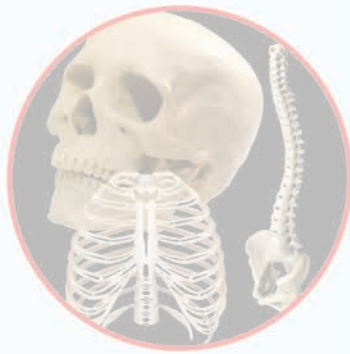




**Explore the World**

# SCIENCE

**Class - 5**



**Scribbling page**

# Introduction

Millat Foundation for Educational Research and Development (MFERD) is an organization conceived with the vision of providing a common platform for the networking, co-ordination, collaboration and co-operation among Muslim educational institutions, thereby complementing the efforts of individuals and organizations in achieving excellence in education within the boundaries of Islamic Shariah. MFERD aims to address the various challenges faced by these institutions and find solutions through research and development.

One of its major program is to design a value based curriculum for school to nurture and culture our future generations with excellence.

Curriculum is the sum total of all learning experience a child undergoes including academics, activities, learning environment, assessment and interaction with teachers, students, parents all together from the moment a child walks in the school until he/she steps out.

After years of research in child psychology, education from Islamic perspective, and review of various curricula, a value based curriculum has been designed in accordance with National Curriculum Framework and International standards to focus on all round development of the children so that they identify their identity, realize the need and become leaders of tomorrow.

This curriculum is comprised of:

- ⇒ **Objectives** - as per Islam psychology, education and stakeholders
- ⇒ **Syllabus** - as per age group and government standards
- ⇒ **Methodology** - child centric and appropriate to the subject and objectives
- ⇒ **Resources** - including teacher training, teaching aids manuals and more
- ⇒ **Assessment** - formative, summative, self, co-scholastic, behavioral and long term
- ⇒ **Activities** - curricular, co-curricular and extra curricular with guidelines for events
- ⇒ **Scheduling** - calendar, day-year plans, workload, period split and competitions
- ⇒ **Observation** - feedback and research

Central Academic Development department has been setup to plan, train and monitor the implementation of this curriculum in various schools at all the levels.



# Preface

Explore the world - Science is a 'brain based learning' book designed to address the curiosity of this age group along with hands-on experimentation. It is based on methodology of 'Learning by Doing'. Children at this age needs to explore the world around them. They need to comprehend What's being taught, What's happening around, What's expected of them; take clues from it and understand on their own.

Greater the understanding of the details, greater the child will appreciate Islam. Science coexisted, infact flourished in the Islamic era. Islam teaches mankind to observe and learn from the nature. This book prepares young minds to appreciate the importance of environment in a holistic manner, to get them familiarized with the surrounding and to view it with a sense of care and responsibility. It imbibes in children the values of love and respect for nature and its laws.

The Alif Laam Meem Series aims at encouraging learners to believe in the Almighty and also believe in the self, develop skills and become confident while enjoying the content of this book. They wear the Scientists' hat and tread on the journey to explore the world. It also aims at training the learners to locate and comprehend the relationship between the natural, social and cultural environment to develop an understanding based on observations drawn from life experience.

The language is simple and clear to comprehend. There is an attempt towards building scientific aptitude and temperament in the learners. Besides making them realize the existence of Allah and His creations, this book teaches them to be thankful to Allah for all His bounties, refrain from inhumane acts and to develop reasoning that leads to the correct path destined for us.

The salient feature of the book:

- ❖ Test the knowledge of the child through '**Explore**' section so as to involve them.
- ❖ Encourage scientific thinking through '**Reasoning**' section.
- ❖ Arouse curiosity in learners through various interactive and interesting activities.
- ❖ '**Young Scientist at work**' to promote independent work and develop observation, data collection, inferential, mathematical, linguistic and other skills.
- ❖ '**Skills acquired**' to help the learner realize his/her learning and growth.
- ❖ '**Mind Mapping**' to summarize the lesson through memory techniques.
- ❖ '**Self Assessment**' to ensure learning takes place; and includes **Assessment** to help the students get familiar with **CCE system**.
- ❖ **Quranic verses and Hadeeth:** To prove the laws of nature laid by Allah.
- ❖ **Multiple intelligence :** Using arts, language, logic, rhythm in science to implement multiple intelligence.
- ❖ **Take home activity:** Activities given to make the child apply his knowledge.

We strive to keep our standards high and continually improve the Alif Laam Meem Series based on your feedback and our research. Therefore, we request you to kindly send in your valuable suggestions to us and help this mission be successful.

We wish and pray for the wide spread use of this syllabus and inspire other experienced hands to come forward and do such work or better.



# Excerpts from National Curriculum Framework 2005

## An overall summary of the National Curriculum Framework 2005

The fact that learning has become a source of burden and stress on children and their parents is an evidence of a deep distortion in educational aims and quality. To correct this distortion, the present NCF proposes five guiding principles for curriculum development

- (i) connecting knowledge to life outside the school;
- (ii) ensuring that learning shifts away from rote methods;
- (iii) enriching the curriculum so that it goes beyond textbooks;
- (iv) making examinations more flexible and integrating them with classroom life; and
- (v) nurturing an over-riding identity informed by caring concerns within the democratic polity of the country

## National Curriculum Framework 2005 on the perspective of education

Education must be able to promote values that foster peace, humaneness and tolerance in a multicultural society.

The National Curriculum Frame document seeks to provide a framework within which teachers and schools can choose and plan experiences that they think children should have. In order to realize educational objectives, the curriculum should be conceptualized as a structure that articulates required experiences. For this, it should address some basic questions:

- (i) What educational purposes should the schools seek to achieve?
- (ii) What educational experiences can be provided that are likely to achieve these purposes?
- (iii) How can these educational experiences be meaningfully organized?
- (iv) How do we ensure that these educational purposes are indeed being accomplished?

## National Curriculum Framework 2005 on the Guiding Principles of education

Children acquire varied skills naturally while growing up in their environment. They also observe life and the world around them. When imported into classrooms, their questions and queries can enrich the curriculum and make it more creative. Such reforms will also facilitate the practice of the widely acknowledged curricular principles of moving from 'known to unknown', from 'concrete to abstract', and from 'local to global'.

*The MFERD books are designed to adhere to the guiding principles laid down in the National Curriculum Framework 2005. We want the followers/students to abide and fulfill the educational objectives framed by the NCF so that they not only become honest and faithful citizens but also to be a part of the ever growing global world and economy. We sincerely believe that by following this curriculum the students will develop their personality which will be a beacon of light for others to reflect and ponder and be like one.*

*For MFERD's approach to address these perspectives please refer to the back cover page.*

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## You will learn about

- **Soil formation**
- **Layers of soil**
- **Soil erosion**
  - **Causes**
  - **Effects**
- **Conservation of soil**

## UNIT IV

# MATTER AND MATERIAL

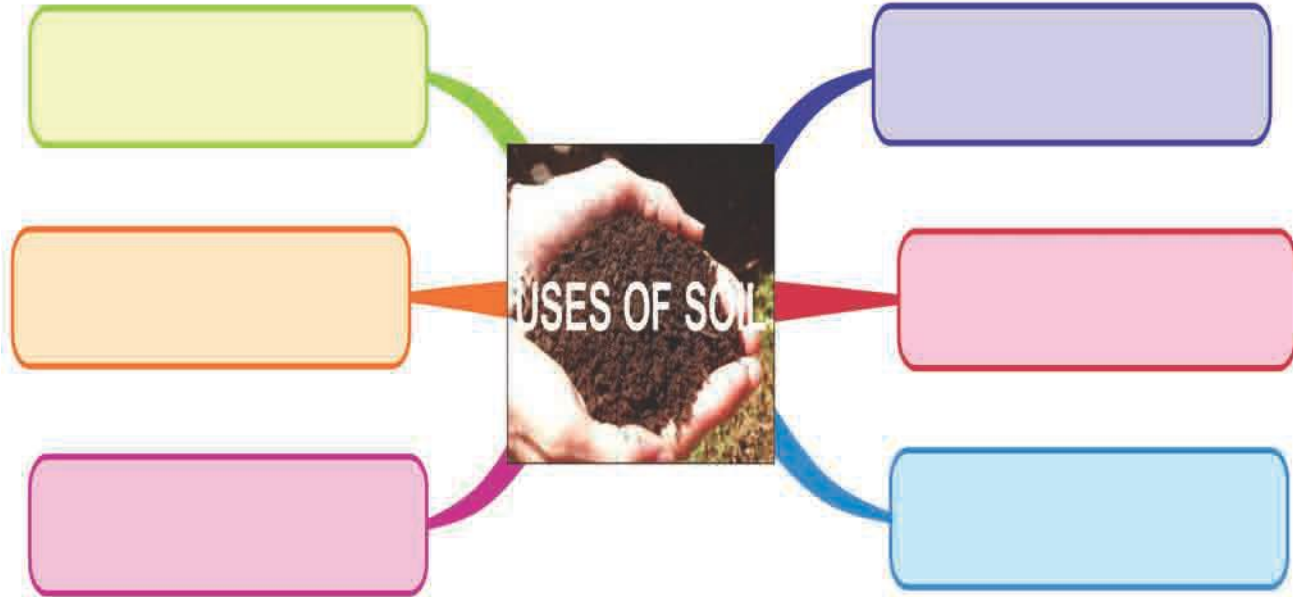


# 8. SOIL



## EXPLORE

In Class III you have learnt about soil. Brainstorm and write down the uses of soil in the mind map given below.



## REASONING

- How is soil formed?
- What makes the big rocks break into smaller ones?
- What is soil erosion?
- What happens if we cut down the trees?

Soil is the uppermost layer of the earth. It is also considered as the 'Skin of the Earth'. Plants grown in this layer. Animals depend on plants for their food while human beings depend on both plants and animals for their food. All living organisms depend either directly or indirectly on the soil. Therefore, life cannot exist on earth without soil.

He (Allah) created (the first) man from melodious (sounding) sand that resembles potter's clay. (Surah: Ar-Rahman chapter 55 verse: 14)

Allah created us from clay, which is a type of soil. There are various types of soils that are mentioned in the Quran and each has its own significance.



Soil	Surah	Significance
Turab	Surah Naazi'aat chapter 79 verse:40	Dry earth or soil, common word for all kind of earth (dust)
Teen	Surah Sajdah chapter 32 verse:7	Water soaked soil without husk (sand/dust)
Lazib	Surah Saaffaat chapter 37 verse:11	Viscous, sticky clay
Hama	Surah Hijr	Black, stinking mud
Salsaal	Surah Hijr chapter 15 verse: 26	Dried black, stinking mud
Fakh-khaar	Surah Rahman chapter 55 verse: 14	Fire hardened or cooked earth(clay)
Saeed	Surah Maa'idah chapter 5 verse:6	The grime and dirt on the topmost layer of earth (clean soil)
Sulalah	Surah Mu'minoon chapter 23 verse: 12	Extract of clay
Thara	Surah Taha chapter 20 verse: 6	The moist soil from the deeper layer of earth

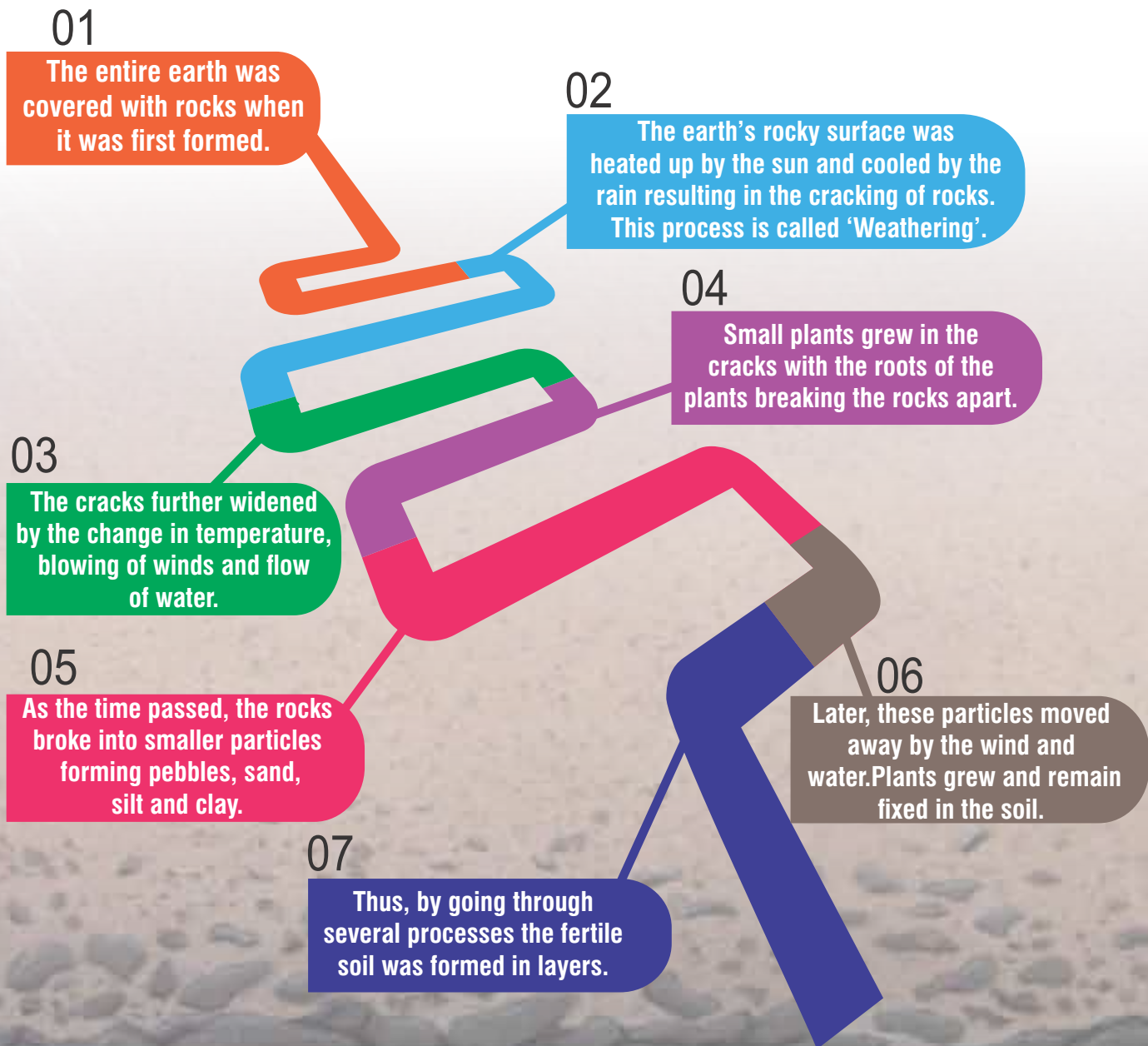
### So, what is soil?

Soil is one of the natural resources. It is present on the upper most layer of the earth's surface. It consists of small particles formed by broken rocks, organic matter and minerals. It supports plant growth by providing nutrients to them.



# SOIL FORMATION

At the time of formation of the earth, there was no soil on it. Most of the soil we see today has been formed for thousands of years. The process of soil formation occurs gradually all the time. Let's learn how soil is formed.



# YOUNG SCIENTIST AT WORK

**Observation** : When we dig the ground, we observe different layers of the soil.

**Question** : Why do the soil particles differ in different layers of the earth?

**Hypothesis** : Soil particles with different characteristics settle in different layers.

**Material required:** Soil, ruler, wide-mouthed plastic jar with lid, hand lens and water.

## Procedure

- Take a wide-mouthed plastic jar and fill about one-third of the jar with soil.
- Add water up to the brim of the jar.
- Tightly screw the lid onto the jar. Shake the jar for at least 15 seconds such that the soil is thoroughly mixed with the water.
- Keep the jar aside for the whole night.
- Then the next day, take the jar and observe the soil and water in the jar more closely with the help of a hand lens.
- Take a ruler and measure the height of different layers formed in the jar.
- Record your observations in the table.

## Result

Before shaking	After settling	
Soil composition	Soil composition	Height

## Draw Conclusions

Compare your observations before shaking and after settling of the soil in the jar. Where do you find soil particles more easily visible in the jar?

**Inference:** My hypothesis was correct. The different layers of soil are composed of soil particles with different characteristics.

**Skills acquired:** Observation, communication, measurement and drawing inference.





## Fact zone

It takes 500 years to form an inch of topsoil.

Watch



<https://www.youtube.com/watch?v=ysIm7ImsK6c>



## LAYERS OF SOIL

Soil is divided into three main layers.

- The top layer of the soil is called as topsoil.
  - It is dark in colour, soft in texture and contains humus. Plants grow in this layer.
  - It is 25 cm deep and helps in absorbing rain water which forms the groundwater.
- The second layer of the soil just below the topsoil is the sub-soil.
  - It is composed of minerals and little organic matter. It is light in colour.
  - It is the layer where the roots of big trees end.
- The third and the bottom most layer is bedrock and it is mostly solid rock.



Think

What is under the bedrock?



## SELF ASSESSMENT

Choose the correct option.

1. There are \_\_\_\_\_ layers of soil. ( )
  - a.  $(3 \times 1) + 3$
  - b.  $(12 \div 2) - 3$
  - c.  $(5 \times 4) - 2$
2. Breaking down of big rocks into pieces by heat is \_\_\_\_\_. ( )
  - a. uhsum
  - b. silo
  - c. ewahrtrenig
3. The \_\_\_\_\_ is called as the 'Skin of the Earth'. ( )

(Unscramble the answer)

a.



b.



c.

