



# Science

90 Minutes, 1 section of approximately 34 questions

The primary focus of the Science test is the measurement of essential thinking skills (analysis, evaluation, and inference) applied in scientific context. The questions will contain a combination of graphics, charts, and text. The questions will be in multiple choice, fill-in the-blank, drop-down, drag-and-drop, and hot-spot formats. The answers to the questions are always supplied in the passage or graphic materials. You need a general knowledge of scientific principles and strong critical thinking skill to pass the Science test.

Areas covered on the test:

- 40% of the questions cover Life Science: Pg. 518-534
- 40% of the questions cover Physical Science: Pg. 552-564
- 20% of the questions cover Earth and Space Science: Pg. 538-548



## Top things you need to know for the GED **Science** Test

### 1. **DNA:** Know the structure of DNA and its function

- DNA is the material that carries all the information about how a living thing will look and function. For instance, DNA in humans determines such things as what color the eyes are and how the lungs work. Each piece of information is carried on a different section of the DNA. These sections are called genes. DNA is short for deoxyribonucleic acid.
- When DNA works correctly, it helps keep the body functioning properly. DNA helps cells to make the substances called proteins, which the cells need to live. DNA also allows living things to reproduce. The genes in DNA pass along physical traits from parents to children. Sometimes there are mistakes in DNA. These mistakes are called mutations. They can cause diseases and other problems.

### 2. **11 Body Systems:** Know the functions and major organs of the body systems

- **Circulatory system:** Circulates blood around the body via the heart, arteries and veins, delivering oxygen and nutrients to organs and cells and carrying their waste products away. Keeps the body's temperature in a safe range.
- **Digestive system and excretory system:** System to absorb nutrients and remove waste via the gastrointestinal tract, including the mouth, esophagus, stomach and intestines. Eliminates waste from the body.
- **Endocrine system:** Influences the function of the body using hormones.
- **Integumentary system / exocrine system:** Skin, hair, nails, sweat and other exocrine glands.



- Immune system and lymphatic system: Defend the body against pathogens that may endanger the body. The systems comprising a network of lymphatic vessels that carry a clear fluid called lymph.
- Muscular system: Enables the body to move using muscles.
- Nervous system: Collects and processes information from the senses via nerves and the brain and tells the muscles to contract to cause physical actions.
- Renal system and urinary system: The system where the kidneys filter blood to produce urine.
- Reproductive system: The sex organs required for the production of offspring.
- Respiratory system: Brings air into and out of the lungs to absorb oxygen and remove carbon dioxide.
- Skeletal system: Bones maintain the structure of the body and its organs.

3. **Cell Division:** Understand the process of mitosis

- The big idea to remember is that mitosis is the simple duplication of a cell and all of its parts. It duplicates its DNA and the two new cells (daughter cells) have the same pieces and genetic code. Two identical copies come from one original.

4. **Photosynthesis:** Understand the process of photosynthesis

- The process by which green plants and some other organisms use sunlight to synthesize foods from carbon dioxide and water. Photosynthesis in plants generally involves the green pigment chlorophyll and generates oxygen as a byproduct.



5. **Feeding levels:** Know the four feeding levels and the difference between autotrophs and heterotrophs
  - Producer □ Primary Consumers □ Secondary Consumers □ Third-level Consumers
  - Autotrophs are organisms that can produce their own food from the substances available in their surroundings using light (photosynthesis) or chemical energy (chemosynthesis).
  - Heterotrophs cannot synthesize their own food and rely on other organisms — both plants and animals — for nutrition.
6. **Energy Flow:** Understand how several energy flow models work
7. **Water Cycle:** Understand the phases of the water cycle
8. **Ecosystem**
  - An ecosystem consists of a community of organisms together with their physical environment. Ecosystems can be of different sizes and can be marine, aquatic, or terrestrial. Broad categories of terrestrial ecosystems are called biomes.
  - In ecosystems, both matter and energy are conserved. Energy flows through the system—usually from light to heat—while matter is recycled.
  - Ecosystems with higher biodiversity tend to be more stable with greater resistance and resilience in the face of disturbances, disruptive events.
9. **Nitrogen Cycle:** Understand the phases of the nitrogen cycle
  - A continuous series of natural processes by which nitrogen passes successively from air to soil to organisms and back to air or soil involving principally nitrogen fixation, nitrification, decay, and denitrification.



10. **Heredity:** Know the difference between genotype and phenotype and how dominance works

- The passing of genetic traits from parents to offspring.
- Genotype – the set of genes in our DNA which are responsible for a particular trait.
- Phenotype – an organism’s observable characteristics and traits.

11. **Punnett Square:** construct a Punnett square to predict ratios of inherited traits

	R	r
R	RR	Rr
r	Rr	rr

12. **Natural Selection:** The process whereby organisms better adapted to their environment tend to survive and produce more offspring. The four principles of natural selection:

1. Individuals in a population show differences, or variations.
2. Variations can be inherited, meaning that they can be passed down from parent to offspring.
3. Organisms have more offspring than can survive on available resources.
4. Variations that increase reproductive success will have a greater chance of being passed on than those variations that do not increase reproductive success.

13. **Solar System:** Know the planets in our solar system and their basic characteristics

- The Solar System is the Sun and all the objects that orbit around it. The Sun is orbited by planets, asteroids, comets and other things.



- There are eight planets in the Solar System. From closest to farthest from the Sun, they are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.
- The first four planets are called terrestrial planets. They are mostly made of rock and metal, and they are mostly solid.
- The last four planets are called gas giants. This is because they are much larger than other planets and are mostly made of gas.

14. **Plate tectonics:** understand the forces that shift the Earth's crust and the effects of those forces

- Plate tectonics is the theory that Earth's outer shell is divided into several plates that glide over the mantle, the rocky inner layer above the core. The plates act like a hard and rigid shell compared to Earth's mantle.

15. **Earth's Layers:** Describe the components of the four layers of the Earth and define lithosphere

- In order from the exterior to the interior – the crust, the mantle, the outer core, and the inner core.
- The crust is an outer solid layer and is where life as we know it exists with mountains, sea and soil. It is about 3-5 miles (5 – 8 kilometers) thick in the ocean bed.
- Below the crust is a solid relatively cooler portion of the upper mantle that is combined with the crust to make the **lithosphere layer**. The lithosphere is physically distinct from the below-lying layers due to its cool temperatures and typically extends 70-100 km in depth.



- The mantle is the layer of the earth that lies below the crust and is by far the largest layer making up 84% of Earth's volume.
- The outer core is the liquid largely iron layer of the earth that lies below the mantle.
- The inner core is the centermost layer of Earth and is in many ways similar to the outer core. It is also primarily iron and nickel and has a radius of about 1,220 km.

16. **Climate:** Understand the process of climate change and the effects humans have had on it

17. **Atoms:** Know the structure of an atom and how atoms bond together

- Atoms are the basic building blocks of ordinary matter. Atoms can join to form molecules, which in turn form most of the objects around you. Atoms are composed of particles called protons, electrons and neutrons.

18. **Motion:** Understand Newton's laws of motion

- Every object in a state of uniform motion will remain in that state of motion unless an external force acts upon it.
- Force equals mass times acceleration.
- For every action there is an equal and opposite reaction.



19. **Magnetism:** Understand how electricity and magnetism work

- Magnetism is a force that can attract (pull closer) or repel (push away) objects that have a magnetic material like iron inside them (magnetic objects). In simpler words, it is a property of certain substances which pull closer or repel other objects.
- Electricity is a type of energy fueled by the transfer of electrons from positive and negative points within a conductor.

20. **Energy:** Understand conservation of energy and know the various types of potential and kinetic energy

- Kinetic energy is the energy which an object contains because of a motion.
- Potential energy is the stored energy, because it is in a state of rest.

21. **Waves:** Understand how waves work and know the main types of waves.

- A wave is a kind of oscillation (disturbance) that travels through space and matter. Wave motions transfer energy from one place to another.