1) In the Scientific Method, what is the "educated guess" you need to make about your experiment?
   
   **hypothesis**

2) In the Scientific Method, what is the list of instructions you need to write out?
   
   **procedure**

3) In the Scientific Method, you'll have a list of items that you'll need to complete your investigation. What is this called?
   
   **materials list**

4) In the Scientific Method, you'll have graphs and data charts to display information you acquired through your investigation. What is this called?
   
   **data analysis**

5) In the Scientific Method, after you have completed your investigation, you write about the outcome. What is this write-up called? (It is always at LEAST one paragraph.)
   
   **conclusion**

6) I am any factor that can change in a controlled experiment, observation or model. What am I?
   
   **variable**

7) You use measurements to describe an object or event with me. What am I?
   
   **qualitative observation**

8) You try to figure out what is going on in an experiment by using me. What am I?
   
   **inference**

9) I am a type of science that poses questions and then problem solves those questions. What am I?
   
   **inquiry**

10) You make a guess on the basis of observation, experience or reasoning using me. What am I?
   
   **hypothesis**

11) What are the 6 steps of the scientific method?
    1. **question**
    2. **hypothesis**
    3. **experiment**
    4. **data analysis**
    5. **conclusion**
    6. **control**

12) What types of observations are there and what is the difference between them?
    1. **qualitative** - use your senses. How something smells, feels.
    2. **quantitative** - use numbers (quantity)

13) What types of variables are there and what is the difference between them?
    1. **independent variable** - is changed to see if it affects something.
    2. **dependent variable** - changes depending on the independent variable. It is measured.
    3. **control variable** - variables that remain constant.
14) Suppose your friends went to the mall after dinner on a cool night. They saw some families with children there. Which of the following statements are observations and which are inferences? Indicate your answer with either the letter “O” for an observation, or letter “I” for an inference.

1. F It is wintertime.
2. O It is night time.
3. O They saw people.
4. F They saw a movie.
5. F They played with kids.
6. F One friend wore a sweater.
7. O It was a cool night.
8. O There were families there.
9. O They ate dessert.
10. O They were at the mall.

15) Determine which of the following statements are quantitative and which are qualitative.

1. quan The paper clip had a mass of 3 grams.
2. quan The temperature outside is 32 C.
3. quan It is cold outside.
4. quan The house is 24 feet tall.
5. quan The ladder has 25 steps.
6. quan The ladder is shorter than the tree.
7. quan The movie is long.
8. quan The movie is 2 hours long.
9. quan The test was over quickly.
10. quan The test was over in 20 minutes.

16) Create a multiple bar graph using the data below. Title and label your graph. Make sure it has a key. Write 3-4 sentences summarizing (explaining) what the data in the table shows. Do this on a separate sheet of paper (staple it to this review).

<table>
<thead>
<tr>
<th>Town</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northbrook</td>
<td>26</td>
<td>33</td>
<td>18</td>
</tr>
<tr>
<td>Easthaven</td>
<td>54</td>
<td>67</td>
<td>48</td>
</tr>
<tr>
<td>Southlynn</td>
<td>41</td>
<td>58</td>
<td>35</td>
</tr>
</tbody>
</table>

17) What type of word does each step of your procedure HAVE to start with?

Verb

18) What is the correct format for a hypothesis (be specific)?

If [it], then [it] + prediction

19) Name three things you have to talk about in a conclusion to an experiment.

1. Whether your hypothesis is accepted/rejected
2. What would you do differently?
3. What would you do to further your experiment?

20) A theory or educated guess about something that has not yet been confirmed.

Hypothesis

21) The variable that is being measured in an experiment; it always changes in response to the independent variable.

Dependent variable

22) Taking notice of the properties of an object or event through use of your senses and/or measurements.

Observations
23) The variable that is changed in the experiment to determine if it affects something else.

independent variable

24) The variable(s) that remain the same (constant) throughout the experiment.

controls

25) A system of observing and experimenting to determine whether an idea should be accepted as true.

scientific method

26) Using your senses to describe and object or event.

qualitative observations

27) To make a guess on the basis of observation, experience or reasoning.

hypothesis

28) What makes a research question testable?

not opinion-based

29) There are two things that have to be true of a research question. What are they?

has to be testable & open-ended

30) What type of candy contains the most sugar? Write the independent, dependent & control variables. Also, write a correctly formatted hypothesis.

IV: type of candy
DV: amt of sugar
controls: same amt. of candy
If different types of candy are tested, brand X will have the most sugar.

31) Which fertilizer works best for growing plants? Write the independent, dependent & control variables. Also, write a correctly formatted hypothesis.

IV: type of fertilizer
DV: plant growth
control: amt of water, type of soil, type of plant
If different types of fertilizer are tested, brand X will generate most growth than the others.

32) Petra is not in school today. Write an inference based off of this statement.

Petra is sick (answer will vary)
33) Kyle's shoes are dirty. Write an inference based off of this statement.

He walked through the mud (answers will vary)

34) Write a proper set of procedures for making a peanut butter and jelly sandwich.
- Place 2 pieces of bread on the counter
- Spread PB evenly over one piece
- Spread jelly evenly over the other piece
- Put the 2 pieces together with the PB & jelly facing each other.
- Cut off the crust of the sandwich
- Eat it!

35) T or F It is important for your hypothesis to be correct.

36) T or F Your conclusion must be a paragraph.

37) T or F A data table is basically the same thing as a graph.

38) T or F A research question can be about anything.

39) T or F A hypothesis must include your prediction about the outcome of the experiment.

40) T or F Your purpose and research question are the same thing.

41) T or F Procedures are the 4th step of the scientific method.

42) T or F You can include more than one thing in the procedure steps (i.e. Analyze results AND record the data).

43) T or F Your analysis can include photos of the experiment.

44) T or F It is not important to discuss why you got your results in your conclusion; only what your result were.

45) It is important that a research question is NOT opinionated.