

- a) Supercluster *Local Supercluster*
- b) Galaxy cluster *Local Group*
- c) Galaxy *Milky Way*
- d) Star *Sun*

### Conditions Conducive to the Development of Life (pages 20 to 23)

9. Why is the presence of a lithosphere (a solid surface) an important condition for the development of life on a planet? *Once the first molecules have formed, they need a solid surface in order to assemble into more complex molecules.*
10. What are the characteristics of the habitable zone? *The habitable zone is the region surrounding a star in which the temperature allows water to remain liquid on the surface of a planet.*

11. Why does the shape of a planet's orbit have to be roughly circular? *The shape of a planet's orbit determines how the quantity of energy it receives will change, which in turn influences changes in temperature on the planet.*
12. Why is an atmosphere important for the development of life on a planet? *An atmosphere protects life forms from harmful solar radiation such as ultraviolet rays and X-rays. An atmosphere also makes a water cycle possible.*
13. Can a planet's mass reduce the chances that life will develop on it? Explain your answer. *A larger planet has a stronger gravitational force and retains the particles that form its atmosphere more easily. A lightweight celestial body, such as the Moon, does not have enough gravity to hold in the gaseous particles needed to form an atmosphere.*

## Section 2 • The Earth

### Student textbook, page 42

#### Fossils (pages 27 and 28)

1. a) What is a fossil? *The word "fossil" describes all traces of life from geological periods. They are generally found in sediment and in sedimentary rocks (e.g. limestone and sandstone).*
- b) Give a few examples of elements that can become fossilized. *Fossils are the remains of animals, plants or humans, including skeletons, shells, carapaces, leaves and eggshells. Fossils can also be traces of activity (e.g. footprints and burrows).*
2. a) What is fossilization? *Fossilization is the transformation of a living organism into a fossil.*

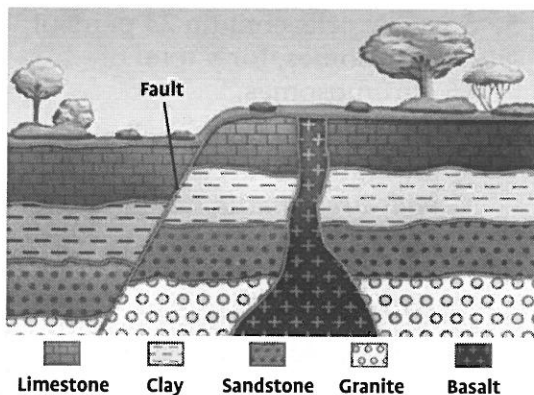
- b) Briefly explain the various stages of fossilization. *An animal dies. Its remains are covered with sediment. Rock is formed and the animal is fossilized.*

#### Stratigraphy (pages 28 and 29)

3. What is a stratigraphic layer? *A stratigraphic layer is made up of sedimentary deposits with the same characteristics (colour, particle size, type of rock).*
4. a) What is stratigraphy? *Stratigraphy is the science that studies the superposition of rock layers. The objective of this branch of science is to explain the events that caused the arrangement of the different layers.*

b) Name the two major principles of stratigraphy. *The two major principles of stratigraphy are the principle of superposition and the principle of paleontological identity.*

5. Look at the following sketch, then answer the questions:



- a) Is the layer of clay younger or older than the layer of limestone? *The layer of clay is older than the layer of limestone.*
- b) Is the layer of sandstone younger or older than the layer of granite? *The layer of sandstone is younger than the layer of granite.*
- c) Is basalt (rock formed from a volcanic eruption) younger or older than the layers of rock it runs through? *The basalt is younger than the layers of rock it crosses.*
- d) Is the fault younger or older than the rock layers it runs through? *The fault is younger than the layers of rock it crosses.*

### The Geological Time Scale (pages 29 to 31)

6. Name the different eras of the geological time scale, beginning with the oldest. *The Precambrian Era, the Paleozoic Era, the Mesozoic Era and the Cenozoic Era*

### Major Stages in the History of Life on Earth and Massive Extinctions (pages 32 to 40)

7. What were the first life forms that developed on Earth? *The first life forms that developed on Earth were bacteria*

*consisting of a single cell without a nucleus (prokaryotic cells).*

8. During which era or which period did the following appear:

- a) First reptiles? *During the Carboniferous Period (Paleozoic Era)*
- b) Mollusks? *During the Cambrian Period (Paleozoic Era)*
- c) First multicellular organisms? *During the Precambrian Era*
- d) First animal with a vertebral column? *During the Cambrian Period (Paleozoic Era)*
- e) First hominids? *During the Quaternary Period (Cenozoic Era)*
- f) Small mammals? *During the Jurassic Period (Mesozoic Era)*
- g) Dinosaurs? *During the Triassic Period (Mesozoic Era)*
- h) First plants? *During the Ordovician Period (Paleozoic Era)*

9. Name the hominid species described in each of the following statements:

- a) I walk upright, I have a large nose and a low forehead, and I don't use fire. *Homo habilis*
- b) I make the first bifaces, I communicate using a spoken language and I have learned to use fire. *Homo erectus or Homo ergaster*
- c) I am sedentary, I practise agriculture and I am famous for my cave paintings. *Homo sapiens*

10. a) What is a massive extinction?  
*A massive extinction is the disappearance of most life forms.*
- b) At the end of which period in the Earth's history did the largest massive extinction occur? *The largest massive extinction occurred at the end of the Permian Period.*
- c) At the end of which period did dinosaurs become extinct?  
*The dinosaurs became extinct at the end of the Cretaceous Period.*