Chapter 21

Conflicting Viewpoints

Conflicting viewpoint questions are based on passages that present hypotheses, viewpoints, or ideas that are mutually exclusive. Mutually exclusive means that the hypotheses or viewpoints cannot both be true, although both of them may be false. Note that questions for these passages do not ask you to choose which hypothesis is correct or which viewpoint you agree with.

Conflicting viewpoints passages usually consist of text, but these passages may also include figures and graphs. Answering conflicting viewpoints questions requires you to use the reading comprehension skills. It also helps to have a working science vocabulary.

The Science Vocabulary List

The Science Reasoning Test does not assume you know much science. However, the definitions in the list of words below may help you to answer conflicting viewpoints and other questions.

Don't try to memorize the words and meanings. Just scan them several times to familiarize yourself with the words and their meanings. Even if you don't come across these words on the test, you'll be familiar with science terms.

The Science List

absorption process by which end products of digestion move from the small intestine into the blood

acid a compound that dissociates in water to form hydrogen ions

active transport energy-requiring process that moves materials through a cell membrane

adaptation a characteristic of an organism that enables it to survive

aerobic respiration an energy-releasing process of cells that requires oxygen

allergen a foreign substance that causes an allergic reaction

allergy overreaction of the immune system to a foreign substance

amino acid the organic building unit of polypeptides and proteins

anaerobic respiration an energy-releasing process that does not require oxygen

antibiotic a substance produced by certain organisms that prevents the growth and multiplication of microorganisms

antibody a substance produced by the body that counteracts an antigen

antigen a foreign protein that stimulates the body to form antibodies

aorta the largest artery of the body; carries oxygenated blood from the left ventricle of the heart to most body organs

atom an atom has a nucleus that contains neutrons (neutral charge) and protons (positive charge); electrons (negative charge) move around the nucleus

atomic number the number of protons in the nucleus of an atom of an element

autonomic nervous system the branch of the nervous system that regulates certain internal responses

base a compound that dissociates in water to form hydroxide ions

biome a large climate region composed of a group of ecosystems

calorie the amount of heat needed to raise the temperature of one gram of water one degree Celsius

carbohydrate an organic compound that contains carbon, hydrogen, and oxygen; includes sugars, starches, glycogen, and cellulose

catalyst a substance that changes (usually speeds up) the rate of a chemical reaction without itself being permanently changed

cell membrane the living outer layer of a cell through which substances pass into and out of the cell; also called the plasma membrane

cellular respiration the reactions within a cell that release and store energy

cerebellum the part of the human brain, located behind and below the cerebrum, that controls muscular coordination

cerebrum the largest part of the human brain; it is involved in sensation, memory, voluntary action, and intelligence

chemical bond the force of attraction that holds atoms together and stores chemical energy

chemical reaction any process that results in the production of different substances with new properties

chlorophyll a complex green pigment that captures light energy, for use in photosynthesis

chromosome a structure, composed primarily of DNA, that contains the genes

commensalism a symbiotic relationship in which one organism benefits and the other is not harmed

compound two or more elements combined chemically in definite proportions by weight

cytoplasm most of the cellular material located between the nucleus and the cell membrane

dendrite an extension of the cell body of a nerve cell that forms a synapse with an adjoining nerve cell

density mass per unit of volume

differentiation the transformation of embryonic cells into the specialized cells of different tissues

diffusion the movement of molecules from a region of greater concentration to a region of lesser concentration

digestion a chemical process that changes complex food molecules into simple food molecules

diploid number the normal, or species, number of chromosomes characteristic of the body cells of an organism; it is usually designated as $2n$

DNA (deoxyribonucleic acid) the hereditary material in cells

dominant trait a hereditary trait that shows itself when its form of its gene is present

ecology the study of the relationships between organisms and their environment

element a substance that cannot be chemically changed into a simpler substance; all atoms of an element have the same number of protons

embryo an organism in the early stages of growth and differentiation

enzyme an organic catalyst that lowers the activation energy of a reaction, thus speeding up the reaction

eukaryote any cell or organism that has a membrane enclosing its genetic material

evolution change over time

excretion the removal of metabolic wastes from cells and from body fluids

fission division of a parent cell into two or more daughter cells

fungus (*plural,* **fungi**) an organism, sometimes parasitic, often saprophytic—living off the nutrients in dead organisms; examples are molds, mildews, and mushrooms

gas a substance that takes the shape and fills the volume of its container

gene the portion of a chromosome that carries the genetic information for a specific trait

half-life the time required for half the atoms in a radioactive specimen to change to stable end products

histamine a chemical compound formed by cells in response to certain antigens; produces allergy symptoms

homeostasis the tendency of a living system (organism) to maintain the stability of its internal environment

hydrolysis a reaction in which a large complex molecule reacts with water to form two simpler molecules

immunity the ability of the body to combat disease-causing organisms

imprinting a behavior pattern exhibited by certain animals in response to a stimulus received early in life

inorganic relating to substances that were never alive; or, relating to compounds that lack carbon and hydrogen

invertebrate an animal without a backbone

kinetic energy the energy of motion

lipid any fat or oil; a fat-soluble organic compound composed of fatty acid molecules and glycerol molecules

liquid a substance that takes the shape of the vessel that contains it but does not necessarily fill its volume

lymph nodes (lymph glands) small structures located along the lymph vessels that help protect the body by producing some white blood cells and filtering out bacteria

malleable the ability of a metal to have its shape permanently changed by applying a force, e.g., hammering

marsupial a pouched mammal

mass the measure of the amount of matter in an object; the mass of an object remains the same regardless of the force of gravity

medulla the part of the brain stem, connecting the brain to the spinal cord, that controls involuntary activities such as breathing and heartbeat

meiosis a cell division process that reduces the diploid number ($2n$) of chromosomes to the haploid, or monoploid, or number (n)

metabolism the sum of the building-up and tearing-down reactions that occur in cells

mitosis the cell division process that duplicates nuclear material (chromosomes) and distributes the material equally between daughter cells

molecule the smallest unit of an element or a compound, two or more atoms covalently bonded

mutualism a symbiotic relationship in which both species benefit

Newton's Laws of Motion:

First A body will stay in its present state of rest or motion until acted upon by an outside force.

Second The change in acceleration of a body is proportional to the force applied.

Third For every action there is an equal and opposite reaction.

nucleic acids DNA and RNA (composed of nucleotides); they both control heredity and protein synthesis

nucleus the cell organelle that controls the cell's activities and contains DNA

nutrients molecules that provide energy and/or raw materials for growth, such as proteins, carbohydrates, fats, water, and vitamins

organ several tissues that work together to perform a function

organic relating to compounds that contain carbon and hydrogen

osmosis the movement of water molecules through a semipermeable membrane from a region of greater concentration to a region of lesser concentration

ovary the egg-producing female reproductive organ of plants or animals

ovule a reproductive structure in seed plants; after fertilization, the ovule develops into a seed

oxidation the chemical union of oxygen with a substance; a loss of electrons

parasitism a symbiotic relationship in which one organism (the parasite) benefits and the other (the host) is harmed

pepsin a protein-splitting enzyme in gastric juice

periodic event an event that occurs at regular time intervals

permeability the extent to which a membrane allows different molecules to pass through it

pH a measure of the acidity of a solution; a pH of 7 is neutral, less than 7 is acidic, and greater than 7 is basic

phagocyte a white blood cell that engulfs and ingests foreign matter

phloem tissue in plants that conducts food

photosynthesis the process in which energy is used to form carbohydrate and oxygen from carbon dioxide and water

pistil the female part of a flower; contains the ovary, style, and stigma

plasma the liquid portion of blood; contains water and dissolved materials

progesterone a hormone that builds up the lining of the uterus and stimulates the growth of blood vessels in the uterus

prokaryote any cell that lacks a membrane enclosing its genetic material

protein a complex organic molecule composed of a chain of amino acids

pulmonary circulation the circulation of the blood through the lungs and back to the heart

radioactive refers to elements that emit particles and radiation during the spontaneous disintegration of their nuclei

recessive trait a hereditary trait that does not appear in an individual if the dominant form of the gene is present

reflection occurs when light bounces off a surface; when light is reflected from a flat mirror, the angle of *incidence* (light striking the mirror) equals the angle of *reflection* (light leaving the mirror)

reproduction the life activity by which organisms produce offspring

respiration (cellular) the process in which carbohydrates react with oxygen, which releases energy and produces water and carbon dioxide

RNA (ribonucleic acid) a single chain of nucleotides patterned from a DNA template

saprophyte an organism that obtains food by absorbing organic matter from dead or decaying organisms

seed a ripened ovule; contains an embryo plant and stored food

semicircular canals structures located in each inner ear that detect changes in body movement and help to maintain balance

solid matter that has a definite shape and volume

solution a homogeneous mixture formed when one substance dissolves in another

solvent a substance in which a solute dissolves to form a solution

spore an asexual cell that can withstand unfavorable conditions and is capable of producing a new organism

stamen the male reproductive organ of a flower; consists of the filament and the anther, which produces pollen grains

stimulus any change in an organism's internal or external environment

symbiosis a permanent relationship between two different organisms living together; one organism lives either on, in, or near the other

synapse the space between the end brush of one neuron and the cell body of another neuron across which a nerve impulse (signal) passes

systemic circulation the circulation of the blood through all parts of the body except the lungs

taiga the land biome south of the tundra, which is characterized by coniferous forests

thorax in insects, the region of the body between the head and abdomen; in humans, the chest region

tissue a group of similar cells that carry out a specialized activity

tropism an automatic response of a plant or part of a plant to an environmental stimulus such as sunlight or gravity

tundra the land biome located north of the taiga biome, which is characterized by permanently frozen subsoil

umbilical cord a structure in mammals that connects a fetus with a placenta

uterus a muscular organ in female mammals in which an embryo develops

vertebra (*plural,* **vertebrae**) one of the bones of the spinal column

vertebrate an animal with a backbone

virus an infectious particle showing some characteristics of life that survives only as a parasite in a host cell

viscous describes a material that flows slowly

vitamin an organic nutrient that usually cannot be manufactured by the body; most function to assist enzymes

water cycle the movement of water from the atmosphere to the ground, through organisms, and back to the atmosphere

weight the measure of the gravitational force that attracts an object; the weight of an object changes as the force of gravity changes

xylem water-conducting tissue in plants

yolk stored food material in an egg cell

zygote a fertilized egg cell

Reading Conflicting Viewpoints Passages

Use the same four steps you have used for other types of passages. Include these four questions in Step 1.

What is the fundamental issue?
What is each scientist's position?
What points does each scientist use to support his or her position?
What flaws are there in each scientist's position?

Here is a conflicting viewpoints passage. This section shows how to use the four steps to answer the questions.