Practice: *Determine the IV and DV for each inquiry. Suggest at least 3 constant variables (CV) for each.*

1. What amount of sunlight makes pea plants grow tallest?
   IV: _____
   DV: _____
   CVs: _____
2. Which type of soda has more sugar?
   IV: _____
   DV: _____
   CVs: _____
3. Is a ball's bounce affected by the height from which it is bounced?
   IV: _____
   DV: _____
   CVs: _____

Step 3: _____

A _____ is a _____ of the outcome of an experiment based on _____.

A hypothesis is usually written in the form: _____

Practice: *Identify the IV, DV and write a hypothesis for the following questions.*

1. What type of music quiets a crying baby faster: jazz, classical or rock?
   IV: _____
   DV: _____
   Hypothesis: _____
   _____
2. Is the number of eggs a chicken lays affected by the hours of daylight?
   IV: _____
   DV: _____
   Hypothesis: _____
   _____
3. Will a rubber band or string hold more weight without breaking?
   IV: _____
   DV: _____
   Hypothesis: _____
   _____

Step 4: _____

Write a _____ .

Your procedure should be _____ that _____ could repeat the steps without your input.

Step 5: _____

Use _____ to make observations.

There are 2 types of observations:

1. _____ These observations involve _____.
2. _____ These observations are _____.

Step 6: _____

What did you learn? _____ your findings.

List the six steps of the Scientific Method:

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

<u>Scientific Method Vocabulary Review</u>

analyze – to examine carefully by looking at all the parts of something

data – information, usually in numbers, that describes our observations

conclusion – the ending; often a summary of what's said before

evidence – something that proves or disproves an idea

hypothesis – an "educated" guess or prediction about what will happen

interval – the time between events; also a space between items

observation – something that you can see, hear, taste, smell or feel; in an experiment we use observation to collect data

qualitative – observational data that describes something that is not measured, like color or shape (not a number)

quantitative – observational data that is measured, like height, weight, how many more (or less), how long (time); this is a NUMBER

scale – a measure of something by using a series of regular units, such as inches on a ruler or degrees on a thermometer

testable question – an idea that can be tested experimentally

untestable question – an idea that cannot be tested experimentally

variable – something in an experiment that might change

dependent variable – the thing in an experiment that changes (the EFFECT); the thing that the experiment measures

independent variable – the thing in an experiment that makes the dependent variable change (the CAUSE); the thing that the experimenter CHANGES

controlled variable – the thing(s) in an experiment that does not change; also called the CONSTANT