

# 6

# Earth Then and Now

## Subject Area

The Natural World

## Topics & Curriculum Links

history of Earth (Science, History)  
 materials and natural resources (Science; Civics)  
 types of rock; the rock cycle (Geography)  
 how Earth moves (Geography)  
 plants and animals; classification (Science)  
 parts of the body (Science)  
 natural processes (Science)  
 weather and changing climates (Geography)  
 protecting the environment (Science; Civics)  
 places and countries (Geography)  
 dates and events (History)  
 quantities and measurements (Mathematics)

## Vocabulary

numbers; materials; forms of water; weather; plants; parts of plants; food; seasons; animals; parts of the body; places; buildings; measurements; countries; continents

## Grammar

present simple; present continuous; past simple; present perfect; question forms; imperative; passive; adjectives; prepositions; adverbs

## Teaching Ideas

See also pages 6–7 for general ideas that you can adapt. Or go to [www.oup.com/elt/teacher/readanddiscover](http://www.oup.com/elt/teacher/readanddiscover)

### A National Park Presentation

After completing Project 1, students present their national park to the rest of the class. Posters can then be displayed together, organizing them by type of national park, or by continent.

### An Earth Quiz

After completing Project 2, students write more quiz questions. They can work in small groups. Each group writes questions for a different chapter of the Reader, or they can write one question for each chapter. Collect the questions and do the quiz as a whole class.

## Activities Answers

**Page 36–37** 1 1 gas 2 fire 3 crust 4 mantle 5 core 6 iron 2 1 false 2 true 3 true 4 false 5 false 6 true 7 true 8 false 3 1 Magma forms a magma chamber. 2 The magma moves up a tunnel to the surface. 3 Lava is magma that goes to Earth's surface. 4 The lava comes out of a hole called a vent 5 Some volcanoes produce lots of gas and ash. 6 There's a cone at the top of some volcanoes. 4 1 It's about 6,000 degrees centigrade. 2 Earth's crust is thickest on land. 3 Pillow lava is round. 4 The island formed in 2009. 5 Earth's crust is 35 kilometers thick on land.

**Page 38–39** 1 1 cloud 2 atmosphere 3 lake 4 river 5 rain 6 ocean 7 glacier 8 sky 2 1 atmosphere 2 vapor 3 meteorites 4 bacteria 5 food 6 salt 3 1 dry 2 frozen 3 fresh 4 hot 5 icy 6 large 7 liquid 8 shallow 9 salty 10 underground 11 unusual 12 warm 4 1 Living things appeared on Earth 3 billion years ago. 2 They look like rocks with unusual shapes. 3 21% of the Earth's atmosphere is oxygen. 4 The water in Lake Assal is 35% salt. 5 3% of Earth's water is fresh water. 6 Most of Earth's fresh water is frozen in polar ice snow and glaciers.

**Page 40–41** 1 Igneous Rock: pumice, obsidian, granite Sedimentary Rock: limestone, sandstone, shale Metamorphic Rock: slate, marble, gneiss 2 1 small 2 crystals 3 Pumice 4 sedimentary 5 Marbles 6 gneiss 7 minerals 8 Northern Ireland 3 1 change 2 melt 3 cools 4 break 5 form 4 1 Amethyst crystals are bigger and easier to see. 2 Pumice can float on water. 3 The Giant's Causeway is 60 million years old. It is made of Basalt. 4 People can find fossils in the Burgess Shale. 5 People usually make roof tiles from slate.

**Page 42–43** 1 1 Earth's crust is divided into tectonic plates. 2 These plates float on the magma in Earth's mantle. 3 Tectonic plates move about 10 centimeters every year. 4 Some tectonic plates meet and then push together. 5 Mountains form when two plates push each other up. 2 1 false 2 true 3 false 4 true 5 true 6 false 3 1 fold 2 plates 3 magma 4 tsunami 5 mountain 6 tectonic 7 earthquake 4 1 Rodinia changed when Earth's crust divided into plates. 2 Tectonic plates can move about 100 kilometers in a million years. 3 The Andes Mountains in South America are 76 million years old. 4 Mount Aconcagua in Argentina is 6,962 meters tall. 5 The Great Rift Valley is in East Africa. It is 6,400 kilometers long. 6 The Mid-Atlantic Rift is about 10,000 kilometers long.

**Page 44–45** 1 1 moss 2 spore capsule 3 fern 4 frond 5 needles 6 cone 7 leaf 8 flower 9 fruit 10 seed 2 1 non-seed 2 conifers 3 deciduous 4 spores 5 flowering 6 tropical 3 1 Land plants appeared more than 450 million years ago. 2 Conifers have a trunk, with branches and thin needles. 3 Some redwood trees are more than 100 meters tall. 4 About 30% of the Earth is covered by forests. 5 Rainforests produce lots of oxygen. 4 1 Scientists have named than 300,000 species of plants. 2 The tallest redwood trees are more than 100 meters tall. 3 The first flowering plants appeared about 140 million years ago. 4 The Amazon Rainforest is the biggest rainforest in the world. It is in South America. 5 There are more than 12,000 types of fern today.

**Page 46–47** 1 1 false 2 false 3 true 4 true 5 true 6 false 2 1 Invertebrates don't have a backbone. 2 Most fish have fins and a tail to help them to swim. 3 Penguins have wings but they can't fly. 4 Amphibians were the first vertebrates on land. 5 Crocodiles have scales to protect their skin. 6 Bats are the only mammals that can fly. 3 1 vertebrate 2 feathers 3 tail 4 bird 5 backbone 6 scales 7 lungs 8 shell 9 fins 10 gills 4 1 Earth's first animals appeared in the ocean. 2 There are more than 24,000 types of fish today. 3 Amphibians were the first vertebrates that lived on land. 4 The first reptiles probably looked like small lizards. 5 Whales and dolphins live in the ocean.

**Page 48–49** 1 1 colder 2 slowly 3 valley 4 trap 5 carob dioxide 6 smaller 2 1 sunlight 2 reflect 3 plants 4 methane 5 hills 6 valleys 3 1 Earth's temperature has never changed. (false) 2 The last ice age ended 20,000 years ago. (false) 3 The Lambert Glacier is 80 kilometers long. (false) 4 The Greenhouse Effect keeps Earth warm. (true) 5 Sea levels go up when glaciers melt. (true) 4 1 Winters become colder and longer during ice ages. 2 The ice is 2.5 kilometers deep in the Lambert Glacier. 3 Glaciers carry materials like rocks and soil with them. 4 The greenhouse effect keeps Earth warm enough for us to live here. 5 Plants grow well during greenhouse periods because it's warm and there is more carbon dioxide.

**Page 50–51** 1 1 natural areas: national parks, rainforests / rural areas: crops, farms / urban areas: cities, towns 2 1 pollution – It's not a natural resource. 2 trees – They are natural things. 3 water – It's a renewable resource. 4 carbon dioxide – It's a greenhouse gas. 5 tunnels – They are made by people. 3 1 People lived in Africa about 200,000 years ago. 2 We need to use them carefully because we can't get any more. 3 We can recycle more things. 4 They are melting because Earth is getting warmer. 5 We should protect them because they use carbon dioxide and slow down global warming. 4 1 urban 2 modern 3 mineral 4 beautiful 5 renewable 6 natural 7 rural (care for our planet)