

Practice

Living and Nonliving Things

Each question is followed by four choices. Mark the choice that is the best answer.

- 1 What do plant cells have that animal cells do not?
 - 1 chromosomes and DNA
 - 2 cell membranes and mitochondria
 - 3 nuclei and membrane-bound organelles
 - 4 chloroplasts and cell walls

- 2 The phylum that includes mammals, birds, fish, reptiles, and amphibians is
 - 1 Echinoderm
 - 2 Animalia
 - 3 Chordata
 - 4 Vertebrate

- 3 Fungi are organisms that
 - 1 are unicellular
 - 2 are classified in the plant kingdom
 - 3 require light to grow
 - 4 break down dead matter and absorb useful elements from it

- 4 Nonvascular plants do not have
 - 1 roots
 - 2 leaves
 - 3 transportation tubes
 - 4 chlorophyll

- 5 An organ that is not part of the digestive system is the
 - 1 stomach
 - 2 liver
 - 3 kidney
 - 4 small intestine

- 6 A chemical from a gland that affects other body parts is
 - 1 stomach acid
 - 2 a hormone
 - 3 saliva
 - 4 cytoplasm

Test Tip

Reread the question to be sure you know what it is asking. The answer to question 2 is the name of a **phylum**.



Content Clue

Mushrooms are examples of **fungi**. Scientists used to classify fungi as plants. Today, fungi are classified in their own **kingdom**.

Test Tip

Look for key words such as *all*, *not*, or *none*.

Practice

Genetic Information

Each question is followed by four choices. Mark the choice that is the best answer.

- 1 Hereditary information is passed from one generation to the next by
 - 1 chromosomes
 - 2 Punnett squares
 - 3 traits
 - 4 cytoplasm
- 2 A section of DNA that contains the blueprint for a single trait is
 - 1 a chromosome
 - 2 a gene
 - 3 a molecule
 - 4 an organelle
- 3 Humans have 46 chromosomes. How many of a child's chromosomes come from its mother?
 - 1 12
 - 2 23
 - 3 32
 - 4 46

Use the diagrams below to help you answer questions 4 and 5.

A

	t	t
T	Tt	Tt
T	Tt	Tt

B

	T	t
T	TT	Tt
t	Tt	tt

- 4 Mendel first crossed pea plants with the gene for tallness (T) with pea plants with the gene for shortness (t). What does Punnett square A tell you about the offspring?
 - 1 All offspring were tall.
 - 2 All offspring were short.
 - 3 Half the offspring were tall and half were short.
 - 4 Three-fourths were tall and one-fourth were short.
- 5 What does Punnett square B tell you about the offspring of this experiment?
 - 1 All offspring were tall.
 - 2 All offspring were short.
 - 3 Half the offspring were tall and half were short.
 - 4 Three-fourths were tall and one-fourth were short.

Test Tip

Eliminate any answers that are obviously wrong, such as 3.



Content Clues

Tallness is a **dominant trait** in pea plants. Shortness is a **recessive trait**.

Only individuals with two **genes** for a recessive trait will show that **trait**.

Practice

Change Over Time

Each question is followed by four choices. Mark the choice that is the best answer.

- 1 The two processes that produce variations in living things are
 - 1 sexual and asexual reproduction
 - 2 asexual reproduction and changes in the environment
 - 3 mutation and changes in the environment
 - 4 sexual reproduction and mutation

- 2 A species becomes extinct when
 - 1 changes in the environment force organisms to move to a new location
 - 2 predators kill all the members of a species in a given area
 - 3 all members of the species have died
 - 4 all the natural enemies of the species have died

- 3 After a very cold, dry winter, which wolves are most likely to survive and have offspring?
 - 1 those with dark fur
 - 2 those with white fur
 - 3 those with thick fur
 - 4 those with thin fur

- 4 The fossil record shows that
 - 1 all types of organisms that have ever lived are still alive today
 - 2 Earth's climate has been the same for millions of years
 - 3 many species of organisms that once lived are now extinct
 - 4 dinosaurs died out because they could not protect themselves from humans

- 5 One example of variation and natural selection taking place today is
 - 1 animals becoming extinct because of loss of habitat
 - 2 strains of bacteria becoming resistant to antibiotics
 - 3 organisms such as sheep being cloned
 - 4 corn plants producing better-quality corn



Content Clue

An **organism** produced by **asexual reproduction**, or one parent, has exactly the same **traits** as its parent.

Test Tip

Rephrase question 3 in your own words, for example: *Which wolves are most likely to survive a very cold, dry winter?*

Test Tip

Try to recall facts that help you narrow the choices. For question 5, you might recall news stories reporting that cloning produces exact copies. So cloning cannot be an example of **variation**.

Practice

Reproduction and Development

Each question is followed by four choices. Mark the choice that is the best answer.

- 1 Which of these is a type of sexual reproduction in plants?
 - 1 grafting one plant onto another
 - 2 growing a new plant from runners
 - 3 growing a new plant from a cutting
 - 4 growing a new plant from a seed

- 2 In sexual reproduction each new individual develops from
 - 1 a fertilized egg
 - 2 spores
 - 3 a sperm cell
 - 4 buds

- 3 In the pupa stage of a moth's life cycle, the organism
 - 1 eats leaves and grows
 - 2 lives inside a cocoon, changing its shape
 - 3 flies and drinks nectar
 - 4 lays eggs

- 4 After mitosis, each daughter cell has _____ of chromosomes as the parent cell.
 - 1 one-fourth the number
 - 2 one-half the number
 - 3 the same number
 - 4 twice the number

- 5 After meiosis, each new cell has _____ of chromosomes as the parent cell.
 - 1 one-fourth the number
 - 2 one-half the number
 - 3 the same number
 - 4 twice the number

- 6 Meiosis in a male results in the formation of
 - 1 egg cells
 - 2 sperm cells
 - 3 liver cells
 - 4 brain cells



Content Clue

Grafting is one way of producing a new plant from only one parent. The new plant is identical to its parent plant.

Test Tip

Recalling diagrams can be easier than recalling facts. Try to picture the diagram of the moth's **life cycle** to answer question 3.



Content Clue

Meiosis is a type of cell division during which reproductive cells are formed.

Practice

Meeting Daily Needs

Each question is followed by four choices. Mark the choice that is the best answer.

- 1 Fungi can best be classified as
 - 1 producers
 - 2 photosynthetic organisms
 - 3 secondary consumers
 - 4 decomposers

- 2 What role do plants play in an ecosystem?
 - 1 producers
 - 2 primary consumers
 - 3 secondary consumers
 - 4 decomposers

- 3 Which of the following animals is an endotherm?
 - 1 lobster
 - 2 frog
 - 3 snake
 - 4 chimpanzee

- 4 Nutrients the body needs for the growth and repair of cells are
 - 1 carbohydrates
 - 2 fats
 - 3 proteins
 - 4 vitamins

- 5 A person who takes in 2,800 Calories a day and uses 2,300 Calories a day will most likely
 - 1 gain weight
 - 2 lose weight
 - 3 grow taller
 - 4 lose muscle mass

- 6 Which of the following is not harmful to the development of an unborn child during pregnancy?
 - 1 alcohol
 - 2 tobacco
 - 3 pizza
 - 4 cocaine

- 7 The breaking down of food by an organism is called
 - 1 digestion
 - 2 excretion
 - 3 respiration
 - 4 circulation

Test Tip

Define each science word and try to name examples of each one.



Content Clue

The prefix *endo-* means "inside," and the root word *-therm* means "heat." Endotherms get their body heat from inside. Another term for endotherm is **warm-blooded**.



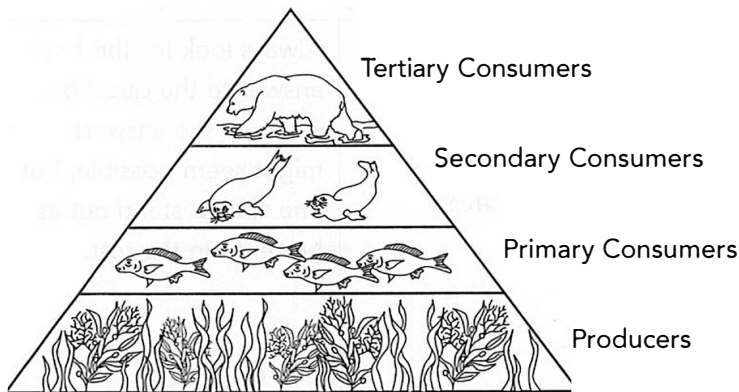
Content Clue

Calories measure the amount of **energy** in food.

Practice

Energy in Ecosystems

Each question is followed by four choices. Mark the choice that is the best answer.



Content Clue

Each level of the **energy pyramid** has about 10 percent of the **energy** of the level below it.

- 1 In the energy pyramid shown above, energy flows
 - 1 from right to left
 - 2 from left to right
 - 3 from top to bottom
 - 4 from bottom to top
- 2 Most of the energy in this energy pyramid is found at the
 - 1 top level
 - 2 first level below the top
 - 3 second level below the top
 - 4 bottom level
- 3 Which of the following statements about this ecosystem cannot be inferred from the energy pyramid?
 - 1 There are more fish than seals.
 - 2 More energy is in the sea plants than in the fish.
 - 3 Polar bears eat seals.
 - 4 Polar bears eat sea plants.
- 4 In the process of photosynthesis, plants use
 - 1 water and sugar to make protein
 - 2 carbon dioxide and oxygen to make protein
 - 3 water and carbon dioxide to make sugar and oxygen
 - 4 water and oxygen to make sugar and carbon dioxide
- 5 The chemical in green plants that allows them to carry out photosynthesis is
 - 1 chlorophyll
 - 2 sodium chloride
 - 3 glucose
 - 4 oxygen

Test Tip

Check each choice in question 3 against what you can see in the energy pyramid.

Practice

Humans and the Environment

Each question is followed by four choices. Mark the choice that is the best answer.

- 1 An ecosystem is
 - 1 all the animals living in a particular environment
 - 2 a community of living things
 - 3 animals interacting with plants
 - 4 all the living and nonliving things that interact in an area
- 2 In parasitism two organisms live together and
 - 1 both organisms benefit
 - 2 one organism benefits while the other is harmed
 - 3 one organism benefits while the other is unaffected
 - 4 neither organism benefits
- 3 Which of the following human actions would benefit the surrounding ecosystem?
 - 1 draining wetlands
 - 2 releasing waste water into a river
 - 3 carpooling
 - 4 urban sprawl
- 4 Acid rain can do all the following except
 - 1 clean streams
 - 2 destroy soil
 - 3 eat away statues and buildings
 - 4 kill plants and animals in lakes
- 5 Which of these is a renewable resource?

1 aluminum	3 wood
2 oil	4 soil
- 6 Particulates pollute the environment by sending into the air

1 soot	3 carbon dioxide
2 gasoline	4 CFCs

Test Tip

Always look for the *best* answer to the question. A few of the answers might seem possible, but one should stand out as better than the rest.

Test Tip

Think about situations relevant to the question. Try to recall examples of **parasites** you have heard of. For example, maybe you know that athlete's foot is caused by a parasite.



Content Clue

A **renewable resource** is one that can be replaced within the human life span.

Practice

The Earth and Space

Each question is followed by four choices. Mark the choice that is the best answer.

- 1 In our solar system the planet closest to the Sun is
 - 1 Mercury
 - 2 Venus
 - 3 Earth
 - 4 Mars
- 2 The length of time it takes the Earth to orbit the Sun is called a
 - 1 day
 - 2 week
 - 3 month
 - 4 year
- 3 The length of time it takes the Earth to rotate once on its axis is called a
 - 1 day
 - 2 week
 - 3 month
 - 4 year
- 4 When we look at the Moon, the light we see comes from
 - 1 the Moon
 - 2 the Earth
 - 3 the Sun
 - 4 faraway stars
- 5 The major force that keeps the Earth in orbit around the Sun is
 - 1 rotation
 - 2 gravity
 - 3 revolution
 - 4 elliptical motion
- 6 A solar eclipse occurs when
 - 1 the Earth's shadow falls on the Moon
 - 2 the Earth's shadow falls on the Sun
 - 3 the Moon's shadow falls on the Earth
 - 4 the Moon's shadow falls on the Sun
- 7 Stars are
 - 1 the same as asteroids
 - 2 huge balls of hot gases
 - 3 in orbit around the Sun
 - 4 in elliptical orbits around planets

Test Tip

Eliminate answers that are obviously wrong. You know that the Earth is not the planet closest to the Sun, so you can eliminate choice 3 for question 1.



Content Clue

Neither the Moon nor the Earth generates its own light.

Practice

The Interaction of Air, Land, and Water

Each question is followed by four choices. Mark the choice that is the best answer.

- 1 Sedimentary rock is formed by
 - 1 erosion and deposition
 - 2 heat and pressure
 - 3 melting and solidification
 - 4 evaporation and condensation
- 2 The layer of the atmosphere in which most weather occurs is the
 - 1 troposphere
 - 2 stratosphere
 - 3 mesosphere
 - 4 ionosphere
- 3 The gas that makes up most of the Earth's atmosphere is
 - 1 oxygen
 - 2 hydrogen
 - 3 nitrogen
 - 4 carbon dioxide
- 4 The energy that causes the Earth's plates to move comes from
 - 1 the Sun
 - 2 inside the Earth
 - 3 the water cycle
 - 4 the rock cycle
- 5 Two of the Earth's plates slipping past each other at a transform fault boundary can cause
 - 1 a volcanic eruption
 - 2 an earthquake
 - 3 a subduction zone
 - 4 a convergent zone
- 6 Molecules of water on the Earth
 - 1 go to the bottom of the ocean and stay there forever
 - 2 evaporate and end up in outer space
 - 3 cycle over and over again through the Earth's surface, organisms, and atmosphere
 - 4 freeze into the polar ice caps and stay there forever
- 7 The process in which rocks change as they break down, wear away, get compressed, melt, or cool is called
 - 1 erosion
 - 2 deposition
 - 3 the rock cycle
 - 4 volcanism



Content Clues

Sediment is rock, sand, or dirt carried by wind, water, or ice to a new place.

The prefix *tropo-* means "turning" or "changing." *Stratus* is a Latin root meaning "spread out," and *meso* comes from Latin for "middle."

Test Tip

Make sure you know what the question is asking. Where are the plates that move, and what causes them to move?



Content Clue

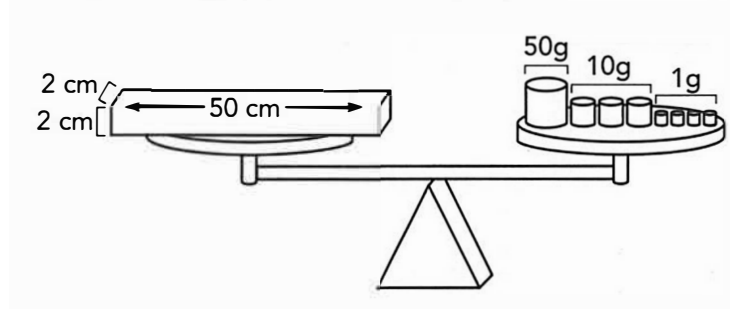
The San Andreas Fault in California is the boundary for two **plates** that sometimes slip past each other.

Practice

Physical Properties of Matter

Each question is followed by four choices. Mark the choice that is the best answer.

- 1 Study the diagram. What is the density of the block of wood?



- 1 0.42 g/cm^3 3 2.38 g/cm^3
2 0.84 g/cm^3 4 42 g/cm^3
- 2 All matter is made of particles called
1 cells 3 atoms
2 element 4 photons
- 3 Which of the following is a chemical change?
1 sugar dissolving in water
2 wood burning in a fireplace
3 magnetizing a steel screwdriver
4 boiling water on a stove
- 4 The molecules in liquid water _____ than the molecules in ice.
1 move faster 3 have more mass
2 move more slowly 4 have less mass
- 5 The noble gases helium, neon, argon, krypton, xenon, and radon
1 react easily with water
2 burn brightly when heated in air
3 explode when put in water
4 react only under extreme conditions
- 6 Oxygen is
1 an element 3 a mixture
2 a compound 4 a solution



Content Clue

Density = mass/volume.
Find the volume of a block by multiplying length times width times height.

Test Tip

Read carefully! Question 2 is asking for the name of the particles that make up *all* matter, not just living things.



Content Clue

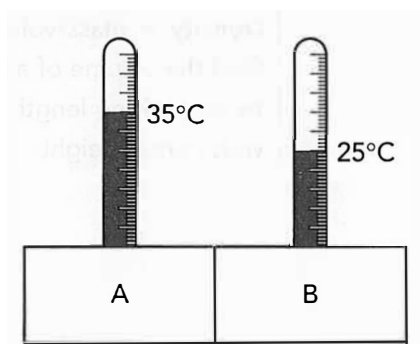
A **chemical change** produces a new substance.

Practice

Forms of Energy

Each question is followed by four choices. Mark the choice that is the best answer.

Use the diagram to answer Questions 1 and 2.



- 1 Heat will move
 - 1 by convection from Block A to Block B
 - 2 by convection from Block B to Block A
 - 3 by conduction from Block A to Block B
 - 4 by conduction from Block B to Block A
- 2 The transfer of heat between Blocks A and B will stop when
 - 1 Block B reaches 35°C
 - 2 Block A reaches 25°C
 - 3 Blocks A and B reach the same temperature
 - 4 Blocks A and B lose all their heat
- 3 Refraction occurs when
 - 1 light bounces off a surface
 - 2 light moves from one medium to another, bending
 - 3 light is absorbed by an object
 - 4 some wavelengths of light are absorbed by an object while others are reflected
- 4 Which energy conversion is represented by a lighted incandescent bulb?
 - 1 electrical energy is changed to chemical energy
 - 2 electrical energy is changed to light and heat
 - 3 chemical energy is changed to light and heat
 - 4 chemical energy is changed to electrical energy



Content Clue

Convection is the process that moves heat through liquids and gases. It does not move heat through solids.

Test Tip

Think about situations that apply to the question. When you look in a mirror, you see your **reflection**. Reflection, not **refraction**, occurs when light bounces off a surface, so you can eliminate choice 1 in question 3.



Content Clue

To turn on a light, you have to switch on the electricity. The energy that goes into the light bulb is electrical energy.

Practice

Forces and Motion

Each question is followed by four choices. Mark the choice that is the best answer.

- 1 An object's motion is the result of
 - 1 friction and inertia
 - 2 inertia and gravity
 - 3 gravity and speed
 - 4 all the forces acting on the object

- 2 Mary is standing on a train moving east at 10 km per hour. Alicia is sitting on a train that passes in the opposite direction at 30 km per hour. From Mary's point of view, how fast is Alicia moving?
 - 1 10 km per hour
 - 2 20 km per hour
 - 3 30 km per hour
 - 4 40 km per hour

- 3 An electromagnet works because
 - 1 an electric current produces a magnetic field
 - 2 a magnetic field produces an electric current
 - 3 an electric current produces friction
 - 4 a magnetic field produces friction

- 4 Why does the Earth exert a greater gravitational pull on the Moon than the Sun does?
 - 1 The Earth is smaller than the Sun.
 - 2 The Earth is larger than the Sun.
 - 3 The Moon is closer to the Sun.
 - 4 The Moon is closer to the Earth.

- 5 A ball is rolling in a straight line on level ground. It slows down and stops. What force stops it?
 - 1 gravity
 - 2 friction
 - 3 inertia
 - 4 centripetal force

- 6 When you lift a load, the resistance force is
 - 1 magnetism
 - 2 inertia
 - 3 electricity
 - 4 gravity



Content Clue

An object at rest tends to stay at rest and an object in **motion** tends to stay in motion in a straight line until an outside **force** acts on it.



Test Tip

From Mary's point of view, Alicia is moving $[10 - (-30)]$ km per hr.

Test Tip

Recall facts that help you narrow the choices. Think about what an electromagnet looks like and how you make it work.

Test Tip

Eliminate answers that are obviously wrong. In question 4, the Earth is not larger than the Sun, so choice 2 is wrong. The Moon is not closer to the Sun than it is to the Earth, so choice 3 is wrong. Choices 1 and 4 are both true statements, but only one of them answers the question.