Weathering Notes ***Name:*** _____

•Process by which **rocks** are _____ _____ due to processes that occur on Earth's surface:

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There are 2 DIFFERENT Types of Weathering: Mechanical and Chemical

•*Mechanical Weathering is also called "Physical Weathering"*

–Rock is _____ _____ into _____ _____ of the ***same material*** (_____ _____ in composition.) ***Like when a rock is broken into sediment.***

– There are **4 main ways** a rock can be mechanically or physically weathered:

1. Frost (Ice) Wedging (mechanical/physical)

–Process in which _____ _____ in the **cracks** of rock and _____ (***pushes***) it apart

–This happens because **water EXPANDS when it freezes to ice**

–Occurs where there are **frequent freezes and thaws** (like in Harrisonburg!)

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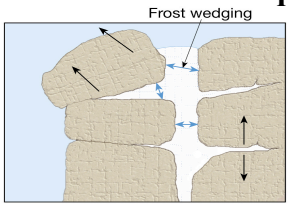

Frost/Ice Wedging can cause _____ to form in pavement (roads)

2. Abrasion (mechanical/physical)

–The _____ _____ of rock material by _____action ***(scratches off rock)***

–***Usually caused by sediment in wind, running water, and glaciers***. 2 main types:

Wind abrasion- _____ effect on stationary rocks (creates sandstone arches)

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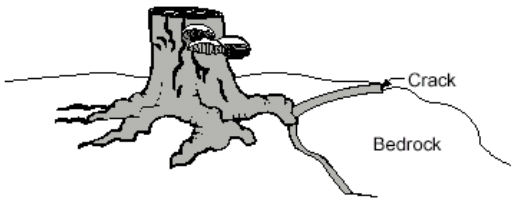
Hydraulic abrasion- _____ & _____ flowing over boulders (*like in rivers with rapids.)*

3. Plants and Animals (mechanical/physical)



_____ can _____ rock, also known as "**Root Pry**" or "**Root Action**"
As the roots grow it pushes the rock apart, you may have seen this in sidewalks!

–Animals also dig _____, which can break up rocks.

4. Exfoliation (mechanical/physical)

Exfoliation- gradual _____ __ _____ due to _____***and frost action***, typical of granite domes like those in Yosemite N.P.

Exfoliate = to remove layers

•*Chemical Weathering*

–The _____ or ***decomposition*** of _____ that occurs when _____ are _____***into different substances***

–_____ in composition (*what it is made of)*

•***CHEMICAL Weathering*** *Involves _____ , water vapor, _____, and/or _____.*

•*2 main types****: Hydrolysis*** *(chemicals in water) and* ***Oxidation*** *(reactions with oxygen)*

•Hydrolysis: (Chemical) *hydro=water*

•_____ **Acid in water dissolves _____.** This chemical weathering can hollow out underground _____**(limestone and dolomite dissolve because they contain calcite.)**

•_____ _____ (*carbonic acid)* weathers the details of statues and tombstones (ex: marble & limestone)

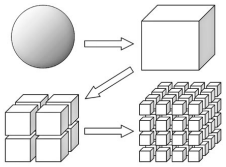
•Oxidation: (chemical)

•**Oxidation of minerals with_____ (magnetite, pyrite)** results in the formation of _____ **(or iron oxide.) This is why _____** is the **red planet.**

•**Oxidation** causes rocks with **copper** to turn _____**.**

Rate of Weathering: How fast a rock weathers depends on **3 factors**:

•1. Surface area



-The _____ the surface area (the more ***number*** of sides), the _____ the weathering rate (***it will break down faster!***)
There are more surfaces to be weathered.

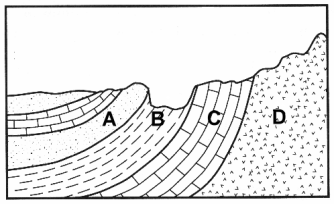
Questions: **The **more sides** and pieces that a rock has, the_____ it will weather.
** The **fewer sides** and pieces that a rock has, the _____ it will weather.

•2. Rock composition: (what it is made of)

–Some _____ (which make up rocks) are more _____ (***harder***) than others

–***Remember the Moh's scale of hardness***?

–For example, _____ **is more resistant** than _____(which dissolves in acid)



Questions: Which layer weathered the **slowest?** _____

Which layer weathered the **fastest?** _____

•3. Climate (the ***long term pattern*** of **moisture/rainfall** and **temperature**)

–Weathering rates are **faster** in _____**,** _____ climates. (both factors must be present)

–Weathering rates are **slower** in _____, _____ climates.

Questions:

What about the weathering rate in the desert (hot & dry)? _____

What about the weathering rate in the artic (cold & dry)? _____

What about the weathering rate in the rainforest (hot & wet)?