Weathering

1.  Any process that causes rock to crack or break into pieces is called physical weathering.  Initial product = final product

**End Result of physical weathering is increased surface area.**

2.  Physical weathering of rock may occur as the result of alternate freezing and melting or water, a process called frost action.

3.  Physical weathering may occur when cracks in rocks are widened by the forces exerted by growing plants.

4.  Abrasion is a physical weathering process that occurs when rocks grind against one another.  Abrasion occurs when sediments are moved by ice, gravity, running water, or wind.

5.  Physical weathering may occur when rocks split along planes of weakness when the pressure of overlying material is removed - unloading.  (exfoliation - peeling away)

6.  Chemical weathering changes the chemical composition of the minerals in rocks and usually weakens the rock as a result of these changes.  Initial product does not equal final product.

7.  The agents of chemical weathering include oxygen, water, carbon dioxide, and acids.

8.  Water is a major factor in chemical weathering because it speeds up chemical reactions, dissolves many materials, and reacts directly with many mineral substances.

9.  Some of the substances produced by chemical weathering are soluble in water and break down into ions (charged particles) when they dissolve.  All surface and ground water contains the ions of dissolved minerals.

10.  The rate of weathering is affected by climate, the size of the particles being weathered, and the type of material being weathered. Particle size and hardness of minerals affects weathering rates.  Smaller particles will weather faster.  Harder minerals will resist weathering.

11.  At high latitudes  (and high altitudes) frost action is the major form of weathering.  In warm climates, chemical weathering is most important.  However, low humidity will slow the rate of weathering in both cases.

12.  Local climatic conditions - winds, nearness to cities, etc - can affect the expected weathering rate for a region.

13.  **The end result of all weathering processes is sediment**.  A soil profile shows the distinct layers in the soil, which differ in color, texture and mineral composition.  (Mature soil layers: Topsoil, subsoil, partly weathered, unweathered rock.)

14.  Soil profiles develop as a result of weathering processes and biologic activity.