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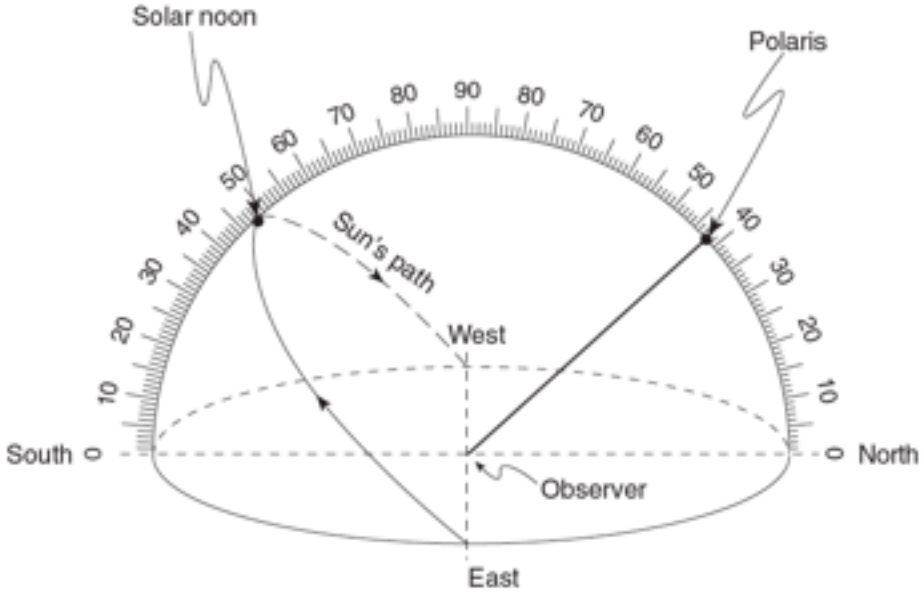
Sun's Path and Altitude of Polaris



1. What season is shown in the diagram above? _____FALL/SPRING_____
2. What is the altitude of the noon sun? _____48_____
3. What direction would the noon shadow of the observer point? _____NORTH_____
4. What is the altitude of Polaris? _____42_____
5. Name a city in NYS that would see Polaris at this altitude? ____ELMIRA_____
6. What would the altitude of the noon sun be in Summer? ___71.5_____
7. What is the zenith? _POINT DIRECTLY ABOVE OBSERVER_____
8. Does the noon sun ever reach the zenith in NYS? _NO_____
9. Explain why the zenith is never reached in NYS. _____NY NOT IN THE TROPICS_____
10. What happens to the length of the shadow from sunrise to noon? _DECREASES__
11. What happens to the length of the shadow from noon to sunset? _INCREASES__
12. What season has the longest noon shadow? _____WINTER_____
13. What season has the greatest angle of insolation? ____SUMMER_____
14. What season has the shortest noon shadow? _____SUMMER_____
15. What season has the lowest angle of insolation? ____WINTER_____

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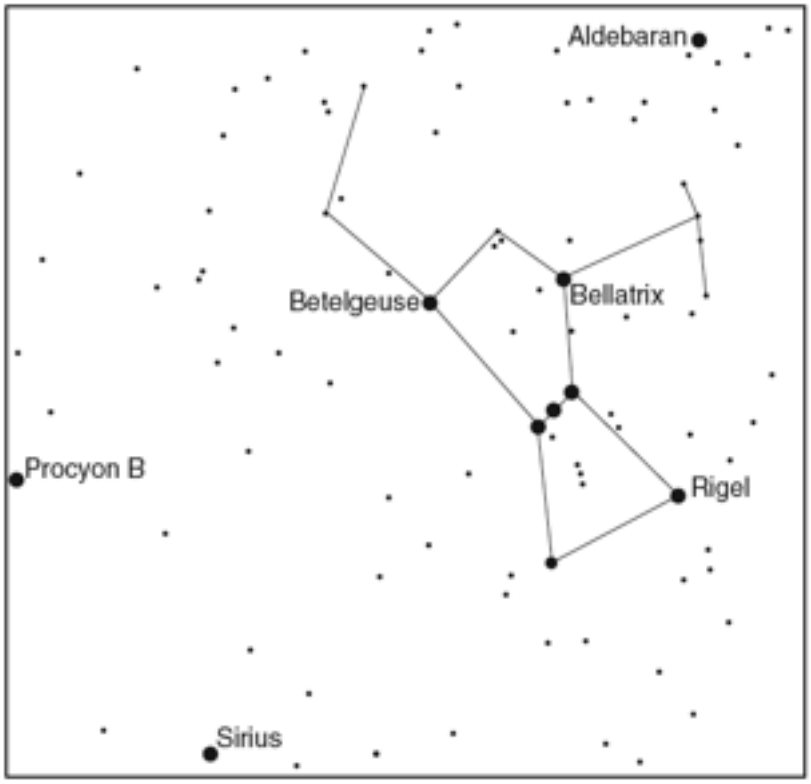
Stars



1. What is the luminosity and temperature of Betelgeuse?

500,000 X BRIGHTER/3500C

2. What is the temperature and luminosity of Rigel?

_____400,000X BRIGHTER/12,000C_____

3. What is the name of the reaction that produces light within a star? __FUSION____
4. What is the "fuel" of the sun? _____HYDROGEN_____
5. The majority of stars fit into what category? ___MAIN SEQUENCE_____
6. Our own sun is considered a (what group of star?) _MAIN SEQUENCE_____
7. In 5 billion years, our sun is going to turn into a ___RED GIANT_____
8. We can see Orion in December...why can't we see Orion in June?

   _____EARTH REVOLVES AROUND THE SUN_____

9. What color star is Sirius? ___WHITE/BLUE-WHITE_____
10. What group of stars does Aldebaran belong to? ___GIANT_____

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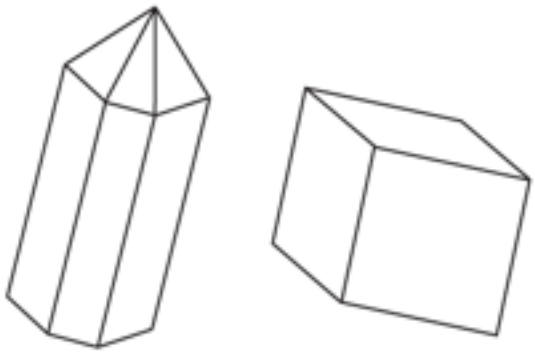
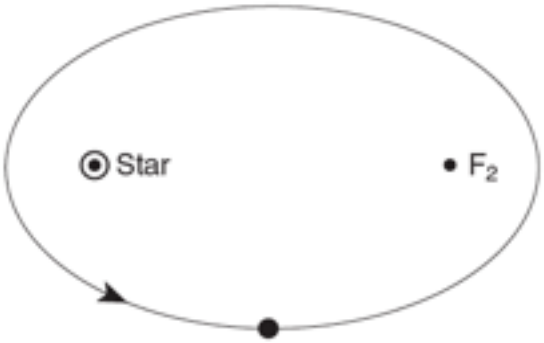
Minerals



Quartz Halite

1. What is the hardness and composition of quartz? _____7/SIO2_____
2. What is the luster and form of breakage of halite? ___NONMETALLIC/CLEAVAGE__
3. What makes quartz different from halite? _INTERNAL ARRANGEMENT OF ATOMS_
4. What mineral has a metallic luster, hardness of 6.5 and is a brassy yellow color?
   _____PYRITE_____
5. What mineral has a non-metallic luster, has cleavage and bubbles with acid?
   _____CALCITE_____
6. What mineral has a greasy feel and and is used in ceramics? ___TALC_____

Eccentricity



1. What is the eccentricity of this ellipse? _____0.672_____
2. When the planet gets close to the star, what happens to the velocity? _INCREASES_
3. The more elliptical this ellipse gets...what happens to eccentriciy? _GETS HIGHER_
4. Low eccentricity is what shape orbit....round or oval? ___ROUND___

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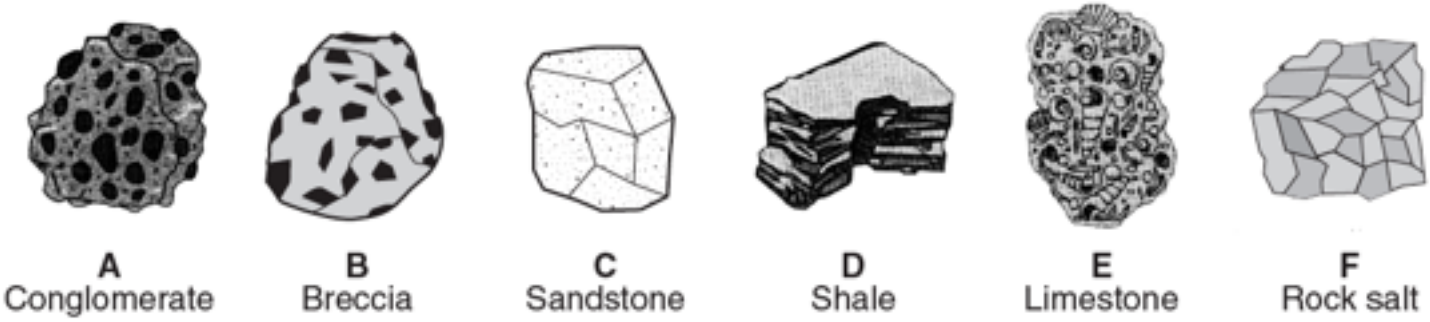
Sedimentary Rocks



1. Which rocks above are clastic? _____A,B,C,D_____

2. Which rock is organic? _____E-LIMESTONE_____

3. Which rock is a chemical rock? _____F-ROCK SALT_____

4. What are the 2 ways a chemical rock can form? _PRECIPITATION/EVAPORATION_

5. Describe the process for the formation of a clastic rock?

WEATHERING/EROSION/DEPOSITION/COMPRESSION/COMPACTION/LITHIFICATION

6. What is the particle size for a sandstone rock? _____0.006-0.2CM_____

7. What is the difference between a conglomerate and breccia rock?

   _____ANGLED/ROUNDED FRAGMENTS_____

8. Which rock had particles that traveled further....conglomerate or breccia?

   __CONGLOMERATE-ROUNDED FRAGMENTS_____

9. Which rock is made of particles with a diameter of 0.006-0.2cm? _SANDSTONE__

10. Which bioclastic rock is made from dead plants? __BITUMINOUS COAL_____

11. What is the composition of rock gypsum? _____GYPSUM_____

12. How are clastic sedimentary rocks classified? _____GRAIN SIZE_____

13. How are chemical rocks classified? _____COMPOSITION_____

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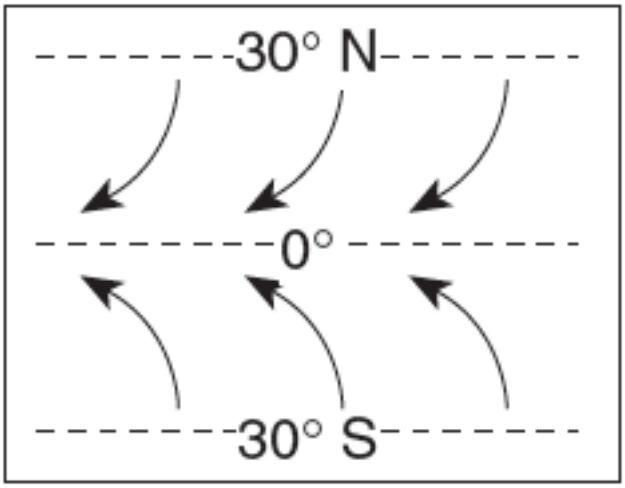
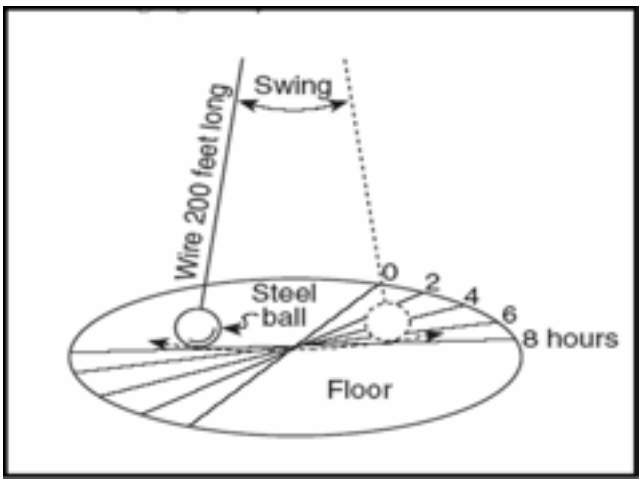
Earth Rotation





1. The Earth rotates in what direction? _____COUNTERCLOCKWISE_____
2. What direction do wind and water currents deflect towards in the northern hemisphere? _____RIGHT_____
3. What direction do wind and water currents deflect towards in the southern hemisphere? _____LEFT_____
4. The coriolis effect is caused by what? ___EARTH ROTATION_____
5. The Foucault Pendulum supports the idea that the Earth does what? _ROTATES__
6. The Earth rotates how many degrees per hour? _____15 DEGREES_____
7. What does rotation give us on the planet? _____DAY/NIGHT_____
8. What does revolution give us on the planet? _____SEASONS_____

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Metamorphic Rocks

Metamorphic

1. What rock is shown in the picture above? _____GNEISS_____
2. What 2 processes produce a metamorphic rock? ____HEAT/PRESSURE____
3. What does foliation mean? _____MINERAL ALIGNMENT_____
4. What type of foliation does Gneiss show? _____BANDING_____
5. What are the 2 types of metamorphism? ___REGIONAL/CONTACT_____
6. What sedimentary rock forms into Anthracite Coal? __BITUMINOUS COAL___
7. What sedimentary rock forms into Quartzite? _____SANDSTONE_____
8. What sedimentary rock forms into Marble? _____LIMESTONE_____
9. What metamorphic rock shows the lowest grade of metamorphism? __SLATE__
10. What metamorphic rock shows the highest grade of metamorphism? _GNEISS__
11. How are nonfoliated rocks classified? _____COMPOSITION____
12. What metamorphic rock is made of platy mica crystals? ___SCHIST____
13. What metamorphic rock can be made from various other rocks through the contact of magma? _____HORNFELS_____
14. What metamorphic rock is made from shale? _____SLATE_____

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Igneous Rocks

Igneous

1. What 2 processes produce an igneous rock? __MELTING/SOLIDIFICATION_____

2. Rocks that form inside the earth are....intrusive or extrusive? __INTRUSIVE_____

3. Rocks that form at or near the surface are...intrusive or extrusive? __EXTRUSIVE__

4. Igneous rocks are classified how? _____TEXTURE_____

5. Very coarse rocks are created where? _INSIDE THE EARTH_____

6. What is the color, density and composition of Granite?

_____LIGHT/LOW AND FELSIC_____

7. What is the color, density and composition of Basalt?

_____DARK/HIGH AND MAFIC_____

8. Name a coarse grained rock that contains the mineral pyroxene? ___GABBRO____

9. Name a vesicular rock that is glassy and floats in water? _____PUMICE_____

10. Name an igneous rock that contains a lot of quartz? _____GRANITE_____

11. Rocks that have large crystals formed....quickly or slowly? ____SLOW_____

12. Rocks that have very small crystals formed...quickly or slowly? ___QUICK_____

13. How are the crystals described with igneous rocks? ___INTERLOCKING_____

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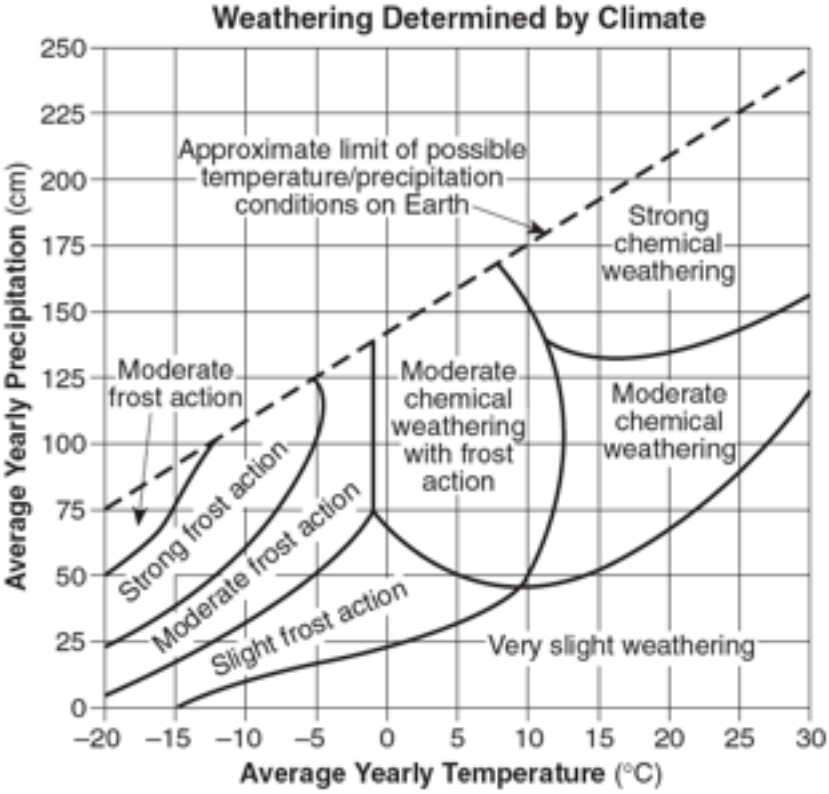
Weathering Conditions



1. Describe the climate needed for chemical weathering to be dominant.

   _____WET AND HOT_____

2. Describe the climate needed for physical weathering to be dominant.

___WET AND TEMPS ABOVE/BELOW FREEZING_____

3. Provide a few examples of physical weathering. __FROST ACTION_____

4. Provide a few examples of chemical weathering. __CARBONATION_____

5. Describe what a chemical weathering landscape would look like.

   ____ROUNDED HILLS, THICK VEGETATION, THICK SOIL_____

6. Describe what a physical weathering landscape would look like.

   ____STEEP, SHARP CLIFFS, THIN SOIL, NO VEGETATION_____

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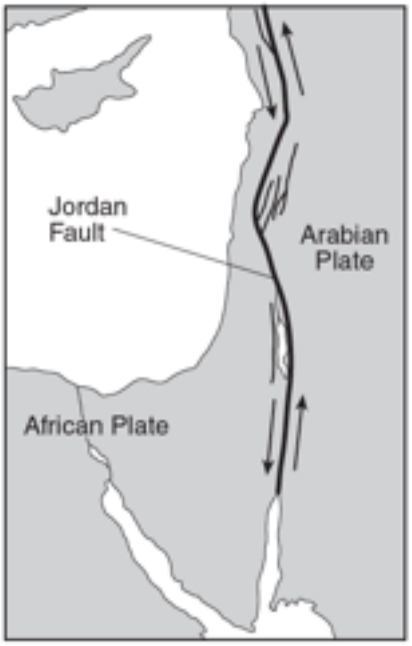
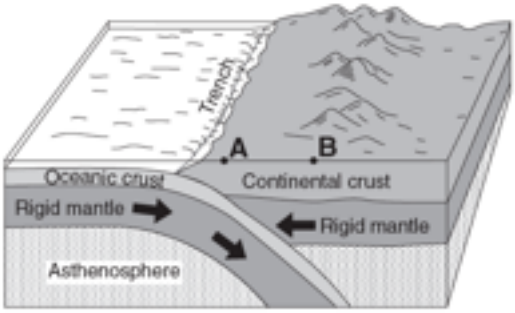
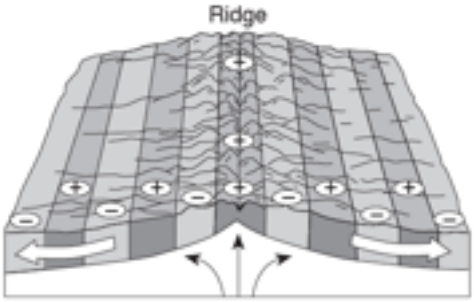
Plate Boundary Diagrams



A



B



C

1. Name the type of plate boundary for diagram A __TRANSFORM_____
2. Name the type of plate boundary for diagram B ___CONVERGENT_____
3. Name the type of plate boundary for diagram C __DIVERGENT_____
4. Provide an example from your reference table where you would find diagram A.
   _____SAN ANDREAS FAULT_____
5. Provide an example from your reference table where you would find diagram B.
   _____NAZCA/SOUTH AMERICAN PLATES_____
6. Provide an example from your reference table where you would find diagram C.
   _____MID ATLANTIC RIDGE_____
7. What is convection and what layer of Earth would you find it?
   _____DENSITY CIRCULATION WITHIN THE ASTHENOSPHERE_____
8. Describe the geologic features that you would get with diagram A.
   _____MASSIVE EARTHQUAKES_____
9. Describe what the + and - signs mean with diagram C.
   _____REVERSAL OF MAGNETIC POLARITY_____

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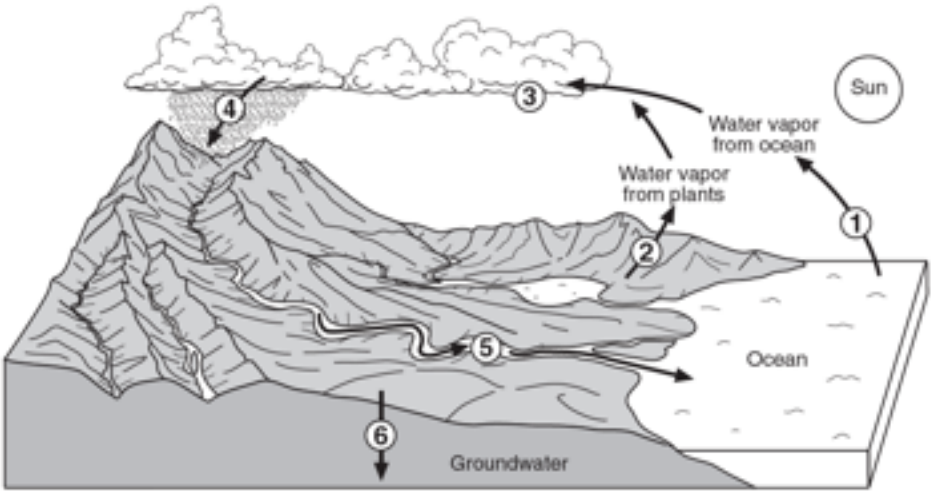
The Water Cycle



1. Label the processes from the diagram above....

   i. ___EVAPORATION_____
   ii. ___TRANSPORATION_____
   iii. ___CONDENSATION_____
   iv. ___PRECIPITATION_____
   v. ___RUNOFF_____
   vi. ___INFILTRATION_____

2. Provide the necessary ground conditions for runoff.
   ___IMPERMEABLE SOIL THAT IS SATURATED_____

3. What does the term "saturated"? ___FILLRD WITH WATER_____

4. Provide the necessary ground conditions for infiltration.

   _____UNSATURATED SOIL THAT IS PERMEABLE_____

5. Clouds form from what process? _____CONDENSATION_____

6. Water enters the atmosphere through 2 processes...what are the?

   _____EVAPORATION/TRANSPORATION_____

7. What are the 2 groundwater zones?

   ___ZONES OF SATURATION AND AERATION_____

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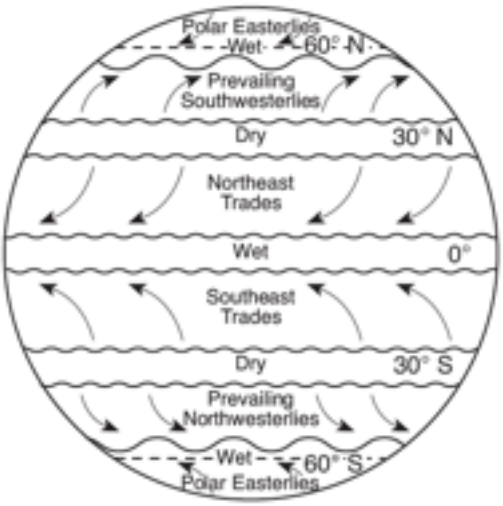
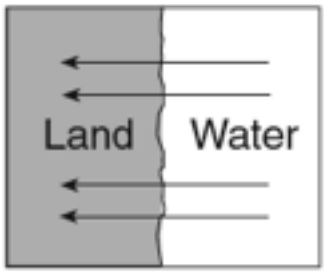
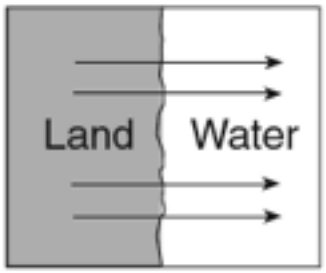


Winds



A



B

1. Winds in the northern hemisphere travel in what direction? ___RIGHT_____

2. Winds in the southern hemisphere travel in what direction? _____LEFT___

3. Winds that converge at the surface do what? _____RISE AND COOL_____

4. Winds that diverge at the surface do what? ____SINK AND WARM_____

5. Which diagram shows a land breeze? _____B_____

6. What time of day does a land breeze occur? _____NIGHT TIME_____

7. Which diagram shows a sea breeze? _____A_____

8. What time of day does a sea breeze occur? _____AFTERNOON_____

9. Winds are caused by differences in what? ____PRESSURE_DIFFERENCES_____

10. What are lines of equal pressure called? ___ISOBARS_____

11. How do you determine where the strongest winds are on a weather map?

_____ISOBARS CLOSE TOGETHER_____

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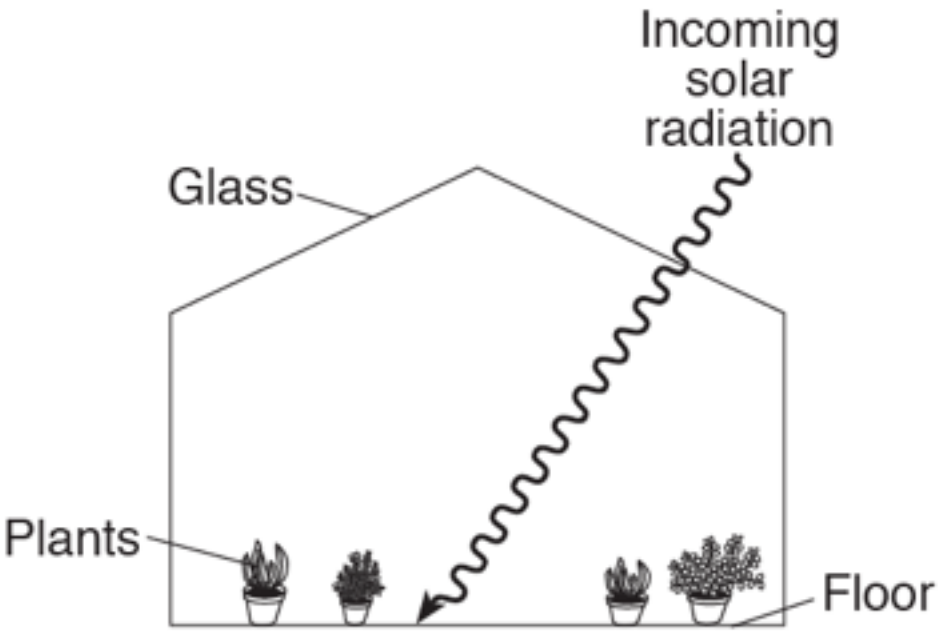
The Greenhouse Effect



1. What type of radiation enters the greenhouse (provide wavelength and names of waves) ___SHORT AND UV_____

2. What type of radiation tries to escape the greenhouse (provide wavelength and names of waves) ___LONG AND IR_____

3. Provide a few examples of greenhouse gases. __CO2, METHANE_____

4. The glass in the greenhouse is equivalent to which greenhouse gas? ___CO2_

5. What are some possible reasons for the increased amount of carbon dioxide in the atmosphere?

____BURNING OF FOSSIL FUELS, DEFORESTATION_____

6. Dark colors are good at doing what? ___ABSORBING/RADIATING_____

7. The electromagnetic spectrum is organized by what? ___WAVELENGTH_____

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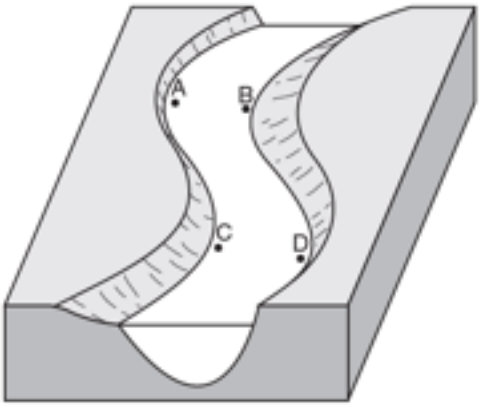
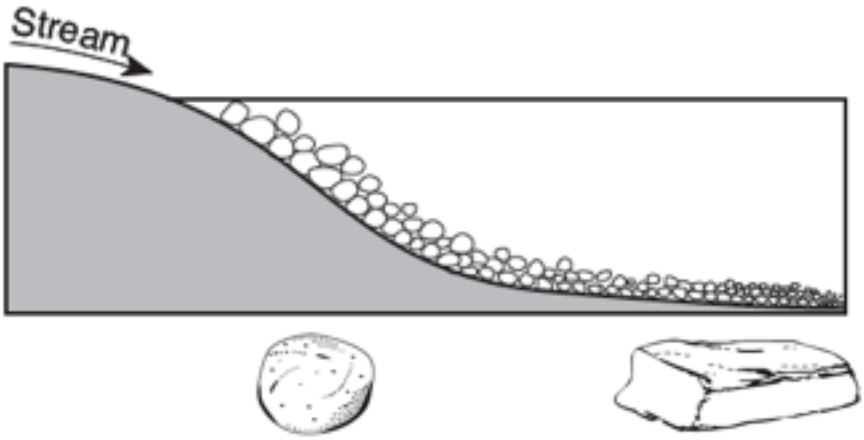


Deposition



1. What is deposition? _____SEDIMENTS DROPPED OFF_____

2. What is erosion? _____TRANSPORTATION OF SEDIMENTS_____

3. The diagram at the left, which positions will show erosion? ____A/D_____

4. The diagram at the left, which positions will show deposition? ___B/C_____

5. What is carrying power? _ABILITY TO MOVE SEDIMENT_____

6. What is discharge? _____VOLUME_____

7. What is velocity? _____SPEED_____

8. What are meanders? _____TURNS_____

9. The diagram on the right shows horizontal sorting...what are some of the factors that effect deposition? ___SIZE, SHAPE, DENSITY_____

10. What is the relationship between velocity and slope? ___DIRECT_____

11. In a straight channel stream, where does water travel the fastest?__CENTER___

12. Why does water erode more on the outside of a meander? __FAST WATER_____

13. Why does water deposit more on the inside of a meander? __SLOW WATER_____

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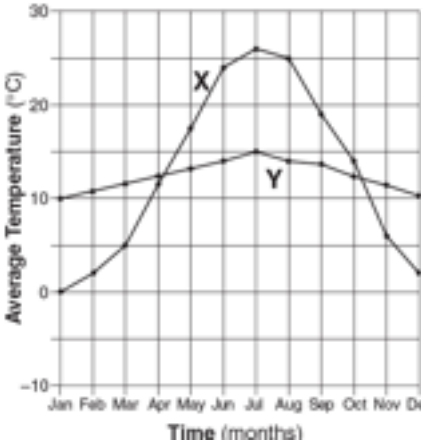
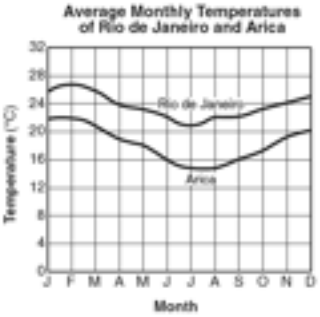
Climatic Conditions

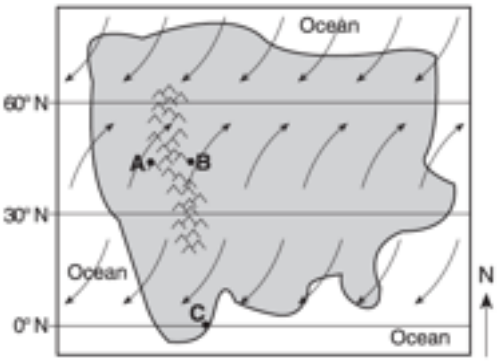


A

B



C



D

1. In diagram A, explain why the 2 cities have very different temperature curves?

   ___1 INLAND AND ONE COASTAL_____

2. Explain the summers and winters of an inland region.

   ___HOT SUMMERS/COLD WINTERS_____

3. Explain the summers and winters of a coastal region.

   ____COOL SUMMERS/WARM WINTERS_____

4. What substance has the highest specific heat on the planet? _WATER_____

5. Describe the differences in heating/cooling for substances that have high or low specific heats.

   ___HIGH-SLOW HEATING/COOLING....LOW-FAST HEATING/COOLING_____

6. In diagrams B and C, explain the difference in temperature curves for Arica and Rio de Janeiro. Both cities are at the same latitude.

   _____COLD CURRENT-COLD AIR...WARM CURRENT-WARM AIR_____

7. In diagram D, explain the difference in climate for positions A and B.

   ____A-WINDWARD...B-LEEWARD_____

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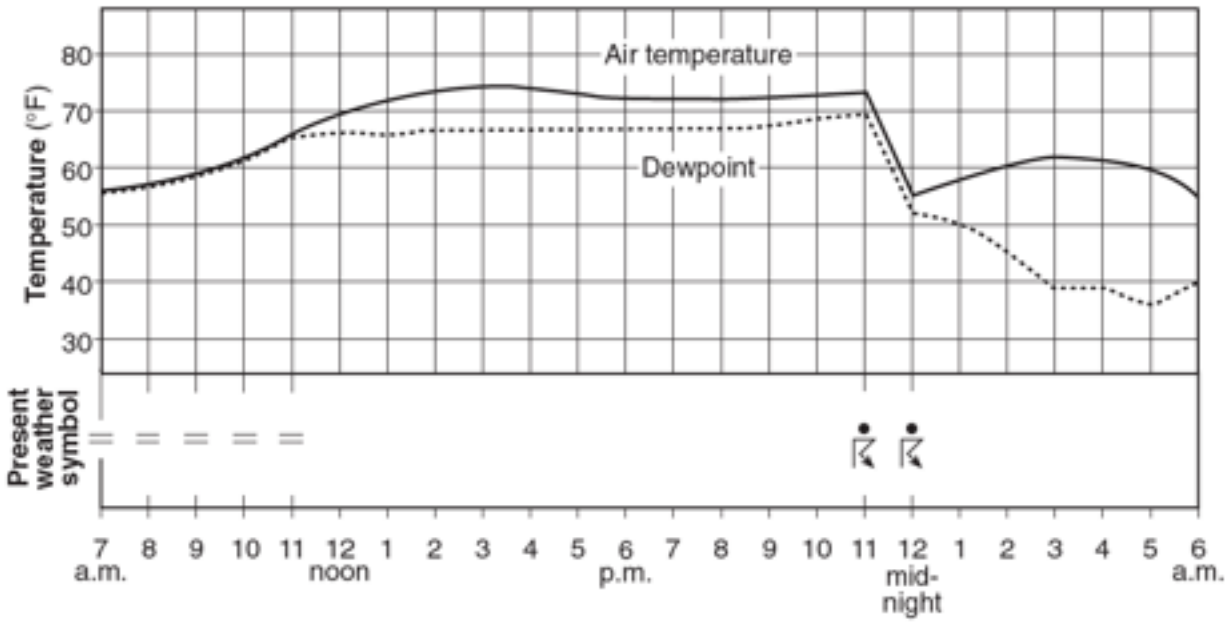
Temperature and Dew Point



1. Low pressure is going to bring in what type of weather? ____RAINY_____

2. High pressure is going to bring in what type of weather? ___DRY_____

3. As the air temperature approaches the dew point, what happens outside?

   _____PRECIPITATION_____

4. As the air temperature and dew point get farther apart, what happens to the weather outside? _____BEAUTIFUL WEATHER_____

5. Clouds form when warm air rises, expands, cools to the ___DEW POINT_____

6. In the diagram above, what 2 time blocks represent the best chance for precipitation? ____7-11AM...11PM-12AM_____

7. As air temperature approaches the dew point, what happens to the relative humidity?

   _____INCREASES_____

8. Air that is saturated is said to have what type of humidity? _____100%_____

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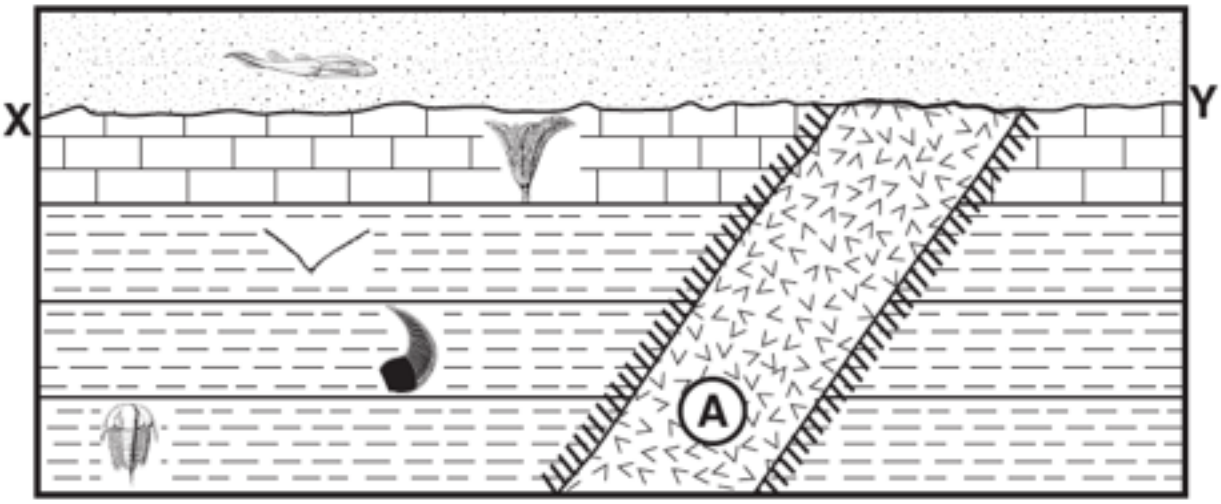
Index Fossils and Correlation



1. What are the 2 criteria for a fossil to be considered an “index fossil”?

   ____LIVED FOR SHORT PERIOD...OVER A HUGE AREA_____

2. What is line XY called? ____UNCONFORMITY_____

3. What does line XY represent? _____GAP IN GEOLOGIC ROCK RECORD_____

4. Provide the steps needed to create line XY

   ___UPLIFT, WEATHERING, EROSION, SUBSIDENCE_____

5. What is rock layer A? _____INTRUSION_____

6. Why are these fossils useful in determining the relative age of these rocks?

   ___AGE OF FOSSIL=AGE OF ROCK_____

7. Put the sequence in order....

a. ___SHALE_____
b. ___SHALE_____
c. ___SHALE_____
d. __LIMESTONE_____
e. ___INTRUSION_____
f. __UPLIFT_____
g. __W + E_____
h. __SUBSIDENCE_____
i. ___SANDSTONE_____

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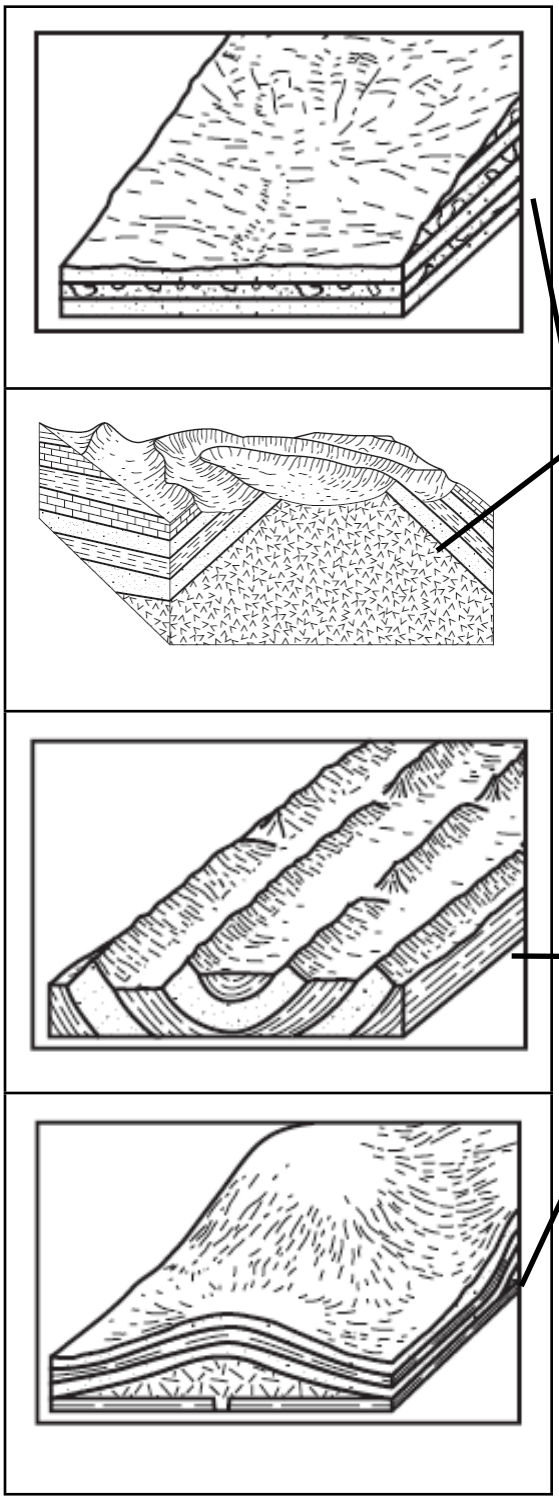
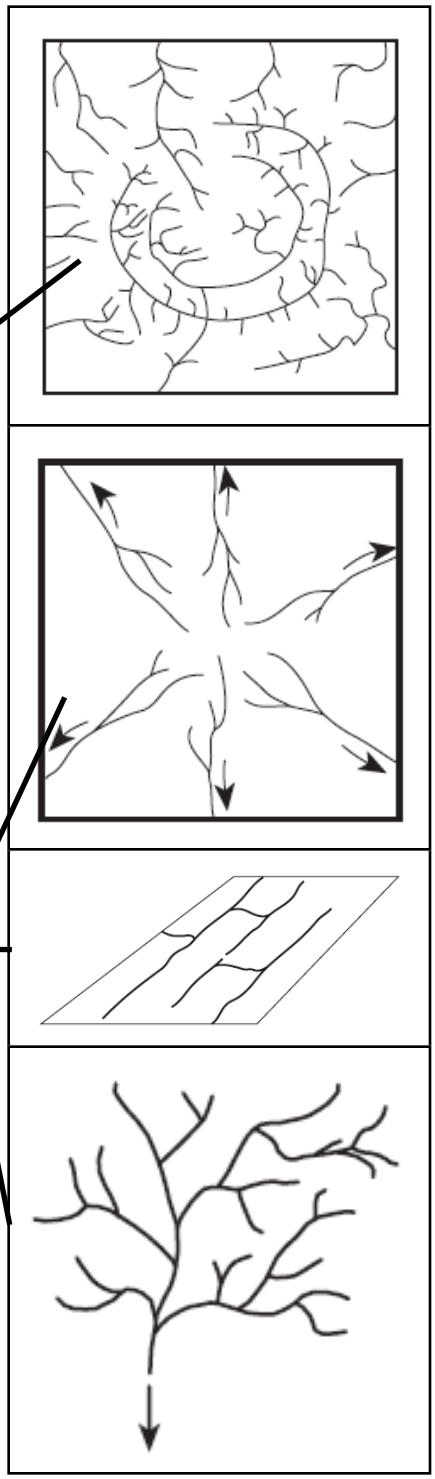
Landscapes

Match the landscapes on the left with the drainage patterns to the right





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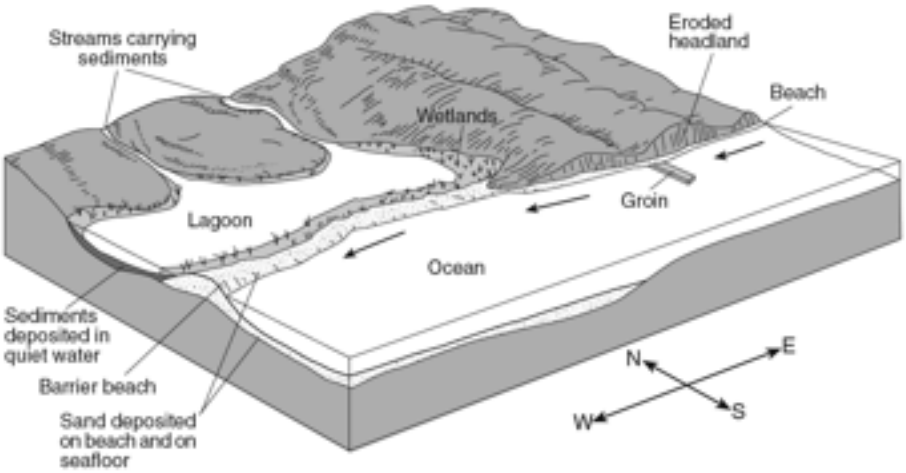
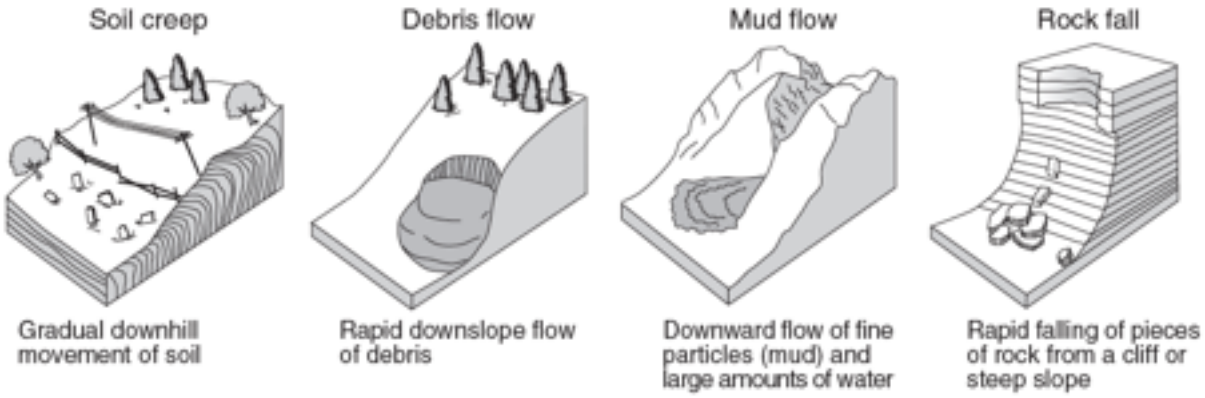
Oceans



1. When looking at the groin, what compass direction will the largest beach? _____E__
2. Sediment is carried parallel to the shoreline by ___LONGSHORE CURRENTS___
3. Ocean currents follow the same path as ___WIND CURRENTS_____
4. What direction is the current flowing? _____WEST_____

Mass Wasting



1. What is the major force behind all 4 types of erosion shown above? _GRAVITY__
2. Mass wasting produces what type of sediment? ___UNSORTED_____
3. Glaciers/gravity produce unsorted sediment, wind and water produce __SORTED
4. Which one of the 4 diagrams above has the greatest velocity? ___ROCK FALL__