



1 Learn the Skill

Diagrams show relationships between ideas, objects, or events in a visual way. Diagrams also can show the order in which events occur. When you **interpret diagrams**, you find out how objects or events relate to one another.

2 Practice the Skill

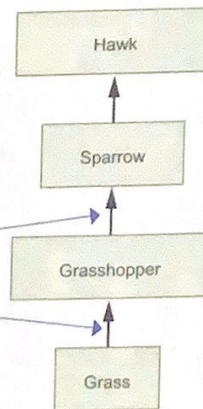
By practicing the skill of interpreting diagrams, you will improve your study and test-taking abilities, especially as they relate to the GED® Science Test. Study the information and diagram below. Then answer the question that follows.

ECOSYSTEMS

An ecosystem includes all the living things in an area, along with their nonliving environment. Energy flows through the living parts of an ecosystem. In most ecosystems, the energy originates from the sun. Plants use energy from sunlight and nutrients from air, water, and soil to make food. Animals eat the plants, other animals eat the plant eaters, and so on. Each organism gets energy from its food and passes on energy to any organism that feeds on it. A food chain shows a single path of feeding relationships among certain organisms in an ecosystem. The diagram shows a food chain in a grassland ecosystem.

a Diagrams can take many forms. Flowcharts use boxes and arrows to show steps in a process or order of events. Some flowcharts are circles or ovals. They show events that occur in cycles.

b The parts of this diagram are arranged in a line, with arrows pointing from one part to the next. The arrows show the direction in which food moves from one organism to the next.



- Which statement describes a feeding relationship shown in the diagram?
 - Hawks eat grass.
 - Grasshoppers eat sparrows.
 - Sparrows eat grasshoppers.
 - Hawks eat grasshoppers.

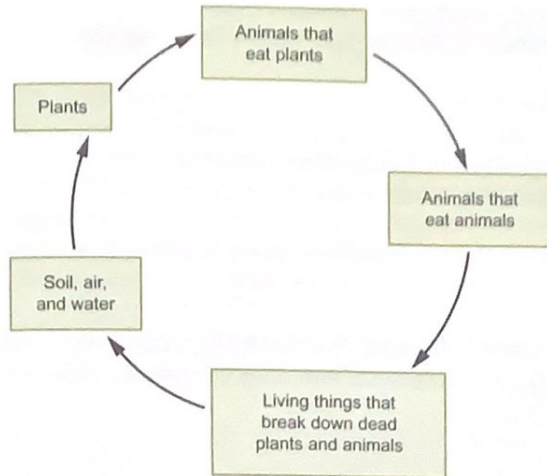
TEST-TAKING TIPS

Review the answer choices. How would the diagram have to look for each answer choice to be true? Compare the imagined diagram with the actual diagram to determine the correct answer.

3 Apply the Skill

DIRECTIONS: Study the diagram and information, read each question, and choose the **best** answer.

MOVEMENT OF NUTRIENTS IN AN ECOSYSTEM



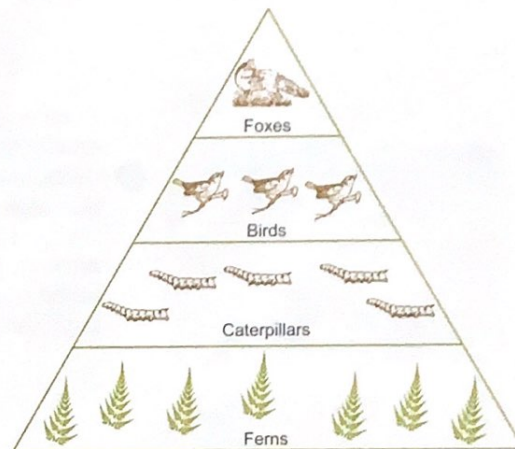
Matter, or the material that makes up everything around us, is continuously recycled in an ecosystem. Organisms get materials they need to live from the environment. They then release waste matter back into the environment. Nutrients are one form of matter that cycles through an ecosystem. The diagram shows the movement of nutrients in a land-based ecosystem.

- Based on the diagram, which statement describes a flow of nutrients in a land-based ecosystem?
 - Most animals obtain nutrients by eating other animals.
 - Plants obtain nutrients from soil, air, and water.
 - Animals that eat animals are a source of nutrients for animals that eat plants.
 - Living things that break down dead plants and animals contribute no nutrients to the ecosystem.
- What would happen to the movement of nutrients shown in the diagram if all the plants in the ecosystem died?
 - Nutrients would continue to cycle through the ecosystem, skipping the missing step.
 - Plant-eating animals would start eating other animals.
 - The nutrients cycle would end.
 - Soil, air, and water supplies would decrease and eventually end.

DIRECTIONS: Study the information and diagram, read each question, and choose the **best** answer.

MOVEMENT OF ENERGY IN AN ECOSYSTEM

As energy flows through an ecosystem, it is conserved. That is, the amount of energy neither increases nor decreases. Plants get energy by making food. Animals get energy by eating food in the form of plants and other animals. Living things convert the energy stored in food into energy for movement, growth, and repair. A small amount of energy that a living thing takes in is stored in the cells of its body. Most of the energy is lost to the environment as heat, sound, motion, and—in some cases—light. Energy pyramids show how energy flows through ecosystems. The diagram shows an energy pyramid for a forest ecosystem.



- What is one way in which energy flows through the forest ecosystem represented by the diagram?
 - from ferns to caterpillars
 - from foxes to ferns
 - from birds to ferns
 - from birds to caterpillars
- What idea does the shape of an energy pyramid **most likely** reinforce?
 - In general, larger animals in an ecosystem eat smaller animals in the ecosystem.
 - Plants use sunlight to obtain energy and form the basis for all food chains in an ecosystem.
 - Organisms at higher levels of a food chain live at higher levels in an environment.
 - The amount of available energy decreases as energy passes from organism to organism.



1 Learn the Skill

When you **generalize**, you use specific information to make a broad statement that applies to an entire group of objects, organisms, places, or events. A **generalization** can be valid or invalid. Valid generalizations are supported by facts and examples. Invalid generalizations are not.

2 Practice the Skill

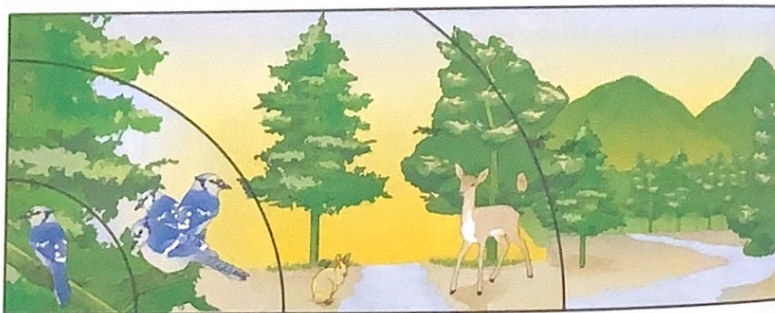
By practicing the skill of generalizing, you will improve your study and test-taking abilities, especially as they relate to the GED® Science Test. Study the information and illustration below. Then answer the question that follows.

a To make a generalization, first gather and compare information about a topic. Then use the information to make a statement that is usually true. This statement is your generalization.

b Even if a statement describes all the members of a particular group, it is not necessarily a generalization. For instance, the statement that a community is all the populations in an area is a fact, not a generalization.

LEVELS OF ORGANIZATION IN AN ECOSYSTEM

An ecosystem is made up of different kinds of living things. Scientists often think of the living things in an ecosystem as being organized in levels. The lowest level of organization is the individual organism. Individual organisms are arranged into populations. A population is a group of organisms that are all the same species and that all live in the same area. For example, all the blue jays in a forest make up a population. Populations are organized into communities. A community is all the populations in an area. Most communities contain many populations, and these populations affect each other in various ways. Groups of communities make up the ecosystem.



Organism Population Community Ecosystem

TEST-TAKING TIPS

Generalizations—both valid and invalid—may contain key words such as *all, always, every, and never* as well as *most, mostly, typically, in general, generally, often, overall, almost, and usually*.

- Based on the information, which statement is a valid generalization about the living things in an ecosystem?
 - There are different kinds of living things in an ecosystem.
 - The communities in most ecosystems are made up of many different species.
 - Populations in an ecosystem are made up of individual organisms.
 - All organisms in a population are of the same species.

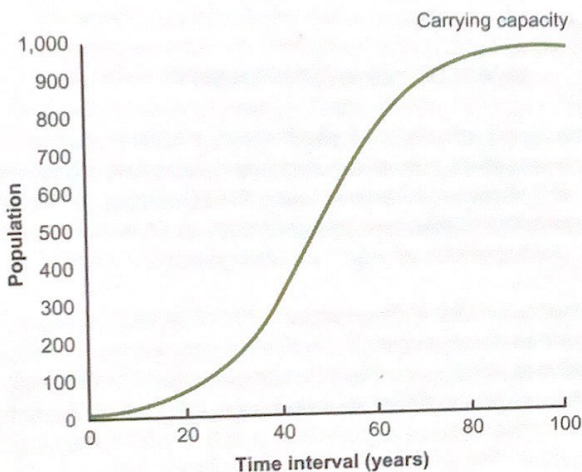
3 Apply the Skill

★ Spotlighted Item: **FILL-IN-THE-BLANK**

DIRECTIONS: Study the information and graph. Then complete each statement by filling in the box.

CARRYING CAPACITY

Carrying capacity is the maximum number of individuals of a given species that an area's resources can sustain. Competition for resources and many other factors can affect carrying capacities. The graph shows a pattern of change over time for one population in one ecosystem.



2. Based on the graph, a population generally

until it reaches its carrying capacity.

3. The graph represents one population in one ecosystem. A generalization can be made that similar populations in similar ecosystems are

between years 40 and 60.

4. Suppose that a new competitor of the population represented in the graph is introduced in the ecosystem. The graph would change by showing a generally lower

DIRECTIONS: Read the passage and question, and choose the **best** answer.

INVASIVE SPECIES

Invasive species, or species not native to the ecosystem in which they are living, cause ecological and economic harm. An invasive species competes with native species for resources and often does not have any predators in the ecosystem. An invasive species population can thrive to the extent that it makes up a large percentage of the biomass, or mass of living organisms in an ecosystem.

5. Based on the passage, a valid generalization is that competition from invasive species

- A. usually leads to decreased carrying capacity for other organisms in an ecosystem.
- B. typically ensures that only the healthiest species survive.
- C. always negatively affects both the invasive species and other species.
- D. generally leads to an increase in the carrying capacity for the organism that is out-competed.



1 Learn the Skill

A **concept** is a fundamental unit of understanding. It can be expressed as a topic, such as "energy transfer among organisms," and represent the body of information associated with the topic. Or it can be a statement about one aspect of a topic. The study of science involves gaining knowledge of new concepts by building on known concepts. In other words, to learn new science information, you **apply science concepts** you have learned already.

2 Practice the Skill

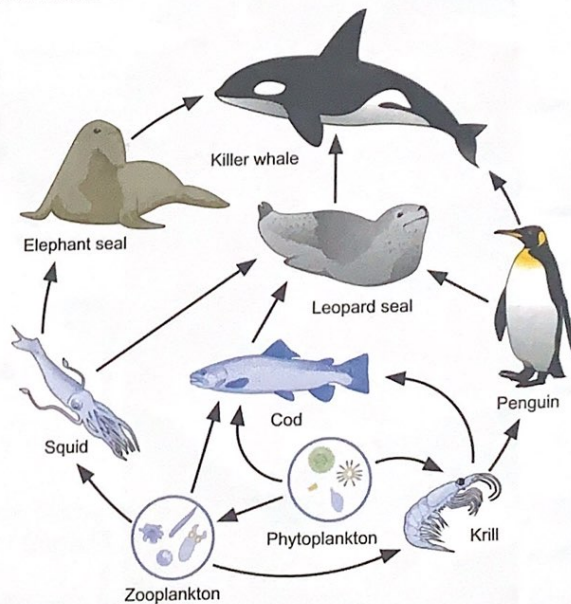
By practicing the skill of applying concepts, you will improve your study and test-taking abilities, especially as they relate to the GED® Science Test. Study the information and diagram below. Then answer the question that follows.

MARINE FOOD WEBS

Concepts in life science, physical science, and Earth and space science are interrelated because Earth's systems are interrelated. For example, oceans, which are part of Earth's hydrosphere, team with and have significant impacts on living things, which make up Earth's biosphere. The food web below shows the feeding and energy transfer relationships in a marine, or ocean, ecosystem. Each organism gets energy from the organisms it eats and passes that energy along to any organism that feeds on it.

a Earth's waters make up its hydrosphere. As you learn about the hydrosphere, you can apply concepts you have learned about Earth's other systems.

b Like a food chain, a food web represents the concept of energy transfer among organisms. Its arrows show the flow of energy from producers to several levels of consumers.



MAKING ASSUMPTIONS

You can assume that all food webs are structured similarly. This allows you to apply the same concepts when you see a food web for any type of ecosystem.

- Based on the concept of energy transfer among organisms in ecosystems, which organism in this ocean food web is a producer?
 - cod
 - killer whale
 - zooplankton
 - phytoplankton