Name: _____ Group: _____ Date: _____

# THE EARTH AND SPACE

## Earth (ST)

STUDENT BOOK | Ch. 10, pp. 305–318

### Geological time scale, major stages in history of life on Earth, extinctions

**1.** What is a geological time scale? Circle the following two definitions that apply.

**a)** The history of Earth's formation
**b)** The division of the history of life on Earth into four eras and several periods
**c)** A tool that represents major episodes in the evolution of life on Earth.
**d)** A clock detailing the history of human beings

**2.** Solve the following riddles on the major episodes in the history of life on Earth.

**a)** I lasted about 300 million years.
I began with the multiplication of a number of marine invertebrates.
I ended when 90 percent of marine species became extinct.
What am I?

_____

**b)** I witnessed the appearance of most birds that exist today.
I saw the evolution of the first primates.
I have now reached the 65 million year mark.
What am I?

_____

**c)** I lasted more than four billion years.
I saw life appear on Earth.
I ended 543 million years ago.
What am I?

_____

**d)** I was acquainted with many dinosaur species.
I began 245 million years ago.
I witnessed an extinction event.
What am I?

_____

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## Geological time scale, major stages in history of life on Earth, extinctions (*continued*)

**3.** Circle A or B to complete the following sentences on evolution and major extinctions.

**a)** Natural selection promotes the reproduction of organisms that:
A. have characteristics to help them survive in their environment.
B. are present in the greatest number in their environment.

**b)** The first amphibians are the result of:
A. crossing a fish and a reptile.
B. the transformation of fins into legs in certain fish species.

**c)** When a species does not adapt to changes in its environment:
A. it will disappear.
B. it has difficulty to survive.

**d)** The episode that marked the transition between the Palaeozoic and Mesozoic eras is:
A. the mass Permian extinction.
B. the Triassic period.

**e)** The mass extinction of the cretaceous:
A. is the biggest in the history of life on Earth.
B. included the disappearance of the dinosaurs.

**4.** True or false?

**a)** Life first developed in the water. _____

**b)** Extinction events facilitated the development of the surviving animal and plant species. _____

**c)** The first human beings appeared early in the history of Earth. _____

**d)** Our species, Homo sapiens, is the only surviving species of human lineage. _____

**e)** Humans are part of the primate order and share a common ancestor with the apes. _____

**f)** The evolution of the human bloodline distinguished itself from that of the apes more than 10 million years ago. _____

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## EARTH (ST) (*continued*)

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### Conditions conducive to development of life

**1.** For life to appear on Earth, four conditions conducive to its development were present at the same time.

| | |
|---|---|
| A. Necessary chemical elements | C. Liquid water |
| B. Energy source | D. Very long period of time |

Identify the condition above referred to by each statement below.

**a)** Shining of the sun and thunder _____

**b)** Slight possibility of obtaining a mix of molecules that lead to the formation of cells. _____

**c)** Large quantities of substances ejected into the atmosphere by volcanic eruptions _____

**d)** The first life forms appeared in this environment. _____

**2.** True or false?

**a)** Four elements are essential in forming a living organism: C, H, O and N. _____

**b)** The only energy source necessary to the development of life originally was volcanic energy. _____

**c)** The first life forms were unicellular beings that looked like cyanobacteria. _____

**d)** Life appeared on Earth around 4.2 billion years ago. _____

**e)** Life appeared at the same time Earth was formed. _____

**3.** Match each period of Earth's formation to the corresponding description.

| Period | Description |
|---|---|
| a) Our era | 1. Formation of a thick crust of solid rock on the surface of Earth |
| b) 3.5 billion years ago | 2. Process of accretion involving rock particles, dust and gas |
| c) 4.2 billion years ago | 3. Earth's crust floats on the upper part of Earth's mantle. |
| d) 4.6 billion years ago | 4. Presence of chemical elements: C, H, O, N |

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## EARTH (ST) (*continued*)

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|---|---|

### Fossils, stratigraphic layers

**1.** Check the statements that define fossils.

- **a)** A rock that is sculpted by erosion. ☐
- **b)** The remains of a plant or animal preserved in Earth's crust ☐
- **c)** Mainly found in metamorphic rock ☐
- **d)** They helped in reconstructing the history of life on Earth. ☐
- **e)** Subject of study by anthropologists ☐

**2.** What am I?

- **a)** Strata formed by the superposition of sedimentary rock layers

  _____

- **b)** A method used to determine the age in years of fossils

  _____

- **c)** A method used to determine the age of fossils by comparing them to other fossils

  _____

- **d)** Type of fossil conserving the space occupied by a plant or an animal that can be filled with sediments or minerals

  _____

**3.** True or false?

- **a)** All living organisms become fossils. _____
- **b)** Organisms that are quickly buried in sediment have a greater chance of being fossilized since it prevents decomposition. _____
- **c)** The greater the depth of a stratigraphic layer, the older it is. _____
- **d)** Stratigraphic layers permit precise dating of fossils. _____
- **e)** Fossils from the same period can be found in several different layers of sedimentary rock. _____
- **f)** Carbon-14 dating is a method that uses radioactivity to determine the age of fossils. _____