Pre-Physics,Earth and Space Science

The following outline and work is for NTI days 6-10.

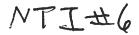Read passages and answer all questions:
NTI Day #6  Crops and Soil
NTI Day #7 Land Management and Conservation
NTI Day #8 Feeding the World
NTI Day #9 Minerals and Mineral Resources
NTI Day #10 Animals and Agriculture

Name _____ Class _____ Date _____

# Active Reading

## Section: Crops and Soil

**Read the passage below and answer the questions that follow.**

In North America, insects eat about 13 percent of all crops. Crops in tropical climates suffer even greater insect damage because the insects grow and reproduce faster in these climates. In Kenya, for example, insects destroy more than 25 percent of the nation's crops. Worldwide, pests destroy about 33 percent of the world's potential food harvest.

Insects are one of several types of organisms considered pests. A *pest* is any organism that exists where you do not want it or that exists in large enough numbers to cause economic damage. Humans try to control populations of many types of pests, including plants, fungi, and microorganisms.

Wild plants often have more protection from pests than do crop plants. Wild plants grow throughout a landscape, so pests have a harder time finding and feeding on a specific plant. Crop plants, however, are usually grown together in large fields, which provide pests with a one-stop source of food. Wild plants are also protected from pests by a variety of pest predators that live on or near the plants. Some wild plants have also evolved defenses to many pests, such as poisonous chemicals that repel pests.

### IDENTIFYING MAIN IDEAS

One reading skill is the ability to identify the main idea of a passage. The main idea is the main focus or key idea. Frequently, a main idea is accompanied by supporting information that offers detailed facts about main ideas.

**Read each question and write the answer in the space provided.**

**1.** What is a *pest?*

_____

_____

**2.** List three types of pest populations that humans try to control.

_____

_____

**Write the letter of the phrase in the space provided, that best answers the question.**

_____ **3.** How much of the potential food harvest do pests destroy worldwide?
   **a.** 100 percent          **c.** 33 percent
   **b.** 50 percent            **d.** 10 percent

**❙ Active Reading** *continued*

## RECOGNIZING SIMILARITIES AND DIFFERENCES

One reading skill is the ability to recognize similarities and differences between two phrases, ideas, or things. This is sometimes known as comparing and contrasting.

**Read each question and write the answer in the space provided.**

**4.** How does insect damage to crops in Kenya compare to insect damage to crops in North America?

_____

_____

**5.** Why do crop plants have less protection from pests than do wild plants?

_____

_____

**The following statements apply to either wild plants or to crop plants. In the space provided, write "WP" if the statement applies to wild plants or "CP" if the statement applies to crop plants.**

_____ **6.** grow throughout a landscape

_____ **7.** provide pests with a one-stop source of food

_____ **8.** have evolved defenses against many pests

_____ **9.** are protected from pests by pest predators that live on or near the plants

_____ **10.** grow together in large fields

## RECOGNIZING CAUSE AND EFFECT

One reading skill is the ability to recognize cause and effect.

**Read each question and write the answer in the space provided.**

**11.** Why do crops in tropical climates suffer greater damage than crops in North America?

_____

_____

_____

**12.** Why do humans try to control pest populations?

_____

_____

_____

Name _____  Class _____  Date _____

# Active Reading

## Section: Land Management and Conservation

**Read the passage below and answer the questions that follow.**

People use enormous amounts of wood. The worldwide average is 1,800 cm³ of wood used per person each day. However, on average, each person in the United States uses about 3.5 times this amount. This is the equivalent of each person in the United States cutting down a tree that is 30 m tall every year. About 1.5 billion people in developing countries depend on firewood as their main source of fuel.

The timber industry classifies forest lands into three categories—virgin forest, which is forest that has never been cut; native forest, which is forest that is planted and managed; and tree farms, which are areas where trees are planted in rows and harvested like other crops. The two most widely used methods of harvesting trees are clear-cutting and selective cutting. *Clear-cutting* is the process of removing all of the trees from an area of land. Clear-cutting large areas destroys wildlife habitat and causes soil erosion. The main alternative is selective cutting, which is usually practiced on smaller areas owned by individuals. *Selective cutting* is the process of cutting and removing only middle-aged or mature trees. Selective cutting is more expensive than clear-cutting, but selective cutting is usually much less destructive.

## IDENTIFYING MAIN IDEAS

One reading skill is the ability to identify the main idea of a passage. The main idea is the main focus or key idea. Frequently, a main idea is accompanied by supporting information that offers detailed facts about the main idea.

**In the space provided, write the letter of the term or phrase that best answers each question.**

_____ **1.** How many people in developing countries rely on firewood for fuel?
  **a.** 30 million                     **c.** 1.5 billion
  **b.** 3.5 billion                    **d.** 1.5 million

_____ **2.** How much wood does the average person (worldwide) use per day?
  **a.** 3.5 cm³                       **c.** 30 m
  **b.** 1,800 cm³                     **d.** 1.5 m

_____ **3.** How much wood does the average person in the United States use per day?
  **a.** 1,800 cm³                     **c.** 6,300 cm³
  **b.** 5,400 cm³                     **d.** 1,050 m

| Active Reading continued

## VOCABULARY DEVELOPMENT

**In the space provided, write the letter of the description that best matches the term or phrase.**

_____ **4.** clear-cutting

_____ **5.** virgin forest

_____ **6.** selective cutting

_____ **7.** tree farms

_____ **8.** native forest

**a.** forest that is planted and managed
**b.** forest that has never been cut
**c.** the process of cutting and removing only middle-aged or mature trees
**d.** the process of removing all trees from an area of land
**e.** areas where trees are planted in rows and harvested like other crops

## RECOGNIZING SIMILARITIES AND DIFFERENCES

One reading skill is the ability to recognize similarities and differences between two phrases, ideas, or things. This is sometimes known as comparing and contrasting.

**Read each question and write the answer in the space provided.**

**9.** What comparison does the author use to show how much wood a person in the United States uses?

_____

_____

**10.** What are the similarities between clear-cutting and selective cutting?

_____

_____

**11.** What are the differences between clear-cutting and selective cutting?

_____

_____

**12.** What are the advantages and disadvantages of clear-cutting versus selective cutting?

_____

_____

_____

_____

_____

Name _____ Class _____ Date _____

Skills Worksheet

# Active Reading

## Section: Feeding the World

**Read the passage below and answer the questions that follow.**

Between 1950 and 1970, Mexico increased its production of wheat eight-fold and India doubled its production of rice. Worldwide, increases in crop yields resulted from the use of new crop varieties and the application of modern agricultural techniques. These changes were called the *green revolution*. Since the 1950s, the green revolution has changed the lives of millions of people.

However, the green revolution also had some negative effects. Most new varieties of grain produce large yields only if they receive large amounts of water, fertilizer, and pesticides. In addition, the machinery, irrigation, and chemicals required by new crop varieties can degrade the soil if they are not used properly. As a result of the overuse of fertilizers and pesticides, yields from green revolution crops are falling in many areas. Grain production in the United States has decreased since 1990, partly because the amount of water used for irrigation has decreased during the same period.

## IDENTIFYING MAIN IDEAS

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**Write the letter of the term or phrase in the space provided, that best completes each statement.**

_____ **1.** Between 1950 and 1970, the green revolution led to
    **a.** increases in crop yields worldwide.
    **b.** the failure of new crop varieties.
    **c.** water shortages in the United States.
    **d.** grain shortages in Mexico and India.

_____ **2.** *Irrigation* refers to
    **a.** varieties of crop yields.
    **b.** water used for crops.
    **c.** fertilizer used to increase crop yields.
    **d.** machinery used to harvest crops.

_____ **3.** According to the passage, one problem with the green revolution is that
    **a.** few people have access to new techniques and machinery.
    **b.** it did not last long enough to make a difference in grain production.
    **c.** it led to widespread drought.
    **d.** it led to the overuse of fertilizers and pesticides.

## VOCABULARY DEVELOPMENT

**Read the following question and write the answer in the space provided.**

**4.** The verb *yield* means "to bear or bring forth as a natural product." Use this information to define *crop yield*.

_____

_____

## RECOGNIZING SIMILARITIES AND DIFFERENCES

One reading skill is the ability to recognize similarities and differences between two phrases, ideas, or things. This is sometimes known as comparing and contrasting.

**Read each question and write the answer in the space provided.**

**5.** How did Mexico benefit from the green revolution between 1950 and 1970? How did India benefit?

_____

_____

**6.** How was agriculture after the green revolution different from agriculture before the green revolution?

_____

_____

## RECOGNIZING CAUSE AND EFFECT

One reading skill is the ability to recognize cause and effect.

**Read each question and write the answer in the space provided.**

**7.** What do new varieties of grain require to produce large yields?

_____

**8.** Why has grain production in the United States decreased since 1990?

_____

**9.** Why are yields from green revolution crops falling in many areas?

_____

**10.** What effect do the machinery, irrigation, and chemicals required by new crop varieties have on soil?

_____

_____

Name _____ Class _____ Date _____

# Active Reading

## Section: Minerals and Mineral Resources

**Read the passage below and answer the questions that follow.**

Certain metals are of major economic and industrial importance. Some metals can be pounded or pressed into various shapes or stretched very thinly without breaking. Other metals are good conductors of heat and electricity, or are prized for their durability and resistance to corrosion. Often, two or more metals are combined to form *alloys*. Alloys are important because they often combine the most desirable properties of the metals used to make them. Many new technologies depend on the mining of metallic minerals.

Nonmetals are among the most widely used minerals in the world. For example, gypsum has many applications in the construction industry. It is used to make Sheetrock™, or wallboard, for homes and commercial buildings. It is also a major component of concrete, which is used to build roads, buildings, and other structures. Industrial sand and gravel have uses that range from glassmaking to the manufacture of computer chips. Some nonmetallic minerals, called *gemstones*, are prized purely for their beauty, rarity, or durability. Important gemstones include diamond, ruby, sapphire, emerald, aquamarine, topaz, and tourmaline.

### IDENTIFYING MAIN IDEAS

One reading skill is the ability to identify the main idea of a passage. The main idea is the main focus or key idea. Frequently, a main idea is accompanied by supporting information that offers detailed facts about the main idea.

**In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.**

_____ 1. The value of a mineral is determined by its
   **a.** properties.
   **b.** mining technique.
   **c.** gemstones.
   **d.** alloys.

_____ 2. What types of minerals are among the most widely used in the world?
   **a.** metals                    **c.** gemstones
   **b.** alloys                    **d.** nonmetals

_____ 3. Which of the following is an example of a gemstone?
   **a.** gypsum                    **c.** gravel
   **b.** sapphire                  **d.** glass

## VOCABULARY DEVELOPMENT

**In the space provided, write the letter of the description that best matches the term or phrase.**

_____ **4.** gypsum

_____ **5.** gemstones

_____ **6.** industrial sand

_____ **7.** alloy

_____ **8.** certain metals

**a.** the combination of two or more metals

**b.** a major component of concrete

**c.** conductors of heat and electricity

**d.** topaz and tourmaline

**e.** a substance used in manufacturing computer chips

**Read each question and write the answer in the space provided.**

**9.** The verb *corrode* means "wear away gradually, usually by a chemical reaction." A metal that is prized for its "resistance to corrosion" has what property?

_____

**10.** *Aqua* means "water" or "a light blue color." *Marine* refers to the sea. Use this information to determine what the gemstone *aquamarine* might look like.

_____

## RECOGNIZING CAUSE AND EFFECT

One reading skill is the ability to recognize cause and effect.

**In the space provided, write the letter of the phrase that best answers the question.**

_____ **11.** Why do people value gemstones?
    **a.** for their use in industry    **c.** for their beauty and rarity
    **b.** for their resistance to corrosion  **d.** for their benefit to technology

**Read each question and write the answer in the space provided.**

**12.** Why are alloys especially important?

_____

_____

**13.** What are some properties of metals that give them economic and industrial importance?

_____

_____

_____

Skills Worksheet )

# Active Reading

## Section: Animals and Agriculture

**Read the passage below and answer the questions that follow.**

There are a number of different methods of aquaculture. The most common method is known as a fish farm. Fish farms generally consist of many individual ponds that each contain fish at a specific stage of development. Clean water is circulated through the ponds and brings in oxygen while sweeping away carbon dioxide and fecal wastes. The fish grow to maturity in the ponds and are then harvested.

Another type of aquaculture operation is known as a ranch. In this method, fish such as salmon are raised until they reach a certain age and are then released. The salmon, for example, migrate downstream to the ocean, where they live until adulthood. When they are mature, the fish return to their birthplace to reproduce. When they return, they are captured and harvested.

### IDENTIFYING MAIN IDEAS

One reading skill is the ability to identify the main idea of a passage. The main idea is the main focus or key idea. Frequently, a main idea is accompanied by supporting information that offers detailed facts about main ideas.

**Write the letter of the term or phrase in the space provided, that best completes each statement or best answers each question.**

_____ **1.** What is the most common method of aquaculture?
    **a.** fish farming            **c.** capturing
    **b.** ranching               **d.** migrating

_____ **2.** Each individual pond on a fish farm contains
    **a.** several different types of fish.
    **b.** one fish species and one of its predators.
    **c.** fish at a specific stage of development.
    **d.** mature fish that are ready to be harvested.

_____ **3.** Where do salmon live until they reach a certain age, before adulthood?
    **a.** on a fish farm        **c.** in a river
    **b.** on a ranch           **d.** in the ocean

_____ **4.** Where do salmon live after they leave their birthplace and until they reach adulthood?
    **a.** in the ocean        **c.** downstream
    **b.** in a pond           **d.** on a ranch

**▌Active Reading** *continued*

## VOCABULARY DEVELOPMENT

**Read the following question and write the answer in the space provided.**

**5.** The prefix *aqua-* refers to "water." The verb *culture* means "to foster the growth of living things." Use this information to define *aquaculture*.

_____

_____

**In the space provided, write the letter of the definition that best matches the term.**

_____ **6.** migrate

_____ **7.** circulate

_____ **8.** harvest

_____ **9.** mature

**a.** gather in

**b.** reach adulthood

**c.** flow without obstruction

**d.** move from one place to another

## SEQUENCING INFORMATION

One reading skill is the ability to sequence information, or to logically place items or events in the order in which they occur.

**Sequence the statements below to show the steps in the process of raising and harvesting salmon. Write "1" on the line in front of the first step, "2" on the line in front of the second step, and so on.**

_____ **10.** The salmon are released.

_____ **11.** The salmon return to their birthplace.

_____ **12.** The salmon are raised on a ranch until they reach a certain age.

_____ **13.** The salmon are captured and harvested.

_____ **14.** The salmon migrate downstream to the ocean.

_____ **15.** The salmon grow to adulthood.

## RECOGNIZING CAUSE AND EFFECT

One reading skill is the ability to recognize cause and effect.

**Read each question and write the answer in the space provided.**

**16.** How does circulating clean water contribute to the operation of a fish farm?

_____

_____

**17.** Why do salmon return to their birthplace after they mature?

_____