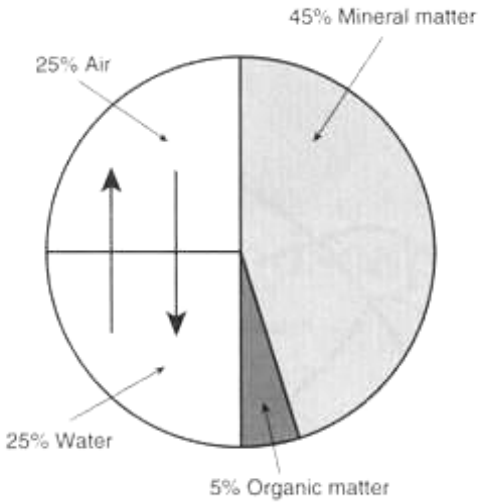
WEATHERING

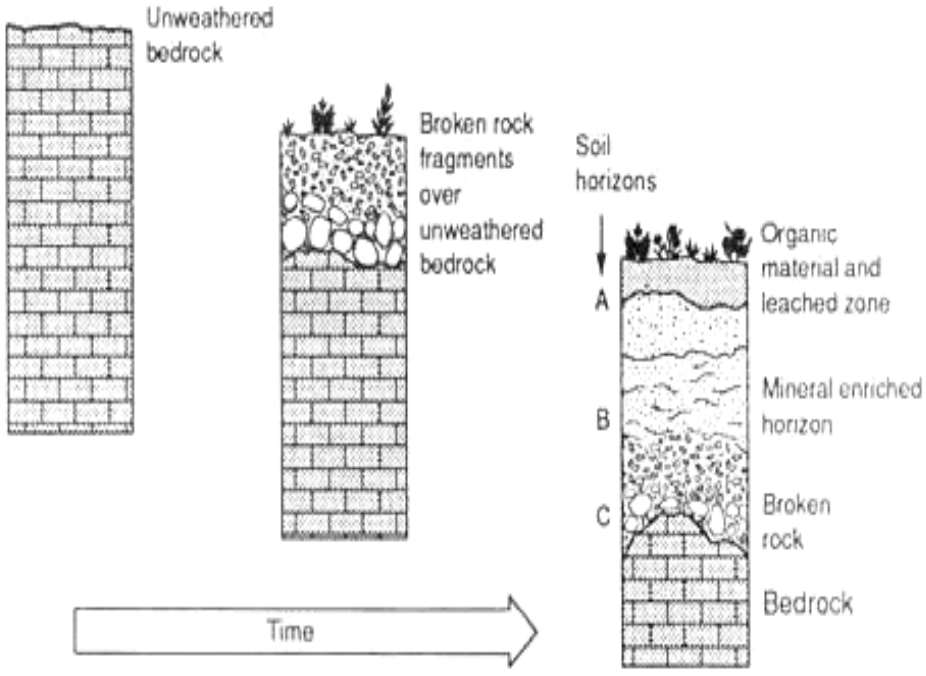
Aim 2: What is the composition of soil?

HW from "Reviewing Earth Science, the Physical Setting"

- **Read "How Do Soils Form" p83-85**
- **Do all questions on Part A p85**

Soil is a mixture of mineral matter, air, water, and organic remains. It is a resource that must be protected. It takes between 100 and 400 years for one centimeter of topsoil to form.





There are in general 3 soil horizons or layers.

Layer A. The top layer called topsoil is rich in dark-colored organic remains called humus. It is the best layer for growing crops.

Layer B. The middle layer is rich in mineral.

Layer C. The lowest layer of the soil is generally composed of broken rocks.

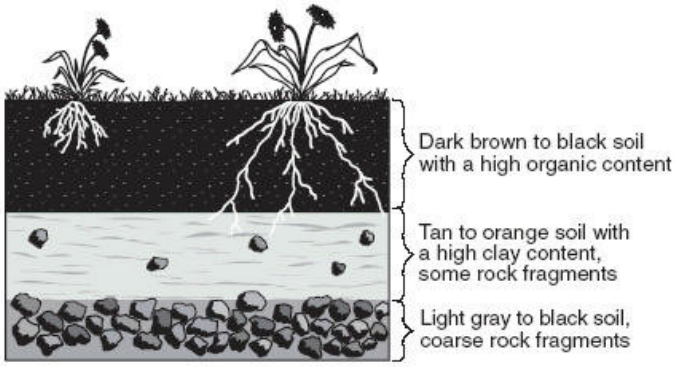
A residual soil is created from the residues of the rocks right underneath it. Therefore the mineral composition of the soil is similar to the bedrock below.

A transported soil was created somewhere else than transported by an agent of erosion (usually glaciers) to a new location. Therefore the mineral composition of the soil is different than the bedrock below.

Test your understanding

1/06

31 The cross section below shows layers of soil.

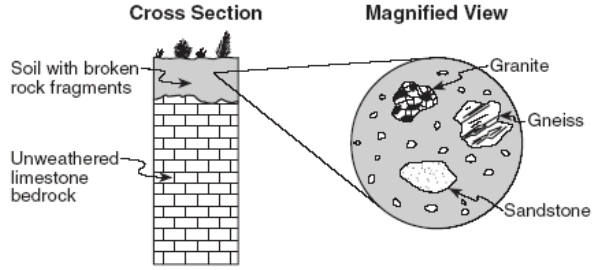


Which two processes produced the layer of dark brown to black soil?

(1) melting and solidification of magma (2) erosion and uplifting

(3) weathering and biologic activity (4) compaction and cementation

Base your answers to questions 63 through 65 on the cross section below, which shows an area near Watertown, New York. The top layer of soil contains broken rock fragments. A representative sample of this layer has been magnified.



63 Identify *one* mineral that could be found in all three rock fragments shown in the magnified view.

64 State *one* observable characteristic, other than mineral composition, that could help identify the gneiss fragment.

65 Rocks and minerals are natural resources that are mined in New York State. State *one* negative impact that should be considered before mining these natural resources.

18. The composition of soil that has formed in place is mostly determined by the local

(1) agent of erosion (2) age of the bedrock (3) slope of the land (4) minerals in the bedrock

19. What makes the best soil for growing most crops?

(1) solid bedrock (2) organic remains without any weathered rock

(3) organic remains mixed with weathered rock (4) broken-up rock without organic material

20. How is soil created from rock?

(1) physical weathering without chemical weathering (2) chemical weathering without physical weathering

(3) erosion without weathering (4) weathering without erosion

21. Which two processes have been the most important in the formation of our soils?

(1) weathering and biological events (2) leaching and evapotranspiration

(3) evaporation and condensation (4) erosion and sublimation

22. The chemical composition of a residual soil in a certain area is determined by the

(1) method by which the soil was transported to the area

(2) slope of the land and the particle size of the soil

(3) length of time since the last crustal movement in the area occurred

(4) minerals in the bedrock beneath the soil and the climate of the area

23. Which change would cause the topsoil in New York State to increase in thickness?

(1) an increase in slope (3) a decrease in rainfall (2) an increase in biologic activity (4) a decrease in air temperature