

5

Materials to Products

Subject Area

The World of Science & Technology

Topics & Curriculum Links

materials and products (Science; Technology)
 natural resources (Science)
 production processes (Technology)
 buildings and construction (Science; Technology, History)
 shapes (Technology; Mathematics)
 tools and machines (Technology)
 energy and the environment (Science; Civics)
 electronic products (Science; Technology)
 communications (Technology)
 future materials (Technology, Science, Civics)
 dates and events (History)
 sizes and measurements (Mathematics)
 places and countries (Geography)

Vocabulary

materials; products; machines; tools; places; buildings;
 food; clothes; plants; furniture; animals; buildings;
 transportation; shapes; numbers; measurements; countries

Grammar

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

4 1 false 2 false 3 false 4 false 5 true 6 false **5 Example answer** During iron smelting, people put iron ore, a chemical called carbon, and a stone called limestone into a very hot place called a blast furnace. At 2,000 degrees centigrade, the carbon and limestone take the other chemicals from the ore, and iron is made. The iron is a hot liquid, and is mixed with other chemicals to make steel.

Page 40–41 **1** 1 fiberglass 2 reinforced 3 skyscraper 4 cement 5 pump 6 grain 7 modern 8 invent **2** 1 skyscrapers, bridges 2 steel, glass 3 glass blower **3** 1 The sand on many beaches is made of cement silica. 2 Glass blowers blow water air through a long, metal tube. 3 People forgot how to make glass concrete for a long time. 4 Fiberglass is made of glass and metal plastic. 5 Concrete becomes hard when fibers crystals grow inside it. 6 The dome of the Pantheon is made of stone concrete. **4** 1 They become darker in the sun and lighter in a room. 2 Because hot and cold don't go through it. 3 Water, sand, and stones. 4 The Ancient Romans 5 1756

Page 42–43 **1** 1 sheep 2 tire 3 cotton 4 curtains 5 boots 6 wool **2** 1 Cotton grows on pants. 2 Farmers collect the cotton. 3 People use machines to collect the cotton. 4 Machines pull the cotton into fibers. 5 Machines spin the cotton fibers into threads. 6 Machines weave threads to make fabric. 7 People make clothes with the fabric. 8 People use dyes to make the fabric different colors. **3** 1 synthetic 2 Oysters 3 pulp 4 spin 5 Dyes 6 cardboard **4** 1 Clothes and curtains. Because it is very soft and warm. 3 When things like grains of sand get into their shells. Rubber balls. **5 free answers**

Page 44–45 **1** 1 gas 2 fuel 3 refinery 4 fertilizer 5 temperature **2** 1 polythene bag 2 fertilizer 3 paint 4 nylon shirt 5 detergent 6 plastic toy **3** 1 plastic, nylon 2 clothes, parachutes 3 toys, plastic bottles **4** 1 We use gasoline to burn as fuel in cars. 2 We use a mold to make plastic shapes/objects. 3 Plastic bags are bad for our world because they take a long time to decompose. 4 Nylon is very strong. We use it to make parachutes. 5 When acrylic paints dry, they become waterproof. **5 Example answers** 1 Oil is made from tiny plants and animals that lived in the seas and oceans millions of years ago. 2 We get different chemicals from oil by heating it until the chemicals become a gas. 3 free answers

Page 46–47 **1** 1 fishing rod 2 Microchips 3 screens 4 properties 5 Firefighters 6 protect **2** 1 Liquid crystal glass is not always transparent. 2 Composite materials are strong and heavy light. 3 Doctors use liquid crystals fiber-optic cables to look inside people's bodies. Silica aerogel is mostly made of water air. **3** 1 parts 2 fiberoptics 3 racket 4 microchips 5 change 6 recycle 7 silicon **4** 1 silicon to make tiny parts for computers 2 aerogels to insulate things 3 composite materials to build planes 4 fiber-optic cables to look inside people's bodies 5 liquid crystals to make pictures on screens **5** 1 To make products that are better. 2 Because we can put millions of electrical parts onto one microchip. 3 To make them stronger to protect people.

Page 48–49 **1** 1 pan 2 oil platform 3 geologist 4 mine 5 pool 6 rocks **2** 1 evaporates 2 drill 3 legs 4 opencast 5 coal 6 miners **3** 1 Explosives are dangerous chemicals that we use in mines. 2 Coal is a mineral that we burn for heat. 3 Radio signals can travel through the ground. 4 Gold is in soil or rocks under the ground. 5 Salt is a mineral that we use in cooking. 6 Soil can have gems or minerals in it. **4** 1 We use machines to measure how electricity and radio signals go through different rocks in the ground and use machines to hit the ground and measure how it moves. 2 Because the water is very deep and the weather can be bad. 3 Because rocks can fall and water and gas can get into the tunnels. 4 They put soil in a pan and wash it with water.

Page 50–51 **1** The Past – fur clothes, bronze weapons, flint tools, grass clothes The Present – fibreglass, concrete, steel, petrochemicals The Future – nanobots, electronic fabric, living homes **2** 1 living 2 furniture 3 button 4 adverts 5 atoms 6 feels **3** 1 electronic clothes 2 nanobots 3 living objects 4 nanobots 5 living objects 6 electronic clothes 7 nanobots **4** 1 They produce waster and dangerous chemicals. 2 Garden furniture. 3 Fiber-optic threads/liquid crystals 4 Tiny tubes, fibers, or balls of atoms. **5 free answers**

Teaching Ideas

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

READ & TALK A Design for a Home

After reading Chapter 8, students design a home for the future, listing what materials the home is made of. Students present their design to the rest of the class. Designs can then be displayed together, and students write comments on each other's design. Or they can vote for their favorite design.

Products Research

Using books or the Internet, students do research on what materials and products are produced in their country. They can write about their findings like this: *Animals: ... are raised; We use ... to make ...; Plants: ... is/are grown. We use ... to make ...; Materials: ... are produced. We use ... to make ...; Rocks and Minerals: We use ... to make ...*

Activities Answers

Page 36–37 **1** 1 bone 2 fur 3 grass 4 metal 5 wood 6 stone **2** 1 forest 2 flint 3 shelters 4 sticks 5 weaving 6 smelting **3** 1 temples walls/palaces/pyramids 2 clothes/beds/baskets 3 bricks/pottery 4 gold/bronze **4** 1 They used animal fur and grass to make clothes. 2 Animals and fruit and fish. 3 Because it can hold water. 4 About 10,000 years ago 5 By mixing two metals together. 6 Tools and weapons.

Page 38–39 **1** 1 wedges 2 metals 3 Crystals 4 Rubies 5 blast furnace 6 ore **2** 1 copper 2 iron 3 aluminum 4 steel 5 copper 6 aluminum 7 steel 8 copper **3** 1 minerals 2 jewelry 3 electricity 4 liquid 5 cans 6 statue