

2022 STAAR Grade 5 Science Rationales

1	Option B is correct	<p>A complete, closed circuit will light the bulb when the switch is closed. A complete circuit is a closed path through which charged electrons (electric current) flow uninterrupted from the negative terminal (-) of a battery through a conductive material, and back again through the positive terminal (+) of the battery. A typical example of a complete circuit includes a source of electrical energy (e.g., battery), a path for the electric current (e.g., copper wire), a device (e.g., a light bulb) to convert the electrical energy to another form.</p> <p>Option C is incorrect The circuit will not light the bulb when the switch is closed because the circuit is open between the battery and the bulb.</p>
		<p>Option D is incorrect The circuit will not light the bulb when the switch is closed because the circuit is open between the battery and the switch.</p>

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3	Option B is correct	Light travels in a straight line to the student's eye.
	Option A is incorrect	Light is not reflected by the tube in this way.
	Option C is incorrect	The light does not travel along a curved path.
	Option D is incorrect	Light travels through the tube—no light is absorbed by the tubes.

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4	Option J is correct	The objects that would float are less dense than water.
	Option F is incorrect	A penny is denser than water.
	Option G is incorrect	A metal spoon is denser than water.
	Option H is incorrect	A metal spoon and a penny are denser than water.

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5	Option C is correct	Grasses are producers, which capture energy from the sun and make food for consumers.
	Option A is incorrect	Grasses do not decompose small organisms.
	Option B is incorrect	Grasses are producers and do not have control over what organisms are in a food chain.
	Option D is incorrect	Grasses are not decomposers, which break down dead material and recycle nutrients.

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8	Option H 4s3.3603.3 2 rm	TjJEMC monAR G#sn yaboumod w 10.02tharvei 10.0 Td(8n)4 0 0 10.C2_9 537.6.4s100Td(daysn)4 0(abouhalEM

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12	Option H is correct	Barracudas are predators of other fish, which are other living elements of the environment.
	Option F is incorrect	Surface ocean currents are nonliving elements of the environment.
	Option G is incorrect	Oil rigs and jetties are nonliving elements of the environment.
	Option J is incorrect	Warm waters are nonliving elements of the environment.

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15	Option C is correct	The difference in foot shape between a hawk and a chicken is due to the way that they obtain food: the hawk grasps live prey, and the chicken eats grain from the ground.
	Option A is incorrect	The difference in foot shape between a hawk and a chicken is not due to the predators that hunt them. Hawks are top predators.
	Option B is incorrect	The difference in foot shape between a hawk and a chicken is not due to the climate in which they live. Both chickens and hawks can live in similar climates.
	Option D is incorrect	The difference in foot shape between a hawk and a chicken is not due to the distance that they can fly. Flight distance is most influenced by wing characteristics.

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16	Option H is correct	Metals conduct thermal energy.
	Option F is incorrect	The mass of an object would not provide evidence that it is a metal.
	Option G is incorrect	All matter can exist in different physical states.
	Option J is incorrect	Metals do not dissolve in water.

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19	Option C is correct	Light is refracted when it passes through the lenses of the microscope.
	Option A is incorrect	Light changes direction when it passes through the lenses of the microscope.
	Option B is incorrect	While light does move in straight lines, this does not cause the light to increase in brightness.
	Option D is incorrect	Moving in straight lines does not prevent light from being reflected.

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20	Option F is correct	Wind and water power are renewable resources. They can be replenished or replaced by nature.
	Option G is incorrect	Coal and natural gas are nonrenewable resources.
	Option H is incorrect	Coal and petroleum are nonrenewable resources.
	Option J is incorrect	Coal, natural gas, and petroleum are nonrenewable resources.

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22	Option F is correct	Food webs provide descriptions of feeding relationships among organisms in a community. An organism identified at the base of an arrow is an organism that is eaten (the food source), while the organism at the point of an arrow is the consumer of that organism. In this food web, both the hawks and snakes eat mice.
	Option G is incorrect	The lizards eat grasshoppers and rabbits eat grasses.
	Option H is incorrect	The mice eat grasses, and the snakes eat mice.
	Option J is incorrect	The grasshoppers eat grasses, and the lizards eat grasshoppers.

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23	Option B is correct	Iron is attracted to magnets.
	Option A is incorrect	Sugar is not attracted to magnets.
	Option C is incorrect	Salt is not attracted to magnets.
	Option D is incorrect	Wheat is not attracted to magnets.

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24	Option F is correct	A power source is needed at Position X to sound the buzzer when Switch K is closed.
	Option G is incorrect	Although insulated wire is a safe way to move electricity from one place to another, a power source is necessary to generate electricity to power the buzzer.
	Option H is incorrect	Adding another bulb will not enable the buzzer to sound when Switch K is closed.
	Option J is incorrect	Another switch is not necessary to sound the buzzer when Switch K is closed.

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26	Option J is correct	Spinning Earth in a circle once models one 24-hour day/night rotation of Earth.
	Option F is incorrect	Moving the moon around Earth once models the lunar cycle, not the 24-hour day/night rotation of Earth.
	Option G is incorrect	Spinning the sun in a circle once does not model the 24-hour day/night rotation of Earth.
	Option H is incorrect	To move Earth around the sun once models the calendar year, not the 24-hour day/night rotation of Earth.

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27	Option B is correct	The palm plant grows in a warm, tropical climate, so the fossil provides evidence that this area in Alaska was once warmer than it is now.
	Option A is incorrect	The palm plant is not an aquatic plant, so the fossil does not provide evidence that this area in Alaska was once covered with an ocean.
	Option C is incorrect	The palm plant does not grow in an arctic climate that would support polar bears, so the fossil does not provide evidence that this area in Alaska was once populated by polar bears.
	Option D is incorrect	The palm plant fossil does not provide evidence that this area in Alaska was changed by earthquakes.

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28	Option F is correct	A canyon is formed by a river.
	Option G is incorrect	A sand dune is not formed by an earthquake; it typically forms because of blowing wind.
	Option H is incorrect	A delta is not formed by the wind; it is formed by water depositing sediment at the mouth of a river.
	Option J is incorrect	A rock formation with layers is formed by cycles of erosion, deposition, compaction, and cementation.

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29	Option A is correct	A fly's missing antenna is not likely an inherited trait that is determined by genes; it is most likely the result of an injury.
	Option B is incorrect	A butterfly's black and yellow stripes are an inherited trait that is determined by genes.
	Option C is incorrect	

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31	Option A is correct	Cooking oil is less dense than water, so the cooking oil floats on the water in the jar.
	Option B is incorrect	Water is denser than cooking oil, sinking to the bottom of the jar.
	Option C is incorrect	Water does not dissolve in cooking oil. The water and oil remain separate in the jar.
	Option D is incorrect	Cooking oil does not dissolve in water.

2022 STAAR Grade 5 Science Rationales

34	Option J is correct	Copper, iron, and tin are metals. Metals conduct thermal energy and electrical energy. They are not soluble in water.
	Option F is incorrect	Copper, iron, and tin are metals. Metals conduct thermal energy. Iron is highly magnetic, and therefore would attract to magnets. Tin has very weak magnetic properties and copper is nonmagnetic.
	Option G is incorrect	Copper, iron, and tin are metals. Metals are not soluble in water. Iron is highly magnetic, and therefore would attract to magnets. Tin has very weak magnetic properties and copper is nonmagnetic.
	Option H is incorrect	Copper, iron, and tin are metals. Metals are <u>not</u> soluble in water.

