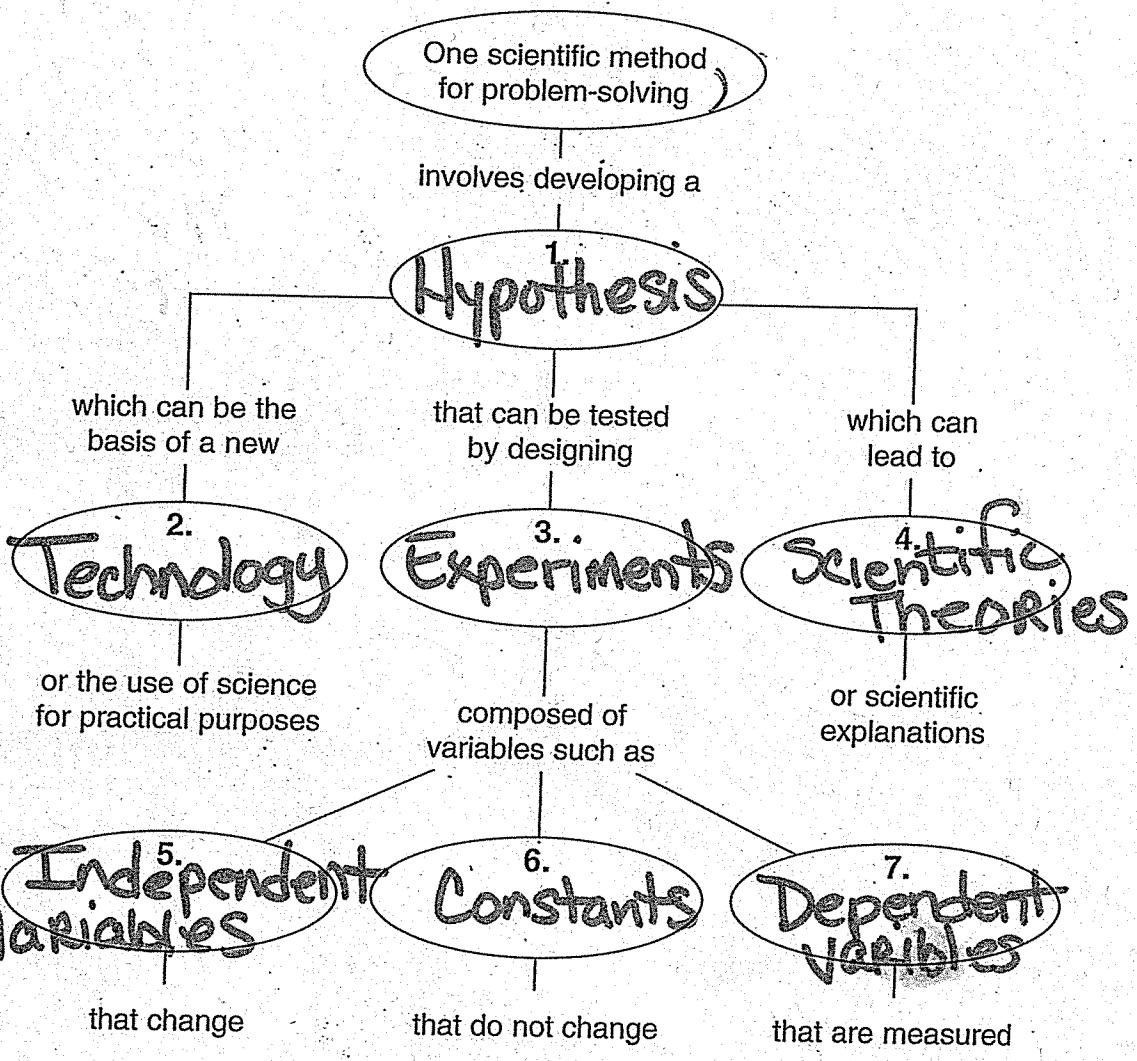
Name CORRECT ANSWERS!! Date Class 8th GRADE Review

Directed Reading for Content Mastery

Overview
The Nature of Science

Directions: *Complete the concept map by using the words below.*

scientific theories **constants** **technology** **hypothesis**
dependent variables **experiments** **independent variables**



Directions: *Circle the terms in parentheses that best complete the sentence.*

8. Problems that deal with ethics (can, cannot) be solved using scientific methods.
9. Ethics deals with (moral values, scientific facts).
10. There (are, are no) limits to what science can explain.

Meeting Individual Needs

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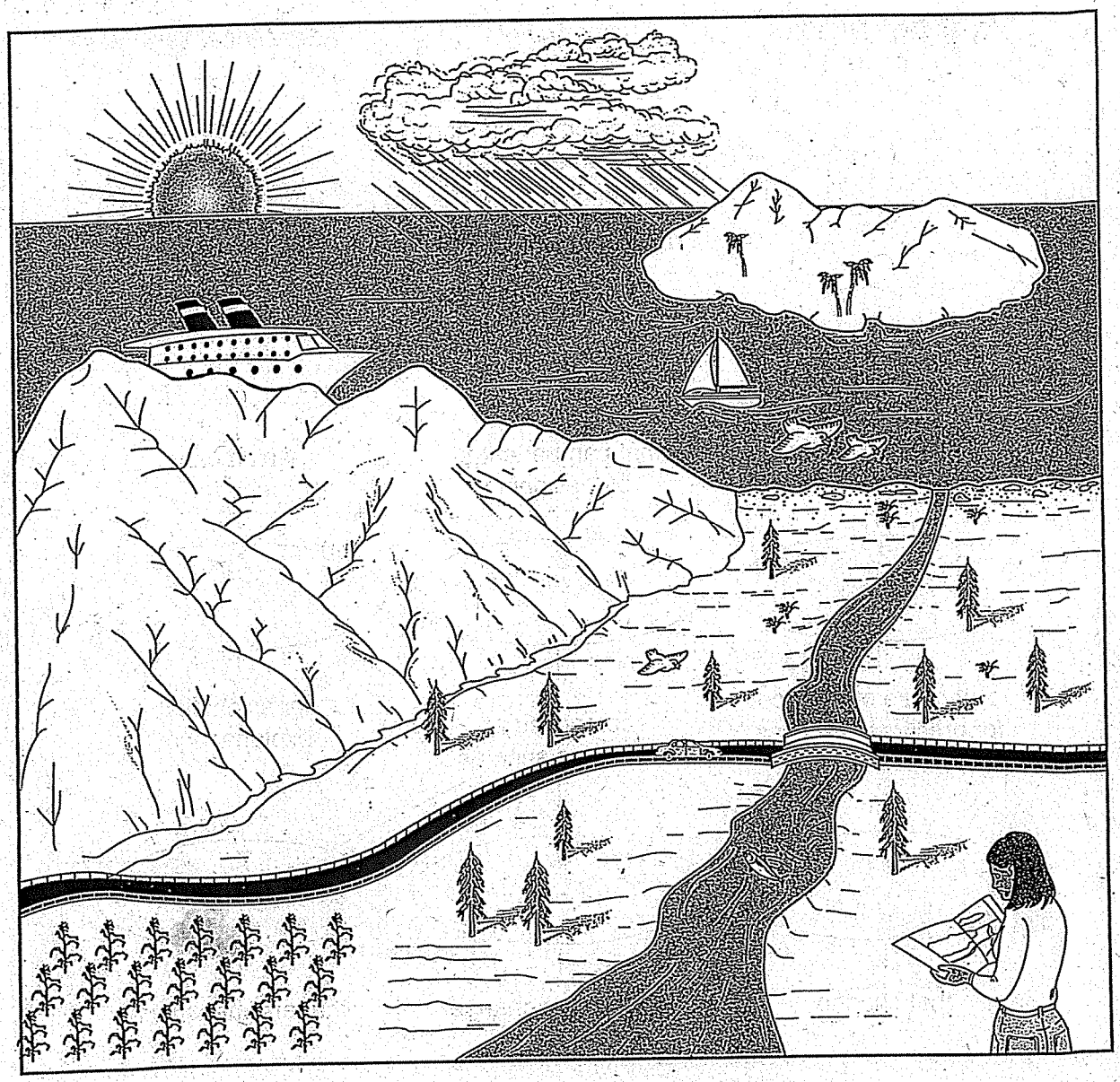
Directed Reading for Content Mastery

Section 1 ▪ Science All Around

Directions: *Study the drawing, then circle the words below the drawing that describe topics studied by Earth science.*



Earth science topics

agriculture
precipitation
trees
rocks
hills

islands
the Sun
rivers
bridges
clouds

navigation
birds
oceans
wind
maps

fish
people
boats
roads
weather

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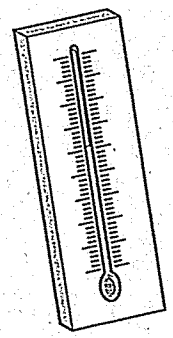
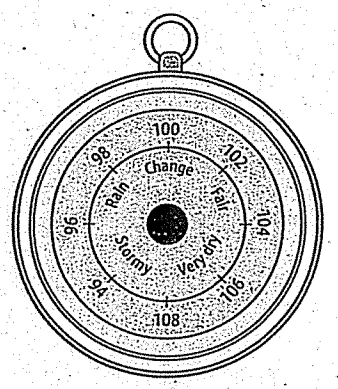
Section 2 ▪ Scientific Enterprise

Directions: *Write the correct name of each weather instrument below to match the illustration.*

hygrometer **barometer** **anemometer** **thermometer**

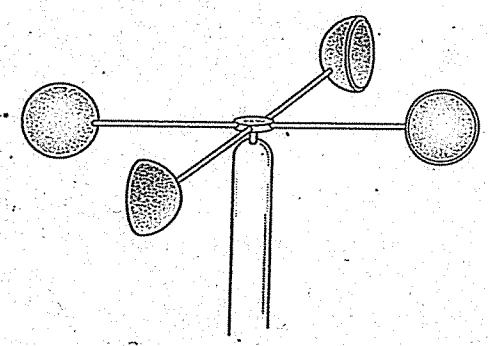
1. The Thermometer measures temperature.

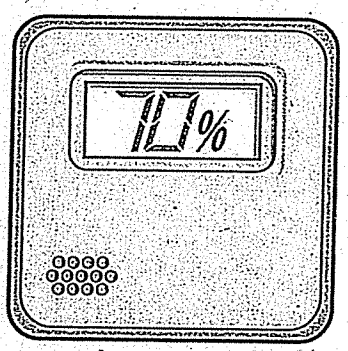




2. The Barometer measures atmospheric pressure.

3. The Anemometer measures wind speed.





4. The Hygrometer measures the percentage of water vapor in the air.

Directions: *In the spaces provided, write* **Yes** *in front of each question that science can answer and* **No** *in front of those that science cannot answer.*

No 5. Is it ethical to use animals in medical experiments?

NO 6. Do humans have more value on Earth than other life forms?

YES 7. What is the distance to the nearest star?

NO 8. Should humans try to colonize other planets?

YES 9. How can more rice be grown on an acre of land?

YES 10. How do trees benefit humans?

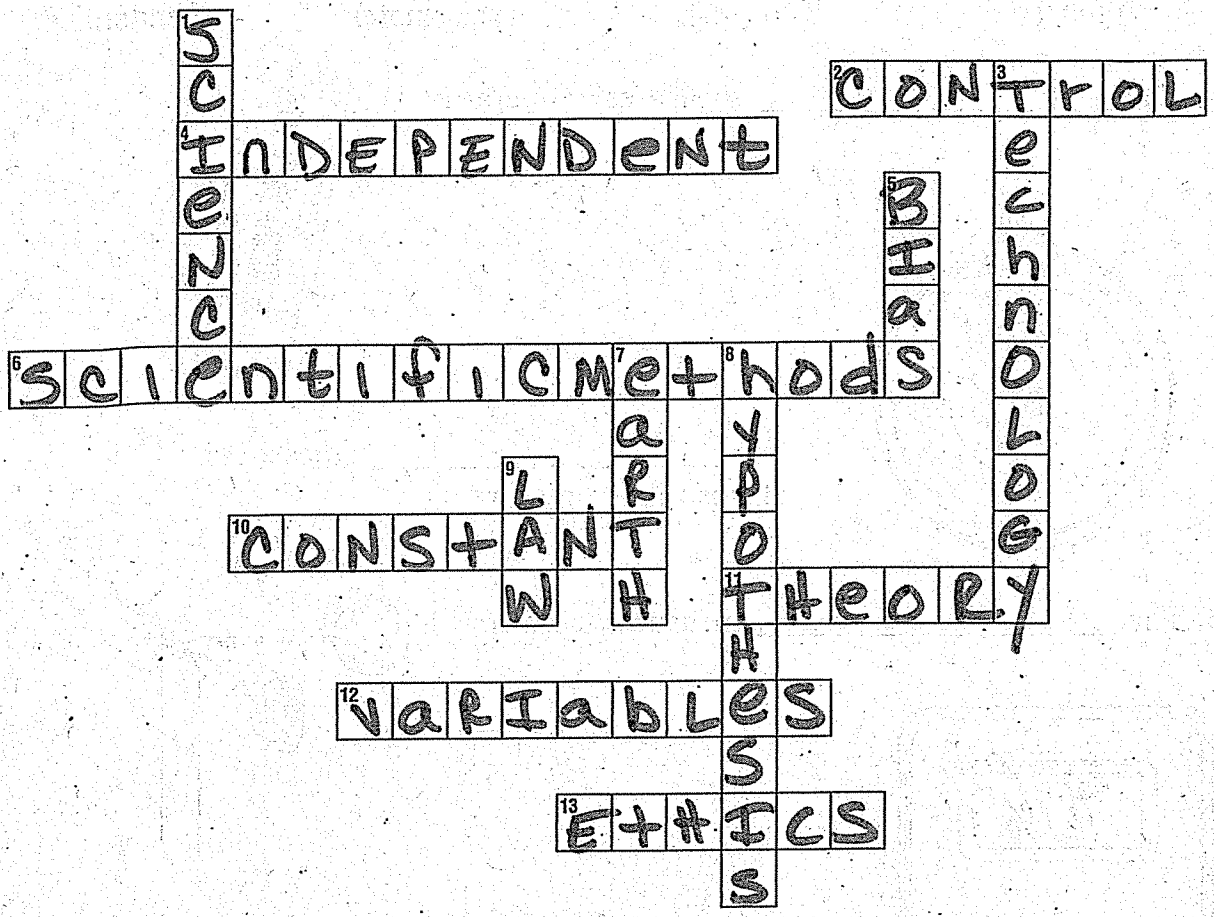
Meeting Individual Needs

Name _____ Date _____ Class _____

Directed Reading for Content Mastery

Key Terms
The Nature of Science

Directions: *Use the clues below to complete the crossword puzzle.*



Meeting Individual Needs

Across

2. The standard to which an experiment's results can be compared
4. The variable you want to test: _____ variable
6. Problem solving procedures
10. Variable that does not change in an experiment
11. Explanation backed by results obtained from repeated tests or experiments: scientific _____
12. Factors that can change in an experiment
13. Deals with moral values about what is good or bad

Down

1. The process of observing and studying things in your world
3. Use of scientific discoveries for practical purposes
5. A personal opinion
7. Type of science that studies Earth and space
8. An educated guess
9. Rule that describes the behavior of something in nature: scientific _____

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Note-taking Worksheet

The Nature of Science

Section 1 Science All Around

A. Scientists are like detectives trying to solve mysteries.

1. Scientists gather information and evidence in their search for answers to questions.
2. A Hypothesis is an educated guess about a possible solution to a mystery.

B. Scientists use a problem-solving procedure called the Scientific Method it includes identifying a problem, gathering information, making hypotheses, testing the hypotheses, analyzing the results, and drawing conclusions.

C. Science is a process of observing, studying, and thinking about things to gain knowledge to better understand the world.

1. Any attempt to find out how and why things look and behave the way they do is a performance of science.
2. Earth Science is the study of Earth and space.

D. Testing, or Experimenting, is an important part of science.

1. Variables are the different factors that can change in an experiment.
   a. An experiment should be designed so that only 1 variable at a time is tested.
   b. The variable that changes, the one being tested in an experiment, is the Independent Variables
   c. **Constants** are variables that do Not change.
   d. A Dependent is the variable being measured.
2. A Control is a standard to which results can be compared; the same experiment done with the same variables, except it omits the Independent variable.
3. For results to be valid or reliable, tests should be repeated _____ times.
4. Observing and recording data and discoveries are important parts of an experiment.
   a. Data and observations must be analyzed to draw Conclusions.
   b. Unexpected results may be important and should be recorded, as well.

Meeting Individual Needs

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Note-taking Worksheet (continued)

E. Technology —use of scientific discoveries for practical purposes such as making pottery or extracting metals from rocks

1. Technology is transferable, meaning it can be applied to new situations.
2. Earth scientists and biologists use information from satellites to gather weather data and track animals.

Section 2 Scientific Enterprise

Meeting Individual Needs

A. Early people believed mythological Gods were responsible for natural phenomena such as weather or seasons.

1. Early civilizations used observations of recurring natural events like floods and the appearance of stars to create Calendars.
2. Civilizations advanced to the use of Instruments to measure things observed and developed a scientific approach for testing inferences, or conclusions.

B. Meteorology, the study of weather, is a science developed over time.

1. A Rain Gauge, used as early as 321 B.C., was probably the first weather instrument; in the late 1600s, Italian scientists developed the barometer, thermometer, hygrometer, and anemometer.
2. Benjamin Franklin was the first American to suggest that weather could be Predicted
   a. By 1849, volunteer weather observers were telegraphing information to the Smithsonian Institute
   b. In 1850, the secretary of the Smithsonian Institution began drawing weather Maps.
3. The U.S. Weather Bureau was formed and functioning by the late 1800s and was renamed the National Weather Service in 1970 when it became part of the National Oceanic and Atmosphere Administration (NOAA).

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Note-taking Worksheet (continued)

C. Scientific knowledge Changes as testing procedures and instruments improve.

1. An explanation or model backed by results obtained from many tests or experiments is called a Scientific theory
2. A Scientific Law is a rule that describes the behavior of something in nature, usually without explaining why the behavior occurs.

D. Science cannot answer all questions.

1. Ethics deals with moral values about what is good or bad.
2. Belief systems deal with religious questions that science cannot answer, such as: Do humans have more value than other life forms?

E. It is important to prevent Bias, or personal opinion, from influencing scientific observations.

1. Ethical and unbiased scientists keep detailed notes and allow other scientists to evaluate their work.
2. Scientific Fraud includes making up data, changing experiment results, or taking credit for another's work.

Meeting Individual Needs