

Name: \_\_\_\_\_

Period: \_\_\_\_ Date: \_\_\_\_\_

## Marine Science: Scientific Methods

**Individually:** answer each of the questions listed below as either **YES** or **NO**.

**In partners:** discuss each question with the person next to you and record your answer, even if the same.

Question	Your Answer	Group Answer
1. Do all species of salmon spawn in streams and lakes?		
2. Is the earth's atmosphere mostly oxygen?		
3. Is the total worldwide contribution of marine food to total human food consumption greater than 5%?		
4. Must all sharks continually swim to force water over their gills?		
5. Does the heartbeat rate of a clam increase with increase of water temperature?		
6. Does more plant production occur each year in the ocean than on land?		
7. Is a meter longer than a yard?		
8. Does warm water contain more dissolved oxygen than cold water?		
9. Do baleen whales commonly feed on phytoplankton?		
10. Is it safe to eat fish caught offshore from a nuclear generating plant?		

**Group** the questions by the following criteria.

1. Which question(s) can be answered by defining a term?
2. Which question(s) cannot be answered or are confusing unless a procedure is provided?
3. Which question(s) require you to make a value judgment before answering?
4. Which question(s) are unanswerable by you, **but** appear to be answerable through some type of practical investigation?

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5. Pick one of the questions that you listed in question 4 and design an experiment that could be used to answer it. Keep in mind the steps of the scientific method, as well as the following vocabulary terms:

Scientific method: way to ask and answer questions using observation and experimentation.

Variable: factor that is manipulated (changed) in experiment.

Independent variable: factor that is changed/controlled in experiment.

Dependent variable: factor that changes as a result of the experiment.

Hypothesis: scientific explanation of what will happen in the experiment based on knowledge or research.

Experimental group: group in experiment with added variable.

Control group: group in an experiment that is unchanged as a comparison.

Controlled variables: factors that are kept the same the experiment.

Controlled experiment: experiment that only tests one variable.

Question:

Hypothesis:

Experimental design (quick description of the procedure):

Independent Variable:

Dependent Variable:

Experimental Group:

Control Group:

Controlled Variables: