Contents

Unit 1  Our Internal Organs and Their Functions
Unit 2  Food and Exercise
Unit 3  Parts of a Plant
Unit 4  Different Animals
Unit 5  Animal Offspring
Unit 6  Introduction to Materials
Unit 7  Solids, Liquids and Gases
Unit 8  Introduction to Simple Machines
Unit 9  What is Energy?
Unit 10 Sounds
Unit 11 Shadows
Unit 12 Natural Resources
Unit 13 Weather and Seasons
Unit 14 The Earth
UNIT 6  Introduction to Materials

THINK

Identify objects and write "M" for metal, "G" for glass and "W" for wooden objects.

EXPLORE

Take a rubber band and a metal spoon. Try to stretch them. Which one gets stretched?

Proud to Know

Al-Razi was a great Muslim scientist and physician. He classified natural substances into earthly, vegetable and animal substances.
What is Material?

A material is something that is used to make an object. Every object is made up of different materials. Materials can be classified as natural and man-made.

Materials that come from plants and animals are called natural materials.

Wood is a natural material. It comes from plants. Leather is another natural material. It comes from animals.

Materials that are made by people are called man-made materials. Glass and plastic are man-made materials.

Different materials have different properties.
Properties of Materials
Each material has a specific property. Here are some materials and their properties.

<table>
<thead>
<tr>
<th>Material</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick</td>
<td>Hard</td>
</tr>
<tr>
<td>Foam</td>
<td>Soft</td>
</tr>
<tr>
<td>Sofa</td>
<td>Heavy</td>
</tr>
<tr>
<td>Candy</td>
<td>Light</td>
</tr>
<tr>
<td>Steel</td>
<td>Strong</td>
</tr>
<tr>
<td>Ceramic</td>
<td>Brittle</td>
</tr>
<tr>
<td>Wood</td>
<td>Opaque</td>
</tr>
<tr>
<td>Glass</td>
<td>Transparent</td>
</tr>
<tr>
<td>Plastic</td>
<td>Waterproof</td>
</tr>
<tr>
<td>Paper</td>
<td>Non-waterproof</td>
</tr>
<tr>
<td>Rubber</td>
<td>Flexible</td>
</tr>
</tbody>
</table>

Transparent
We can see through some materials clearly. These materials are known as transparent materials. For example, we can see through eyeglasses.

Opaque
We cannot see through some materials. These are known as opaque materials. For example, we cannot see through a piece of wood.
Strong and Hard

Some materials are strong and hard. They are difficult to scratch or wear away. For example, stone and diamond are hard and strong materials.

Brittle

Some materials are hard, but they are easily broken. These are called brittle materials. For example, ceramic and glass.

Waterproof

Some materials do not allow water to pass through them. These are called waterproof materials. For example, umbrellas are made of waterproof materials.

Flexible

Some materials can be easily bent. They do not break when bent. These are called flexible materials. For example, rubber is a flexible material.
Points to Remember

- A material is something that is used to make an object.
- Some materials are natural such as leather.
- Some materials are man-made such as plastic.
- Some materials are transparent and some are opaque.
- Some materials are soft and flexible, while others are hard and brittle.
- Some materials do not let water to pass through them.

Glossary

- Material: something that is used to make different objects
- Transparent Material: a material that allows us to see through it
- Opaque Material: a material that does not allow us to see through it
- Brittle Material: a material that is hard but easily broken
- Waterproof Material: a material that does not let water pass through it

Exercise

1. Answer the following questions.
   i. Define material.
   ii. Give two examples of hard materials from your classroom.
   iii. What is the difference between transparent and opaque materials? Give one example for each.
   iv. Name any two flexible materials.
2 Write ‘T’ for a true and ‘F’ for a false statement.

1. Plastic is a natural material.
2. Ceramic is a brittle material.
3. We cannot see through a transparent object.
4. Leather is a man-made material.

3 Match the following materials with their properties.

- Flexible
- Hard
- Waterproof
- Transparent
- Opaque
- Brittle
Look around in your classroom. What are the types of materials you find? Write down in the column as many as you can.

### Materials I Find in My Classroom

- 
- 
- 

**Activity**

Take the following material objects:
- A small piece of cotton
- A piece of wood
- A rubber band
- Eyeglasses
- A piece of iron

Now check the properties of each material object one by one. Classify these materials into natural and man-made materials and put a tick in the right column for each. Share your findings with your classmates and teacher. The first one is done for you.

<table>
<thead>
<tr>
<th>Material Objects</th>
<th>Natural</th>
<th>Man-made</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>A piece of cotton</td>
<td>✓</td>
<td></td>
<td>Soft</td>
</tr>
<tr>
<td>A piece of wood</td>
<td></td>
<td></td>
<td>Transparent</td>
</tr>
<tr>
<td>A rubber band</td>
<td></td>
<td></td>
<td>Flexible</td>
</tr>
<tr>
<td>Eyeglasses</td>
<td></td>
<td></td>
<td>Transparent</td>
</tr>
<tr>
<td>A piece of iron</td>
<td></td>
<td></td>
<td>Soft</td>
</tr>
</tbody>
</table>

42 Spectrum
In simple words, Science can be defined as the knowledge about the natural world that is based on facts learnt through experiments and observation. Spectrum Science is the reflection of this basic definition for the young, curious and enthusiastic learners.

The series triggers children’s intellect to ask why and how about the everyday phenomenon around them. The colourful layout of the books attracts children. Easy language, interesting colourful illustrations and hand-on activities in each chapter engage their enquiring minds. Concepts of Biology, Chemistry, Physics and Space Sciences progress from one level to the next in a very logical and rational manner.

Besides the curriculum, a window to further knowledge is opened through the information under the heading of “Do You Know?”. There is an exercise section at the end of each chapter to assess what a child has learnt and gained from the knowledge shared in the chapter.

Spectrum Science follows the Pakistan National Curriculum for Science and also keeps in view the recommendations of some international curricula for Science.