#Start w/ Slide # 18

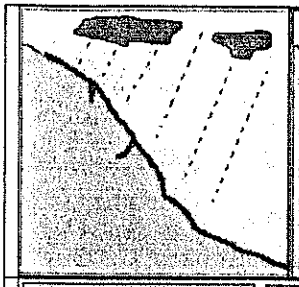
WEATHERING

Name Answer Key

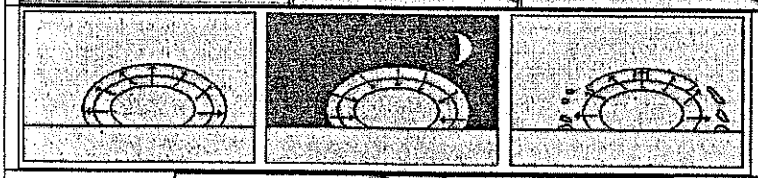
1. Define Weathering - the process by which rocks near or on the Earth's surface break down and change

2. What is Mechanical Weathering? Process where rocks and minerals break down and change into smaller pieces of sediment. (Physical change)

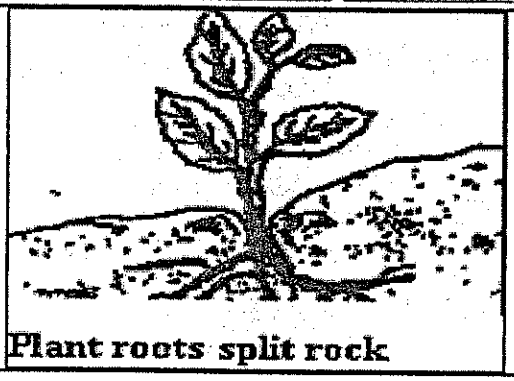
3. What are the 2 factors that affect rocks? ~~weathering, rock erosion~~ pressure & temperature



4. Frost (or Ice) Wedging-

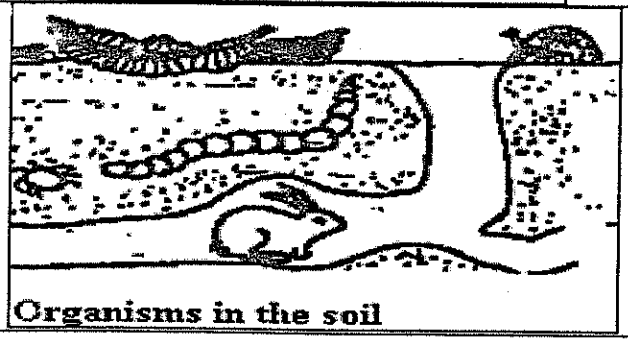


5. Exfoliation -



Plant roots split rock

6. Root Action-



Organisms in the soil

7. Animal Activity-

(ask students)

8. What is Chemical Weathering? Process by which rocks and minerals change their composition as a result of a chemical reaction.

9. Define Hydrolysis - reaction of H_2O w/ other minerals

10. Define Oxidation- a chemical reaction w/ O_2 (gas)

11. How is Carbonic Acid formed- released CO_2 reacts w/ moisture in atmosphere (cars & caves form)

12. What are the 2 gases that form Acid Precipitation? SO_2 (fossil fuels) & NO_2 (car exhaust)

13. Where do these 2 gases come from? _____

Guided reading

The process by which rocks and minerals break down into smaller pieces is (1) Physical → mechanical weathering, also called physical weathering. Two factors that play a significant role in this type of weathering are (2) pressure and (3) temperature. To some extent, the (4) size (surface area) of rocks determines the effects that chemical weathering will have on them. (5) Water is an important agent in chemical weathering because it can dissolve many kinds of minerals. An atmospheric gas that contributes to the chemical weathering process is (6) carbon dioxide (CO2), which is produced by living organisms. When this gas combines with water, it produces a weak acid called (7) carbonic acid. Another agent of chemical weathering is (8) acid rain (precipitation), which is caused mainly by the emission of sulfur dioxide and nitrogen oxides.

Place a C beside those examples of Chemical Weathering and a M beside those examples that represent Mechanical Weathering.

C 1) a limestone cave forms in Guatemala

M 2) a birch tree grows out of a crack in the bedrock

M 3) rocks break apart on Stone Mountain Georgia dome

C 4) markings disappear on the Cleopatra's Needle monument

M 5) potholes develop in the road

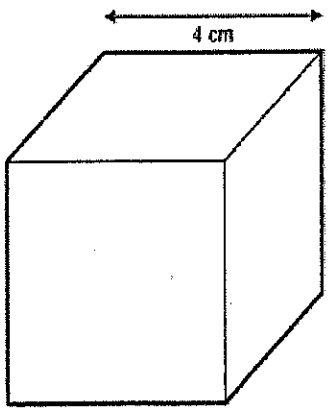
M 6) a rabbit burrows into rock

C 7) exhaust mixes with rainwater

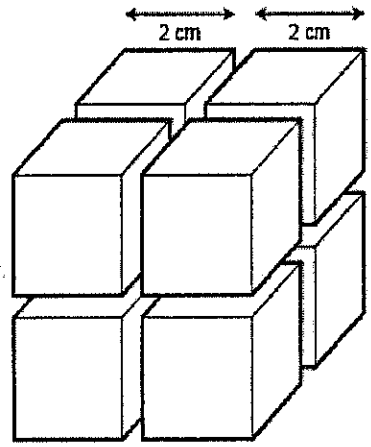
C 8) iron in rocks rusts.

9. What 4 factors affects the rate of weathering? Temperature, Climate, pressure, and surface area

10. Tropical New Guinea experiences a greater rate of mechanical and chemical weathering than Nashville Tennessee. The graph shows that Nashville has lower temperatures and less rainfall as compared to New Guinea.



Surface area
= (4 cm x 4 cm x 6 faces) = 96 cm²



Surface area of one cube
= (2 cm x 2 cm) x 6 faces = 24 cm²

Total surface area
= 24 cm² x 8 cubes = 192 cm²

It can take 2000 years to weather 1 cm of limestone. The volume of the rock in the example remains constant. The original surface area of the rock is 96 cm^2. When this block is broken up into more pieces, the surface area increases. First it is 96 cm^2, then when it is broken into 8 pieces, the total surface area changes to 192 cm^2. Thus the greater the total surface area, the more weathering occurs.