

Science ISAT: General Science - Biology

Skills: Understand the Cell is the Basis of Form and Function for All Living Things and How Living Things Carry Out Their Life Functions

Students:

RIT Above 240:

- Describes the structures, functions, and processes used by the cell in enabling cellular movement (unicellular organisms)
- Draws conclusions from data relating to osmosis in cells and cell models

Students:

RIT 231-240:

- Describes the major function of a plant's leaves
- Describes the purpose for the germination of pollen and growth of pollen tubes
- Describes the relationship between structure and function at the tissue level of organization
- Gives examples of environmental conditions that may influence the characteristics of an organism
- Evaluates the importance of mutation in producing genetic variation
- Predicts probabilities of inheritance for simple dominant-recessive alleles in monohybrid crosses (Mendelian inheritance)
- Describes incomplete dominance
- Classifies given characteristics as examples of phenotype
- Describes the structures, functions, and processes used by the cell in enabling cellular movement (unicellular organisms)
- Determines the function of a cell based on the presence and abundance of organelles found in that cell
- Describes characteristics of the cell membrane that allow it to regulate import and export of cellular materials
- Identifies the mitochondrion when given its function within the cell
- Describes the function of the mitochondrion within the cell
- Identifies the ribosome when given its function within the cell
- Describes the makeup of cytoplasm
- Analyzes the structures, functions, and processes used in cellular reproduction
- Recognizes that in mitosis, the daughter cells produced contain the same number of chromosomes as the parent cell (both parent and daughter cells are diploid)
- Describes how homologous chromosomes are separated during meiosis, to produce sex cells containing half as many chromosomes as a somatic cell
- Relates errors in meiosis to disorders caused by nondisjunction (e.g., Klinefelter's syndrome)

Students:

RIT 221-230:

Understands that a plant's roots generally do not produce food via photosynthesis

- Recognizes that the ovary of a plant will develop into a fruit
- Recognizes that seeds contain embryos
- Describes the structure and specialization of function of the cells and tissues found within a typical plant leaf
- Describes transpiration in plants
- Describes the function of tissues within the respiratory system
- Defines neuron
- Recognizes that replication is the cellular process in which DNA is copied
- Classifies examples of mutations as inversions, deletions, substitutions and point mutations
- Describes patterns of inheritance seen for single gene traits
- Determines the parents involved in a monohybrid cross, given the outcome of that cross and the genotype and/or phenotype of the other parent
- Predicts patterns of inheritance for simple-dominant recessive alleles in dihybrid crosses (Mendelian inheritance)
- Predicts probabilities of inheritance for sex-linked alleles
- Describes the unique features of viruses that allow them to be classified as living or non-living at different times
- Describes the idea that cells of multicellular organisms have specialized functions
- Analyzes the structures, functions, and processes used by the cell in information feedback
- Describes ways in which materials enter the cell
- Compares features of plant and animal cells
- Compares plant and animal cells in terms of the organelles found in each
- Describes the function of the ribosome
- Describes the functions of the nucleus within the cell
- Identifies the chromosomes when given their function within the cell
- Identifies the cell membrane when given its function within the cell
- Describes the composition of plant cell walls
- Describes how homologous chromosomes are separated during meiosis, to produce sex cells containing half as many chromosomes as a somatic cell
- Describes how sex cells are produced (meiosis)
- Defines homeostasis

Science ISAT: General Science - Biology

Skills: Understand the Cell is the Basis of Form and Function for All Living Things and How Living Things Carry Out Their Life Functions

Students:

RIT 211-220:

- Recognizes that the function of a plant's stem is to carry water, minerals, and food to other parts of the plant
- Identifies the external structures that perform particular functions in animals
- Recognizes that photosynthesis/energy capture occurs within a plant's leaves
- Describes the structure and function of the organs making up a flower (e.g., stigma, anthers, petals, pistil)
- Sequences the levels of organization in an organism to relate the parts to each other and to the whole
- Describes the relationship between structure and function at the organ's level of organization
- Describes the organization seen within the plant reproductive system
- Recognizes structures of the respiratory system
- Describes the structure and function of the cells and tissues which make up the circulatory system
- Describes the structure and function of a plant's reproductive system
- Describes the function of the digestive system
- Recognizes that the nervous system interacts with other systems of the body
- Identifies examples of inherited traits
- Defines mutation
- Predicts patterns of inheritance for simple-dominant recessive alleles in dihybrid crosses (Mendelian inheritance)
- Explains that sex chromosomes determine the gender of a human (two copies of the X chromosome produce a female, one copy of X plus one copy of Y produce a male)
- Explains that the sex of a child is determined by the presence or absence of a Y chromosome in the sperm
- Defines fertilization
- Recognizes that all single cells have differences which allow specialization of function
- Recognizes that a microscope must be used to observe something as small as a cell
- Describes the cell theory
- Recognizes that cells are the fundamental units and building blocks of life (the cell is the smallest unit which can reproduce itself)
- Gives examples of cells which perform specialized functions
- Contrasts active transport and osmosis
- Describes features common to all cells
- Compares plant and animal cells in terms of the organelles found in each
- Uses analogies to represent the function of organelle within the cell
- Differentiates between the functions of the nucleus and the nucleolus
- Identifies the cell membrane when given its function within the cell
- Identifies the plant cell wall when given its function within the cell
- Identifies the chloroplast when given its function within the cell
- Identifies the chloroplast in a cell diagram when given its function only
- Describes the process of embryo growth and differentiation
- Compares the process of meiosis with the process of mitosis
- Describes how somatic cells are produced (mitosis)
- Recognizes that the outcome of mitosis is production of two genetically identical daughter cells
- Describes how sex cells are produced (meiosis)

Students:

RIT 201-210:

- Recognizes that the function of a plant's stem is to carry water, minerals, and food to other parts of the plant
- Identifies the external structures that perform particular functions in animals
- Explains that the major functions of a plant's root are to carry absorbed water and minerals and to provide support
- Infers that a plant may not be able to live if its roots cannot absorb minerals
- Relates structures involved in embryonic and fetal development to their functions
- Describes the structure and function of the organs making up a flower (e.g., stigma, anthers, petals, pistil)
- Recognizes that the function of a plant leaf is to take in light and air
- Describes the structure and function of the respiratory system
- Describes the structure and function of the human reproductive system
- Describes the structure and function of the muscular system
- Describes the function of skeletal muscle
- Recognizes that the skeletal system's functions include production of red blood cells, support, protection of organs and movement
- Orders the organs of the digestive system to show how food travels within it
- Recognizes the components which make up the digestive system
- Traces the path that food takes as it is digested
- Describes the events that take place as food is digested
- Describes the structure and function of the excretory system
- Describes the structure and function of the nervous system (large scale)
- Recognizes that egg and sperm unite to produce a new individual
- Describes the idea that in complex, multi-cellular organisms, cells have specialized functions, communicate with each other, and are mutually dependent

Science ISAT: General Science - Biology

Skills: Understand the Cell is the Basis of Form and Function for All Living Things and How Living Things Carry Out Their Life Functions

- Identifies the nucleus when given its function within the cell
- Identifies the nucleus in a cell diagram when given its name only
- Identifies DNA when given its function within the cell
- Identifies the cell membrane in a cell diagram when given its function only
- Identifies the cell membrane in a cell diagram when given its name only

Students:

RIT 191-200:

- Recognizes that a flower will turn into the fruit and produce seeds
- Describes seed dispersal in plants
- Describes the basic structures which make up a seed (e.g., seed coat)
- Describes the function of the backbone in vertebrates
- Recognizes that one function of a plant root is support
- Predicts how a change to one organ or system will affect another organ or system
- Describes the function of the circulatory system
- Recognizes the components which make up the digestive system
- Describes how things feel to the touch
- Recognizes that all living organisms are made up of cells
- Explains why cells are called "building blocks"
- Infers that a cell is a plant cell because

Students:

RIT 181-190:

- Identifies characteristics of organisms
- Describes functions of structures of animals
- Describes the large scale external anatomy of humans
- Explains that the function of a plant's root is to absorb water
- Recognizes that the heart acts as a pump
- Describes the structure and basic functions (movement and support) of the skeletal system
- Describes characteristics of each of the human senses
- Describes how tools enhance the senses
- Predicts how life forms will maintain homeostasis through particular changes

Students:

RIT 171-180:

- Identifies external parts of plants
- Describes the large scale external anatomy of humans
- Describes functions of specific organs

Students:

RIT Below 171: • *No Skills Listed*