GRADE 8 SCIENCE Online Tools Training (OTT) ANSWER KEY 2024-2025

Question 1: Standard Grade 8 Science E.8.10.1

Part A: Select a claim that describes the relationship between wind turbines and human dependency on the use of nonrenewable resources.

Claim

(a) Wind turbines allow humans to become less dependent on nonrenewable resources.

(b) Wind turbines cause humans to become more dependent on nonrenewable resources.

Part B: Select a supporting statement that **best** defends the claim.

Supporting Statement

(a) Wind turbines use a renewable energy resource to generate electricity.

(b) Wind turbines use a nonrenewable energy resource to generate electricity.

Question 2: Standard Grade 8 Science E.8.10.3

In some windy locations, a group of wind turbines may be built near each other. These are known as wind farms. Which pair of statements **best** describes a disadvantage and an advantage of building a wind farm instead of a single wind turbine?

(Practice Hint: Eliminate answer choices by using the Cross-Off tool.)

(a) **Disadvantage:** A wind farm uses more nonrenewable energy than a single wind turbine uses.
Advantage: A wind farm can be built close to towns that need electricity.

(b) **Disadvantage:** A wind farm produces less electricity than a single wind turbine produces.
Advantage: A wind farm can easily be built in locations far from birds.

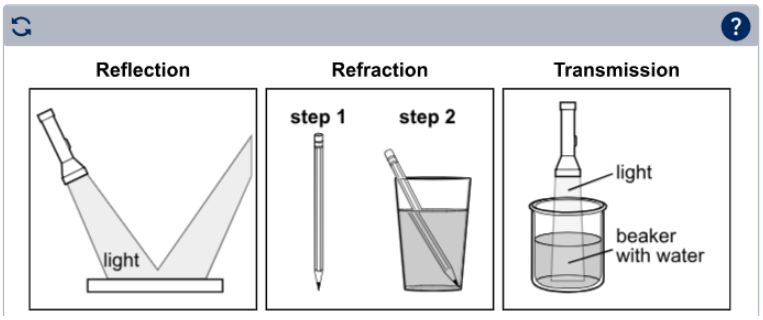
(c) **Disadvantage:** A wind farm is more dangerous to birds than a single wind turbine.
Advantage: A wind farm produces enough sound to keep birds away.

(d) **Disadvantage:** A wind farm produces more noise pollution than a single wind turbine produces.
Advantage: A wind farm produces a greater amount of electricity than a single wind turbine produces.

Question 3: Standard Grade 8 Science P.8.6.3

A student is preparing investigations to demonstrate behaviors of light waves. The diagrams show the setup for each investigation. Drag each investigation setup diagram into the box that labels the behavior it **best** demonstrates.

(Practice Hint: Select and drag the drawings into the correct boxes.)



Question 4: Standard Grade 8 Science L.8.2C.1

a

Label	Identification	Statement
W	gene	A chromosome unravels to form proteins, which then reorganize to form genes.
X	chromosome	
Z	protein	

b

Label	Identification	Statement
W	chromosome	A chromosome is composed of genes, which direct the formation of specific proteins.
X	gene	
Z	protein	

c

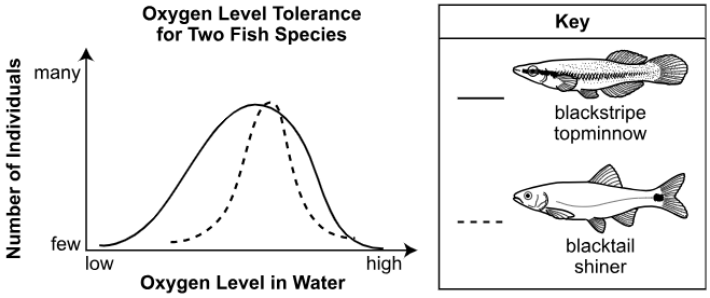
Label	Identification	Statement
W	chromosome	Proteins instruct the organization of genes, which coil to form chromosomes.
X	gene	
Z	protein	

d

Label	Identification	Statement
W	protein	Proteins form by combining sections of chromosomes, which are made of genes.
X	chromosome	
Z	gene	

Question 5: Standard Grade 8 Science L.8.2B.1

The graph shows how two fish species tolerate different oxygen levels in water.



Which argument about fish survival is **best** supported by the evidence shown in the graph?

(a) The blacktail shiner can survive any oxygen level in its environment.

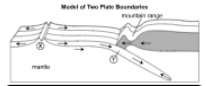
(b) The blackstripe topminnow can survive any oxygen level in its environment.

(c) The blackstripe topminnow is better able to survive a wide range of oxygen levels in its environment than the blacktail shiner.

(d) The blacktail shiner is better able to survive a wide range of oxygen levels in its environment than the blackstripe topminnow.

Question 6: Standard Grade 8 Science E.8.9A.5

A student is developing a model of two tectonic plate boundaries.



(*Practice Hint: Select the "Select to Enlarge" button to view the model. Drag the blue bar to move the model around. Select the X to close the model.*)

The model is incomplete. Which set of information identifies the labels the student should use to complete the model and describes a process shown in the model?

(a) **Label X:** divergent plate boundary
Label Y: convergent plate boundary
Description: New crust is being formed at location X.

(b) **Label X:** convergent plate boundary
Label Y: divergent plate boundary
Description: New crust is being formed at location Y.

(c) **Label X:** divergent plate boundary
Label Y: convergent plate boundary
Description: Crust is being recycled by Earth's mantle at location X.

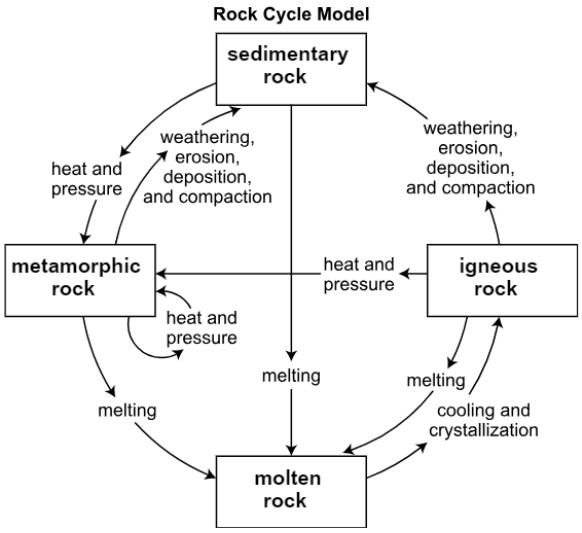
(d) **Label X:** convergent plate boundary
Label Y: divergent plate boundary
Description: Crust is being recycled by Earth's mantle at location Y.

Question 7: Standard Grade 8 Science E.8.7.2

The incomplete model shows the processes involved in the rock cycle.

Part A: Drag the rock types into the correct boxes to complete the model.

(Practice Hint 1: Select the "Select to Respond" button to answer the question. Drag the rock types into the correct position in the model. Select "OK" when you are finished.)



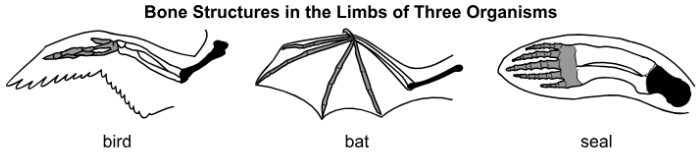
Part B: Use the drop-down menu to identify the rock type that is **best** for the formation of fossils in the fossil record.

(*Practice Hint 2: Select the drop-down arrow to see the list of answer choices. Then, select the answer choice that best completes the statement.*)

Sedimentary rock is best for the formation of fossils in the fossil record.

Question 8: Standard Grade 8 Science L.8.4B.4

The diagram shows bone structures that demonstrate some evolutionary relationships between organisms.



Add checkmarks to the chart to classify the structural/functional similarities between the pair of organisms as analogous and/or homologous. You may make more than one selection in each row.

(Practice Hint: Select the blank spaces next to the organisms to add check marks. Select the arrows to start over.)

Type of Structural Relationship

	Analogous	Homologous
bird and bat	☑	☑
bat and seal	☐	☑

Question 9: Standard Grade 8 Science P.8.6.1

Use the drop-down menus to compare the wavelength and the energy of the two sound waves.

The wavelength of sound wave X is [shorter than] the wavelength of sound wave Y.

Therefore, sound wave X has [more energy than] sound wave Y.

Question 10: Standard Grade 8 Science E.8.7.1

(a) layers 5 and 9

(b) layers 1 and 7

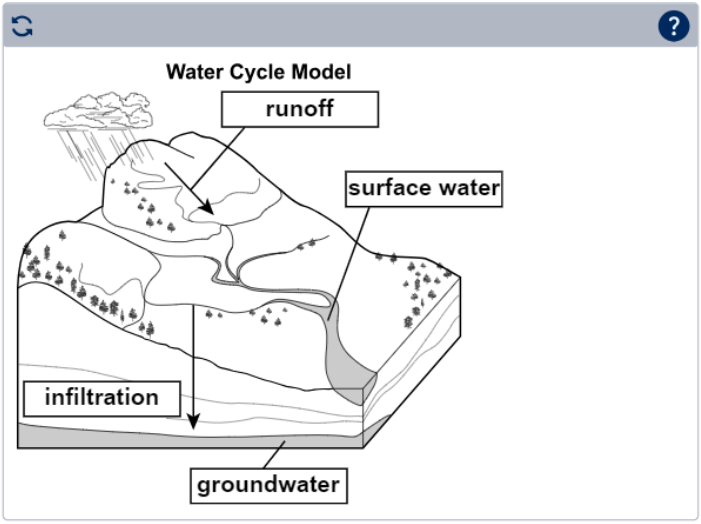
(c) layers 3 and 8

(d) layers 2 and 6

Question 11: Standard Grade 8 Science E.8.9A.7

The incomplete model represents part of the water cycle.

Part A: Drag the labels into the model to identify four parts of the water cycle.



Part B: Use the drop-down menus to describe the relationships between parts of the water cycle.

Precipitation may [run off] to become surface water.
Surface water may [infiltrate] to become groundwater.

Question 12: Standard Grade 8 Science L.8.2A.3

Use the drop-down menus to construct an explanation about the transfer of genetic information during meiosis.

During meiosis, a parent cell first replicates its genetic information and then exchanges sections of DNA before dividing [two times], producing [four haploid] daughter cells that are genetically [different than] the parent cell.

Question 13: Standard Grade 8 Science P.8.6.7

A group of students in a class is researching how cellular telephones transmit sound from one person to another person who is hundreds of miles away. The group presents a step-by-step description to the class.

Cellular Telephone Process

1. The cellular telephone converts sound energy into digital signals.
2. The digital signals are transmitted to a cell tower a few miles away.
3. The cell tower transmits the digital signals to a switching office.
4. The switching office transmits the digital signals to another cell tower hundreds of miles away.
5. The cell tower transmits the digital signals to the telephone of the person receiving the call a few miles away.
6. The receiver telephone converts digital signals into sound.

Which statement **most** accurately describes a step of the cellular telephone transmission process?

(a) In step 1, digital information is converted into mechanical waves.

(b) In step 2, the digital signals are transmitted using electromagnetic waves.

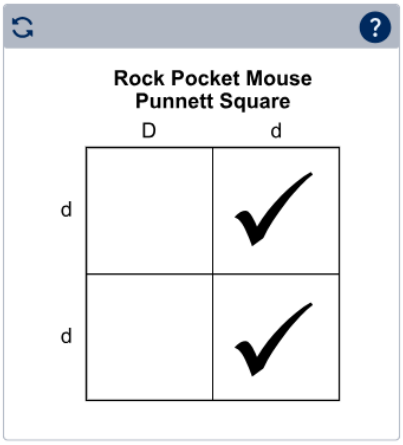
(c) In step 5, the digital signals are transmitted using sound waves.

(d) In step 6, sound waves are converted into electromagnetic waves.

Question 14: Standard Grade 8 Science L.8.2B.3

In rock pocket mice, fur color is mostly controlled by a single gene. In these mice, dark fur (D) is dominant to light fur (d). The Punnett square shows a cross between a rock pocket mouse with dark-colored fur and a rock pocket mouse with light-colored fur.

Part A: In the Punnett square below, select the cell or cells that represent offspring that would be homozygous for light-colored fur.



Question 14, continued

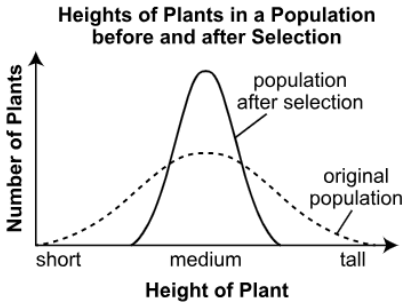
Part B: Type the percentage of rock pocket mice offspring with light-colored fur represented by this cross.

(*Practice Hint: Select the input response box. Use the keyboard to enter a response.*)

Percentage of rock pocket mouse offspring with light-colored fur: 50 %

Question 15: Standard Grade 8 Science L.8.4B.1

The graph shows the distribution of plant heights in an original population and also in the population after natural selection.



The plant population grew in an area with high winds and many organisms that feed on short vegetation. Which statement **best** explains the change in the plant population after selection?

(a) Plants with narrow stems were more likely to survive than plants with wide stems.

(b) Medium-height plants were favored by conditions that harmed tall and short plants.

(c) Ground-feeding organisms favored short plants, resulting in a taller plant population overall.

(d) High winds reduced the survival rate of tall plants, resulting in a greater range of plant heights.

Question 16: Standard Grade 8 Science L.8.2A.4

mitosis

meiosis

sexual reproduction

asexual reproduction

offspring different from parent

offspring the same as parent

Question 17: Standard Grade 8 Science E.8.7.3

Part A: Using the diagram, arrange the fossils in order from youngest to oldest by dragging the labels into the chart.

Part B: The scientist claims that the landscape in the area changed over time. Which statement uses fossil evidence to **best** support the scientist's claim?

(a) The fossils show that the area had little to no water during the observed time.

(b) The fossils show that the area remained covered in water during the observed time.

(c) The fossils show that the area had little water at first but became wetter during the observed time.

(d) The fossils show that the area was covered in water at first but became drier during the observed time.

Question 18: Standard Grade 8 Science L.8.2B.2

A student researching Gregor Mendel recorded the following notes about the scientist.

Notes about Gregor Mendel's Work

- When a yellow pea plant is bred with a green pea plant, the generation 1 offspring are 100% yellow.
- When the generation 1 offspring are bred, the generation 2 offspring are 25% green.
- Mendel described the green pea plant color as "recessive" and the yellow pea plant color as "dominant."

Which statement **best** explains a concept of heredity that is supported by Mendel's findings?

(a) The environment in which plants are grown affects their appearance.

(b) Recessive traits are more likely to be expressed than dominant traits.

(c) The appearance of certain traits is predictable and is controlled by genes.

(d) Crossing pea plants in the wild produces results without observable patterns.

Question 19: Standard Grade 8 Science L.8.2B.4

Selective breeding in plants focuses on desirable characteristics and breeds plants with these characteristics. Corn has been selectively bred to produce crops year after year that yield more ears of corn per plant. If selective breeding is not closely monitored, unintended problems may arise.

Which potential problem is **most likely** to occur if selective breeding of corn plants is practiced in an area for many generations?

(a) The ears of corn that are produced vary so much that buyers decline to purchase the crops.

(b) The corn plants are so similar genetically that entire crops are vulnerable to a rapidly spreading disease.

(c) The stalks of the corn plants become so flexible and vine-like that they spread into other areas as an invasive species.

(d) The corn plants attract so many insects that they must be treated with large amounts of insect-killing chemicals and the corn becomes unusable.

Question 20: Standard Grade 8 Science E.8.10.4

A builder constructs buildings in an area that has long, cold winters. The builder needs a way to keep costs low for owners while keeping each building properly heated. To achieve this goal, the builder decides to use both passive and active solar energy as heating sources.

Drag **two** examples of passive solar energy and **two** examples of active solar energy into the correct side of the chart.

Examples of Solar Energy to Heat Buildings

Passive Solar Energy	Active Solar Energy
Large glass window panes allow light to pass through them and into a room.	Air is forced across coils with heated water and blown into a room.
Clay bricks on the outside of a building absorb and release heat slowly over time.	Heated water is pumped from a container through small tubes beneath the flooring.