U-Pick Projects: Biology Basics

Name _____

Directions: Pick projects that will earn you a minimum of 12 points. Shade in the boxes to show the projects you complete. You may create electronic versions that can be shared with your teacher or complete them with materials you have available at home. You may choose up to 2 more to earn extra credit equal to the number of points the boxes are worth.

Pts	CELLS	CLASSIFICATION	BODY SYSTEMS	VOCABULARY
1	Draw a picture of a plant OR animal cell. Label the organelles with the names of each and their functions.	Create a Venn Diagram to show the similarities and differences between vertebrates and invertebrates. You need a total of 5 comparisons.	Create a comic strip or short story to explain the functions for one of the human body systems and how it works to keep us healthy.	Create a set of flashcards for 10 vocabulary terms from the Biology unit. Each flashcard should have the term listed on the front along with a picture clue and a definition on the back.
2	Create a model of a plant or animal cell using materials you have available. Label the organelles with the names of each and their functions.	Create a display with at least three examples for each of the five groups of vertebrates. Add descriptions to explain how they are classified.	Create a "Wanted" poster for an organ. The poster must include the function of the organ, its main body system, and explain how it is connected to the other body systems.	Make a "word web" or display using 10 vocab words from the Biology unit that shows how the terms are connected. You need to include a brief definition for each and draw arrows to show the connections
3	Draw pictures of different types of cells. Label each picture and describe its function(s).	Create a display with at least three examples for each of group of invertebrates. Add descriptions to explain how they are classified.	Research a disease or genetic disorder. Create an informational booklet to share how it affects each of the human body systems.	Create a crossword puzzle using at least 15 terms from the Biology unit vocabulary. You must provide the clues and an answer key.
4	Develop an analogy that shows how the parts of a cell are related to a real-world example, i.e. how a classroom, factory, or city compares to a cell. Your project should include at least 8 organelles.	Find a picture of a local habitat that includes at least 10 invertebrates and vertebrates. Label the animals to show how they are classified.	Develop an analogy that shows how the human body and its systems compare a real-world example, i.e. how a human body compares to a school or city. Your project should include at least 8 organelles.	Create 10 questions using the Biology unit vocabulary that your teacher could use for online games or tests. Each question must have 4 answer choices with the correct one identified.

Total Points Earned = _____ _____

Cells & Organelles - Also available on Quizlet

- Cell - the smallest unit of an organism that can perform life functions; may be
- Cell Membrane - All cells have a cell membrane. In cells with cell walls, the cell membrane is located just inside the cell wall. In other cells, the cell membrane forms the outside boundary that separates the cell from its environment.
- Cell Wall - Rigid layer of non-living material that surrounds the cells of plants and other organisms. Only in plant cells. Gives plants it's shape. It helps protect and support the cell.
- Chloroplasts - Captures energy from sunlight and uses it to produce food for the cell.
- Cytoplasm - The region between the cell membrane and the nucleus.
- DNA - Deoxyribonucleic acid-a genetic material that provides instructions for all cell processes.
- Endoplasmic Reticulum - Passageways that carry proteins and other materials from one part of the cell to another.
- Eukaryote - A multicellular organism made up of cells that contain their DNA in a nucleus.
- Golgi Bodies - Receive proteins and other newly formed materials and distribute them to other parts of the cell.
- Lysosomes - Small, round structures in cells that break stuff down.
- Mitochondria - "Powerhouses" of the cell because they produce most of the energy the cell needs to carry out its functions. Rod shaped organelles.
- Nucleus - The cell's control center, directing all of the cell's activities.
- Organelles - Tiny cell structures that carry out specific functions within the cell.
- Prokaryote - A single celled organism that does not have a nucleus or membrane-bound organelles. DNA is in the cytoplasm.
- Ribosomes - Small structures that function as factories to produce proteins.
- Vacuoles - Storage area of a cell.

Body Systems – Also available on Quizlet

- Cell - the smallest unit of an organism that can perform life functions; may be specialized such as nerve, blood, or bone cells
- Circulatory system - the body system responsible for carrying materials through out the body; major organs include heart, blood vessels
- Digestive system - the body system that takes in, breaks down, and absorbs nutrients that are necessary for growth and maintenance; major organs include mouth, esophagus, stomach, small intestines, large intestines, rectum/anus
- Digestive system - This system includes the stomach, large and small intestines, live, gall bladder, pancreas and esophagus.
- Endocrine system - This system includes the thyroid, pituitary gland, adrenal glands, pancreas, ovaries, testis, and parathyroid.
- Excretory system - the body system that helps rid the body of wastes, toxins, and excess water or nutrients; major organs include kidneys, ureters, bladder, urethra
- Excretory system - This system includes the skin, kidneys and ureters.
- Immune system - parts of the body that act together to protect the body against infection or disease; is responsible for distinguishing between different kinds of pathogens and reacting to each according to its type
- immune system - This system includes the skin, white blood cells, and lymph nodes.
- Integumentary system - the body system that covers and protects the body; major organ is the skin
- Muscular system - the body system that supports the body and enables it to move; major organs include skeletal muscles, smooth muscles, cardiac muscles
- Nervous system - the body system of specialized cells that carry messages throughout the body; directs behavior, movement, and processes of the body; major organs include brain, spinal cord, peripheral nerves
- Nervous system - This system includes the brain and spinal cord
- Organ systems - a group of two or more organs working together for a specific job; e.g. the digestive system
- Organs - a structure made up of different types if tissues that work together to do a specific job; e.g. the heart is made of muscle and connective tissue

- Respiratory system - the body system in which oxygen is brought into the body and carbon dioxide is released; major organs include nose, trachea, bronchi, lungs, diaphragm
- Respiratory system - This system includes the nose, pharynx, trachea, and lungs.
- Skeletal system - the body system that protect and supports the body; has five functions - provides shape and support, allows movement, protects tissues and organs, stores certain materials, produces blood cells; major organs include the bones
- Tissues - similar type cells that perform the same function (e.g. all muscle tissue contracts); four types - nerve, muscle, epithelial, connective

Animals & Classification- Also available on Quizlet

- Adaptations - Structures or behaviors that allow animals to perform their functions and survive in their habitats
- Amphibians - Ectothermic vertebrates that spends half of its life in water and the other half on land; includes frogs, toads, and salamanders
- Animals - Multicellular organisms that must eat other organisms for food, includes humans, fish, and insects
- Aquatic - Arthropods that live in water or need water for part of their life cycle, such as dragonfly nymphs or mosquito larvae
- Arachnids - Includes organisms with 2 body segments and 4 pairs of legs, such as spiders and ticks
- Arthropods - Includes animals with "jointed" appendages, such as spiders, insects, crustaceans, millipedes, and centipedes
- Bilateral - Type of symmetry in which only 1 line of can be drawn to create two mirror images, such as humans and butterflies
- Birds - Endothermic vertebrates that lay hard-shelled eggs on land, use lungs to breathe, and have feathers
- Bivalves - Mollusks with two shells, such as clams and mussels
- Cells - Basic unit of structure and function in living things
- Cephalopods - Mollusks that have good vision and large brains, such as octopus and squid
- Chilopoda - Includes the centipedes, which have 1 pair of legs per body segment
- Chordate - Phylum that includes vertebrates
- Cnidarians - Organisms with stinging cells, such as jellyfish, hydra, and corals
- Crustaceans - Includes crabs, lobsters, shrimp, and wood lice (pill bugs)
- Diplopoda - Includes the millipedes, which have 2 pairs of legs per body segment
- Echinoderms - Organisms with an endoskeleton and radial symmetry, such as star fish, sea urchins, and sand dollars
- Ectotherm - Another term for a cold-blooded animal whose body temperature changes with its environment
- Endoskeleton - Refers to the internal skeleton found in echinoderms
- Endotherm - Another term for a warm-blooded animal that is able to regulate its own temperature
- Exoskeleton - The outer covering of an insect
- Fish - Ectothermic vertebrates that obtain oxygen through gills; may be bony, jawless, or cartilaginous
- Fungi - Kingdom of organisms that eat decaying matter, such as mushrooms and molds
- Gastropods - Mollusks with a "stomach" foot, such as snails and slugs
- Insects - Includes organisms with 3 body segments and 3 pairs of legs, such as butterflies, grasshoppers, and flies
- Invertebrates - Animals without backbones
- Locomotion - Refers to the way an organism moves
- Mammals - Endothermic vertebrates with skin that is covered in hair or fur and produce milk for their young
- Marsupials - Mammals whose immature offspring complete their development in an external pouch, such as kangaroos and opossums
- Mollusks - Includes gastropods, bivalves, and cephalopods
- Molting - The shedding of an exoskeleton that allows an invertebrate to grow larger
- Monotremes - Egg-laying mammals, such as a platypus
- Organ System - Group of organs that work together to perform a specific function
- Organs - Group of tissues that work together to perform closely related functions.

- Placental - Mammals with young that develop inside the mother and use a placenta to exchange materials; includes humans, deer, and bears
- Plants - Multicellular organisms that use chlorophyll to make food
- Porifera - Asymmetrical organisms that use filter feeder to get food; includes sponges
- Protists - Microscopic organisms that can act like animals and plants, such as algae, amoebas, & protozoans
- Radial - Type of symmetry in which lines can be drawn through a central point into 2 mirror images, such as star fish and sand dollars
- Reptiles - Ectothermic vertebrates with scaly skin, uses lungs to breathe, and lays eggs on land; includes snakes, lizards, and turtles
- Terrestrial - Arthropods that live mainly on land, such as pill bugs and hermit crabs
- Tissues - Groups of cells that perform specific jobs in the body
- Vertebrates - Animals with backbones
- Worms - Group of invertebrates that includes platyhelminthes, annelids, and nematodes