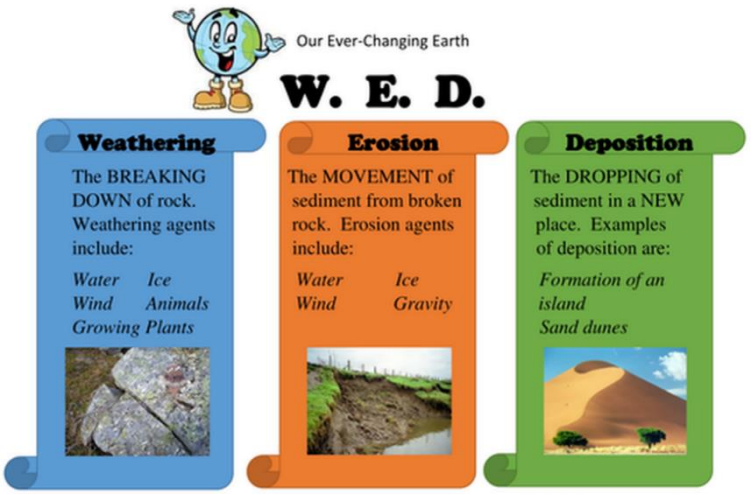
Directorate: Curriculum GET: LESSON PLAN TERM 4 - 2020

SUBJECT and GRADE	**SOCIAL SCIENCES – GRADE 9 GEOGRAPHY**	
TERM 4	*Week 1 – Lesson 1*	
LINK TO TEACHING AND ASSESSMENT PLAN	**TOPIC: Surface forces that shape the earth** (Physical Geography) **Content and concepts:** Weathering, Types of weathering and Human impact on weathering	
AIMS OF LESSON	***You must know:*** • the definition of the term weathering. • which agents in nature are responsible for weathering. • the main types/kinds of weathering and its definitions. • the examples of the main types of weathering, its definitions and how it happens.	
INTRODUCTION	***You should know from previous grades*/current grade**/previous lessons*****:** •	
SKILLS	***You must be able to:*** • define concepts related to weathering. • identify and recognize the different types of weathering processes from sources. • distinguish between different types of weathering processes from sources. • describe and explain the different types of weathering processes from sources. • read and interpret sources to answer data response questions. • write a paragraph and explain any one of the weathering processes.	
ACTIVITIES/ASSESSMENT	***Complete the:*** • *activity to this lesson on pages 7 and 8* • *additional activities in your textbook*	
CONSOLIDATION	• *Answers and Feedback on learner task 4.1*	
RESOURCES ***(if necessary)***	***Paper based resources***	***Digital resources***
	• *Lesson on pages 3-6* • *Activity on pages 7 and 8* • *Textbook*: Surface forces that shape the earth*	• *Video: Types of weathering* https://www.youtube.com/watch?v=ZM4M2J3GdSQ • *Video: Surface processes* https://www.youtube.com/watch?v=opeibsGAwT0 https://www.thelearningtrust.org/asp-treasure-box

DETAILS OF LESSON 1

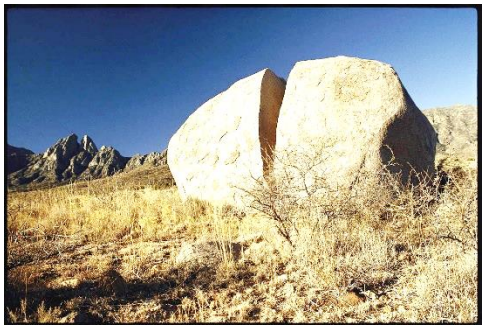
SUBJECT	SOCIAL SCIENCES: GEOGRAPHY	TERM	4
	GRADE 9	DATE	02 - 06 November 2020
	Skills (WHAT I am going to teach/guide/support…)	**Teaching Methodologies/ Approach** (HOW I am going to teach/guide/support…)	**Resources / LTSM** (WHAT I am going to use to teach/guide/support…)
TEACHER'S ACTIVITIES	• the difference between weathering and erosion	Explain and clarify the concepts in the lesson	Lesson 1 on page 3 - 6 by following the geography enquiry route
	• the main types of weathering	Discuss and demonstrate the main types of weathering	Textbook*: Surface forces that shape the earth Own resources and power points
	• processes associated with the main types of weathering	Demonstrate the different examples of weathering processes e.g. abrasion	Learner task on pages 7 and 8
	• assist learners to identify, describe and explain content from sources	Learners complete an activity and feedback is given on their progress	You Tube videos and the local environment
PARENT'S ACTIVITIES	• Refer to the above points regarding the content of the lesson.	***Parents must encourage the following:*** • Make learners watch the videos. • Help learners to organize the content by drawing a mind map. • Make learners observe the weathering processes in the environment and test whether they can identify and explain the processes.	• You Tube videos • The local environment
LEARNER'S ACTIVITIES	1. First read through the learner activity on pages 7 and 8 to see what content and skills will be required to answer the data response questions. 2. Work through the lesson on pages 3 – 6 by asking the questions geographers ask e.g. What is it? 3. Start answering the task without referring to the lesson. 4. Check your answers by referring to the content in the lesson and rectify wrong answers. 5. Compare your answers with the teacher's answers to see if you have completed the task successfully.		

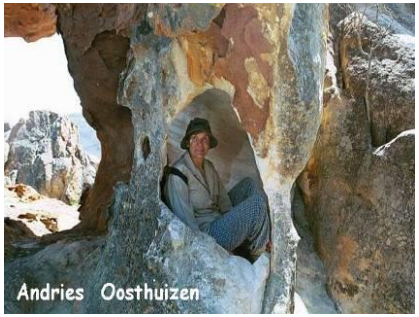
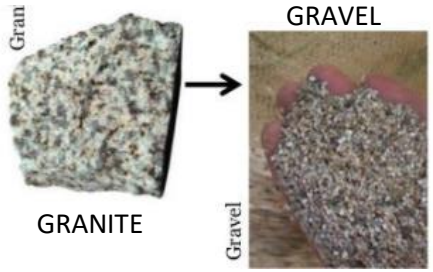
CONTENT AND CONCEPTS	WEATHERING	

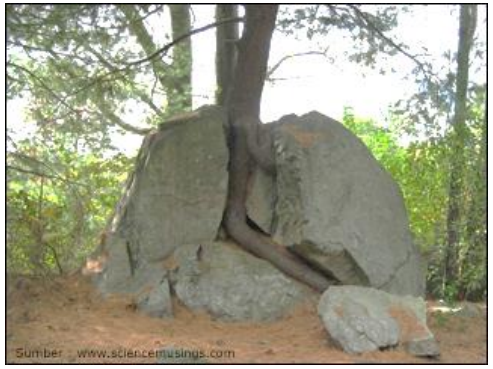
What is weathering?	• *Weathering is a **process** in which rocks are **changed** and **broken** down into smaller rocks.*
	• *Although weathering and erosion work together to change our environment, weathering is not the same as erosion.*
	• *Weathering takes place in nature in the following ways:*
	  ○ *Mechanical or Physical*
	  ○ *Chemical*
	  ○ *Biological*
		

What forces are responsible for weathering?	• The **forces** that cause rock to break down are known as **agents of weathering**. • Water, ice, wind, acids, salts, plants, animals, and changes in temperature are all agents of weathering.	

Ways in which weathering take place:	What is it?	Examples of types or kinds of weathering processes:
Mechanical/Physical	Rocks are broken down into smaller particles through physical forces. There is no change in the chemical composition of the rocks.	1. Ice and frost action/Ice wedging
		2. Exfoliation
		3. Abrasion
Chemical	Minerals in rock are dissolved into soluble or finer materials by water, O_2 and CO_2. The chemical composition of the rock changes and new substances form e.g. limestone dissolved by rainwater form calcium carbonate in caves.	4. Oxidation
		5. Carbonation
		6. Hydrolysis
Biological	When living things such as animals, plants, and bacteria break down rocks.	7. Root wedging
		8. Burrowing

Weathering processes	What is it?	What does it look like?	How does it work?
Ice Wedging 1	Alternating (cycles of) freezing and thawing of water in cracks of rocks break the rock apart.		• Water collects in joints in the rock. • Water freezes and expands forcing joint to widen. • Ice thaws and contracts and water enters deeper into crack. • Repeated expansion and contraction widen cracks until rock splits.
Exfoliation 2	Thin outer layers of rocks peel away which resemble the outer layer of an onion. 		• The outer layer of rocks expands when heated during the day. • The outer layer contracts when cooled at night. • Repeated expansion and contraction day after day cause the rock to peel off.
Abrasion 3	Rocks are broken down by **rubbing** against each other and other surfaces creating smaller, smoother and more rounded pieces of rock.		• Water, wind and gravity pick up smaller rock particles and **scrape/rub/grind** them against each other and other surfaces. • The rubbing causes rocks to be worn down.

Weathering processes	What is it?	What does it look like?	How does it work?
Oxidation 4	Dissolved oxygen reacts with the minerals of a rock.		• Iron minerals in rocks react with dissolved oxygen in the air. • It forms iron oxide (rust) which weakens the rock and breaks it down. • The rock changes to a red colour.
Carbonation 5	Carbon dioxide dissolves in groundwater/rainwater to form a weak carbonic acid.		• Rainwater dissolves carbon dioxide in the atmosphere and forms a weak carbonic acid. • The carbonic acid reacts with carbonates in limestone rock and forms calcium bicarbonate. • The acid dissolves the limestone forming underground caves, stalagmites, stalactites and sink holes
Hydrolysis 6	When minerals in the rock react with hydrogen in slightly acidic rainwater.		• Slightly acid rainwater dissolves minerals in a rock, producing new compounds. • For example, Feldspar (white or pink crystals) inside granite rocks dissolve when in contact with acidic rainwater forming clay minerals.

Weathering processes	What is it?	What does it look like?	How does it work?
Root Wedging 7	A process by which fractures/cracks in rocks are enlarged by the growth of plant roots.		• Plant roots grow into the cracks in rocks. • As they grow roots force the cracks open. • Pressure is created on the sides of the crack enlarging it until the rock breaks apart.
Burrowing 8	When burrowing animals dig for food or create a hole to live in.		• By digging for food or creating a hole to live in burrowing animals may break apart rock. • Burrowing animals such as badgers, meerkats and moles can break up rock underground or bring it to the surface, where it is exposed to other weathering forces. • Some animals directly burrow into the rock.

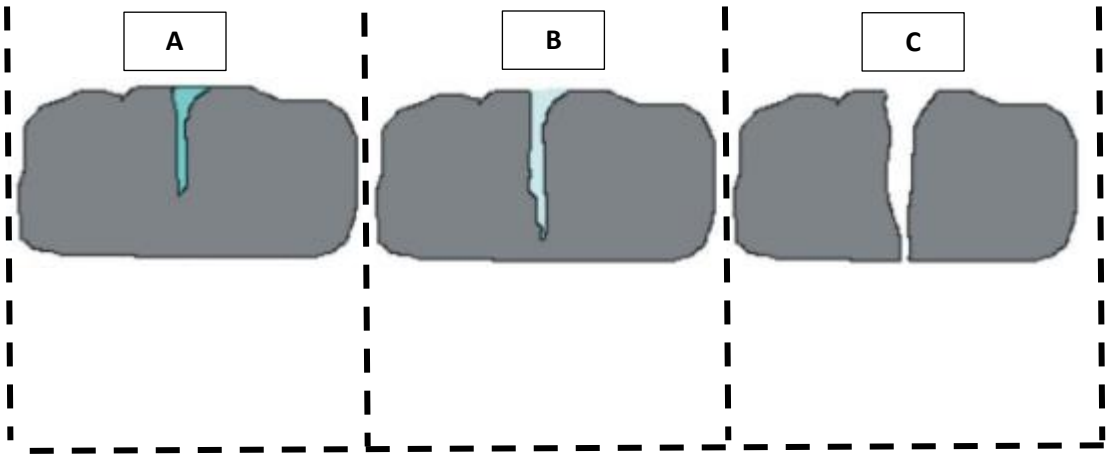
What impact does human activities have on weathering?
The following human activities accelerate weathering: • Air pollution and the burning of fossil fuels lead to the formation of **Acid Rain**. • **Blasting of rocks** during road construction. • **Mining and quarrying** operation.

Compiled by: H. N. GILLION

LEARNER TASK 1 – TERM 4

4.1 USE THE INFORMATION ON PAGE 3 TO 6 AND YOUR TEXTBOOK TO COMPLETE THE FOLLOWING TASK IN YOUR WORKBOOK.

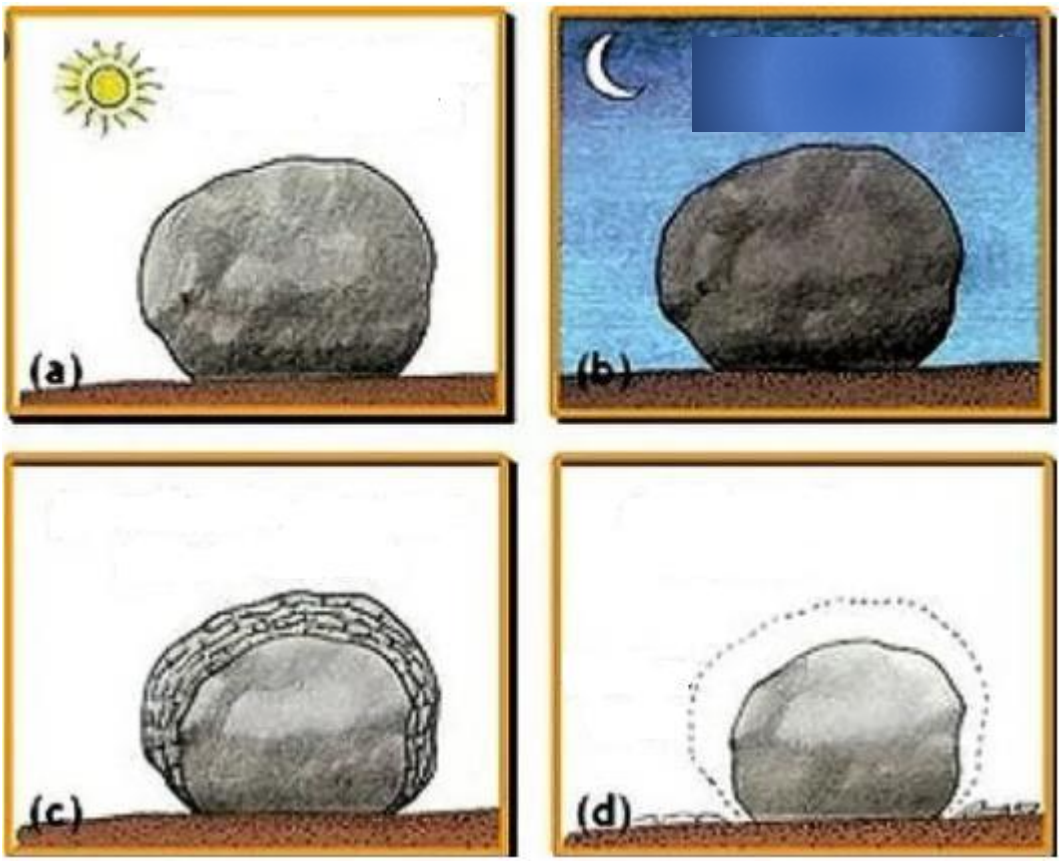
4.1.1 Define the term weathering.
4.1.2 Distinguish between weathering and erosion.
4.1.3 Give **ONE** similarity between weathering and erosion
4.1.4 Name and explain the three main types of weathering.
4.1.5 Study the diagram below that illustrates the process of frost/ice wedging. Add lables and descriptions to A, B and C of the diagram to describe the process of frost/ice wedging.



4.1.6 Copy the table below in your workbook. Complete and fill in the missing information.

Type of weathering:	**Examples of type of weathering process:**	**Explanation of how the process works:**
	Abrasion	
	Oxidation	
	Root wedging	

4.1.7 Study the diagram that illustrates the process of exfoliation and answer the questions.



(a) What type of weathering is the exfoliation process?
(b) Explain what happens to the outer surface area of the rock in A and B.
(c) Describe and explain what is busy happening with the surface of the rock in C.
(d) What happens to the circumference of the rock in D?