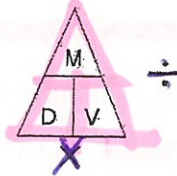


VE:

MIDTERM REVIEW

1. Density is / how close or compact the molecules are
2. As temperature increases / density decreases (molecules spread out) and volume increases (that is why heat rises!) *Hot = less dense Cold = more dense*
3. The same objects have the / same density NO MATTER WHAT SIZE
4. Density triangle / cover up the variable you want to solve for:



Parallels (Never Touch)

5. Latitude lines run / east – west, but measure north – south of Equator (latitude = flatitude)

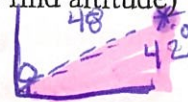
6. Longitude lines run / north – south, but measure east – west of Prime meridian *Meridians*

(Converge at the Poles)

7. The altitude of Polaris equals / your latitude (be able to use NYS map to find altitude)

8. A set of circles inside circles indicates / a hill

74°N = 74° 68°N = 68°



9. The smallest circle in the middle is the / hilltop

10. Tick marks mean / depressions; the first tick marked line is the same elevation as the one next to it

11. Contour interval is the / amount between each contour line; Ocean is sea level 0'

12. Lines close together mean / steeper gradient

13. Water flows / downhill; opposite the bends (“V”) in contour lines (they point upstream)

14. The physical properties of minerals depends upon / the internal arrangement of atoms

15. Color is not a good way to ID a mineral because / some minerals come in lots of colors like quartz

16. Cleavage is / the flat sides on a mineral, mineral breaks along planes of weak bonding

17. The mineral and rock that react to acid are / calcite (rhombus-shaped) and limestone

18. The most abundant minerals in Earth’s crust are / oxygen and silicon (ESRT p.1) *Silicates*

19. Rocks are classified on the basis of / their origin (how they formed)

20. Sedimentary rocks form from / sediments by compaction & cementation, evaporation, and organic remains

Texture / clastic (pieces of other rocks)

/ Fossils!!!

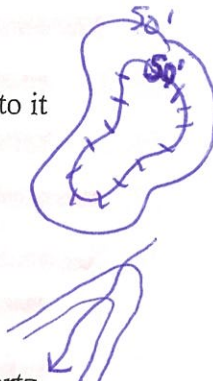
21. Igneous rocks form by / the crystallization of molten magma or lava (intergrown crystals)

Coarse Large crystals / slow cooling (Intrusive)

Fine Small crystals / fast cooling (Extrusive)

Texture / glassy, fine, and coarse

22. Vesicular means / gas pockets (cooled fast, extrusive, volcanic)



Slow = ~~fine~~ coarse

23. Crystal size in igneous rocks depends on / the rate of cooling Fast = Fine

P7

24. Metamorphic rocks form from / other rocks by heat and pressure (recrystallization)

Texture / foliated or banded

Key words are / foliation and distorted structure

25. Weathering is the / breaking down of rocks into smaller pieces (sediments)

Physical + chemical

26. As particle size decreases / surface area increases and the rate of weathering increases

Alka Setzer

27. Frost action occurs as / water seeps in crack, freezes and expands

Physical

28. Rocks become smaller and rounder in a stream due to / abrasion (rock hitting against each other)

Wind + water

29. Chemical weathering / changes the chemical composition of the rock, best example is rust also cave formation and acid rain

limestone caves

30. Resistant layers of rock / stick out (forms cliffs)

Depends on minerals in the rock

31. Moist and warm climates favor / chemical weathering

32. Moist and cold climates favor / physical weathering (good for frost action)

33. Soils develop as a result of / weathering and biological activity

34. Erosion is the / movement of sediment

35. The primary force that drives the agents of erosion is / gravity

36. The primary agent of erosion is / water

37. Streams valleys are / V-shaped

you cant spell river w/o a V

38. Stream velocity depends on / gradient (steepness or slope) and volume (amount) of water

speed

39. The outside of a meander bend is / fast and erodes (elbow)

40. The inside of a meander bend is / slow and deposits (dent)



P6

41. As stream velocity increases, the size of the particles that can be transported / increases

42. Evidence of gravity erosion is / unsorted and angular (sharp) rocks at base of cliff.



43. Glacial landscapes show / U-shaped valleys, erratics (large boulders), kettle lakes, moraines & scratched bedrock

44. Glaciers advance from the / north, they formed Long Island, left sand and gravel (moraines)

45. Wind erosion creates / sand dunes, the windward side of a sand dune has a gentle slope

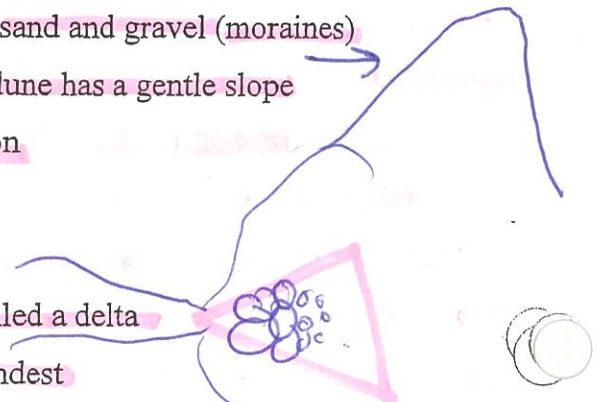
46. Deposition / is the dropping or stopping of sediments after erosion

47. Water and wind deposits are / sorted by size and layered

48. Gravity and glacial deposits are / unsorted and not layered

49. When a river enters the ocean / it slows down, deposits and is called a delta

50. The particles that settle out first are / larger, most dense, and roundest

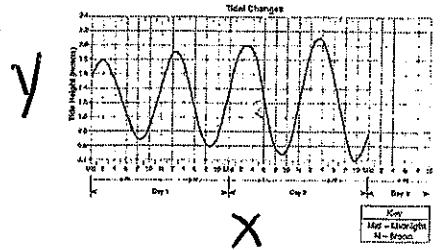


Rocks and Minerals (ESRT pages are huge here, Rock pages on 6, 7, 16 and 1)

Weathering, Erosion, Deposition, (ESRT page 6 top right) Latitude and Longitude (page 2)

GRAPHING

- Look at a data table:
 - Determine which column contains the X data, and which contains the Y data
 - Calculate the correct scale to use for the X and Y axes.
 - Plot the data
 - Connect the data points with a line
- Look at a graph. Explain which type of relationship that it shows.

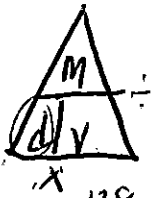


cyclic relationship

FORMULAS AND WORD PROBLEMS

- Look at a data table. Calculate the rate of change (using the formula in your reference tables), rounding your answer to the nearest tenth and including the correct units.
- Find the density of the following:

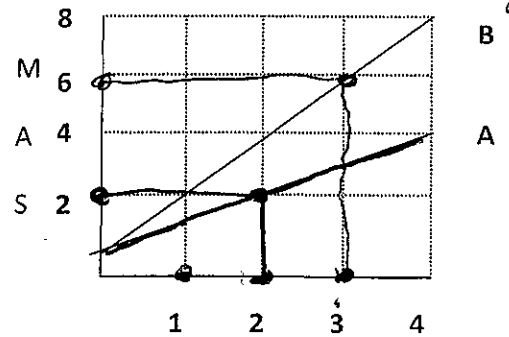
- A cube has a mass of 128 grams and a density of 2 gm/cc. Find the length of one side.
- A rectangle has a length of 5 cm, a width of 4 cm, and a height of 2 cm. It has a density of 3 gm/cc. Calculate its mass.
- Using the graph below, find the density of objects A and B.



$$\frac{128}{2} = 64$$

$$A = d = \frac{m}{V} = \frac{2}{2} = 1$$

$$B = d = \frac{m}{V} = \frac{6}{3} = 2$$

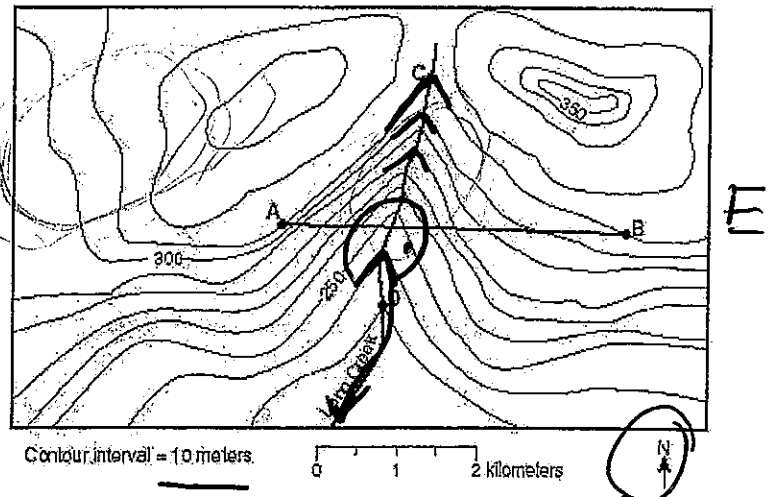


TOPOGRAPHIC MAPS

- You will be given a topographic map with a line drawn on it. You will be asked to construct a profile along that line. (You will practice profiles in class and in labs, very important don't miss!)

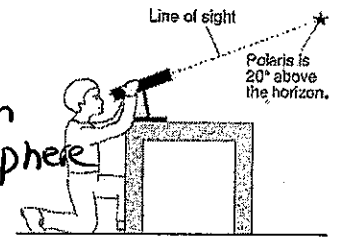
- For the topographic map to the right you must be able to:

- Determine the contour interval *10m*
- Determine the elevation of a specific point, either on a contour line or between contour lines
- Calculate the gradient between two points (using the equation in the reference tables)
- Determine the direction of stream flow *South*
- Determine the maximum elevation possible of a mountain
- Identify areas of gentle and steep slopes



LATITUDE AND LONGITUDE

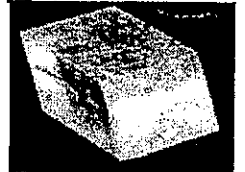
- Determine the latitude and longitude (in degrees and minutes) of a location, with the correct directions i.e. N, S, etc.
 - Which city is located at the following coordinates?
 - $42^{\circ} 05' N$ $75^{\circ} 55' W$ - Binghamton
 - $44^{\circ} 00' N$ $75^{\circ} 55' W$ - Watertown
 - $42^{\circ} 40' N$ $73^{\circ} 45' W$ - Albany
 - What is the latitude and longitude of the following locations?
 - Kingston: $42^{\circ} N, 74^{\circ} W$
 - Old Forge: $43^{\circ} 40' N, 75^{\circ} W$
 - Mount Marcy: $44^{\circ} 15' N, 74^{\circ} W$
- Determine the altitude of Polaris for any location in the Northern Hemisphere
 - What is the altitude of Polaris for the following locations?
 - $41^{\circ} N$ ~~$76^{\circ} W$~~ - ~~$40^{\circ} 15'$~~ - 41°
 - $35^{\circ} S$ ~~$80^{\circ} W$~~ - Does not appear in southern hemisphere
 - In the diagram to the right what is the observer's latitude? hemisphere



$20^{\circ} N$

MINERALS

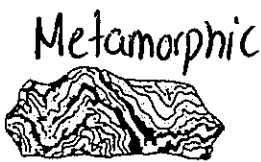
- A student claimed that an object in his hand was a rock. The teacher said it was a mineral. What tests would have to be performed and what would the results be in order to settle this argument? Streak Hardness
- The minerals diamond and graphite are both composed of the element carbon, yet their physical properties are completely different. Why? internal arrangement of atoms.
- Does the mineral sample to the right show fracture or cleavage? How can you tell?



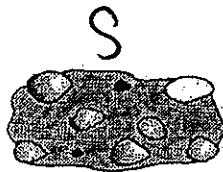
Cleavage

ROCKS

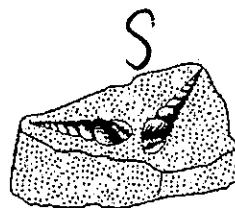
- State if the rock is igneous, metamorphic, or sedimentary and write a sentence explaining how you made your decision:



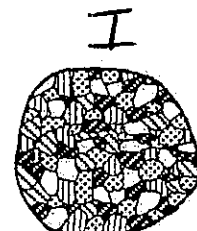
Sample A



Sample B



Sample C

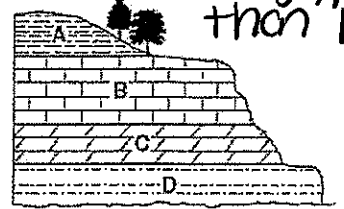


Sample D

- Is sample A an igneous, sedimentary, or metamorphic rock? How can you tell?
Meta because it is foliated
- Is sample B an igneous, sedimentary, or metamorphic rock? How can you tell?
Sedimentary - it is clastic
- Is sample C an igneous, sedimentary, or metamorphic rock? How can you tell?
Sediments - fossils
- Is sample D an igneous, sedimentary, or metamorphic rock? How can you tell?
Igneous - it has crystals.

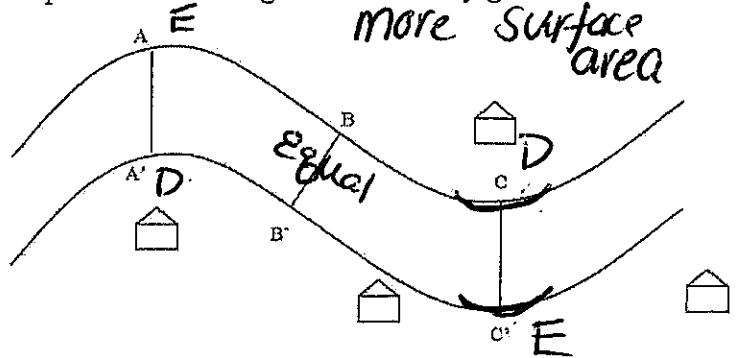
WEATHERING

- Why are streets and highways damaged so much more in the winter months than in the summer months in most of the United States? *Frost Action*
- Sandstones cemented by calcite usually weather much more rapidly than those cemented by quartz. Why? *calcite reacts with acid*
- With specific reference to weathering, explain why Egypt is a good location for a monument such as Cleopatra's Needle, and why New York City is a poor location. *less moisture in egypt than NY*
- On the diagram to the right, which layer is most resistant to weathering? *D*
How can you tell? The least? *A*
- ~~What are the two major materials of which soil is composed?~~



EROSION

- How are landscapes eroded by a glacier different from the landscapes eroded by a stream? *u*
- Why does one gram of finely ground up salt dissolve quicker than one gram of coarsely ground salt? *v*
- What two factors does the velocity of a stream depend on? *Slope, volume*
- Given the diagram of a meandering stream to the right, you should be able to identify the points of maximum and minimum velocity, where erosion and deposition are greatest, and how the water depth varies at different points across the stream. *more surface area*
- What effect does stream velocity have on the size of the sediments that can be transported? (As.....)
- You should be able to use the reference tables [page 1 (ruler) & 6 (graph)] to determine if a particle is a cobble, boulder, etc.



DEPOSITION

- How are sediments deposited by a glacier different from the sediments deposited by a stream? (Two differences) *glacier has unsorted sediments, streams have sorted.*
- What effect does particle size have on settling time? (As.....)
- What effect does particle shape have on settling time? (As....)
- How will unsorted sediments look after being deposited in water?

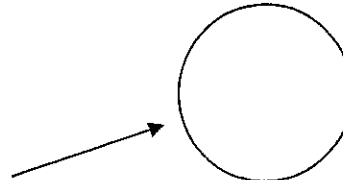
round, smaller & smoother

REVIEW FOR THE EARTH SCIENCE REFERENCE TABLES

The answers to all of these questions are found within your reference tables. Use your tables. Practice using your tables. Place the answer to the question in the space provided.

A. Measurement

1. The length of this paper is _____ cm.
2. The width of this paper is _____ cm.
3. The diameter of this circle is _____ cm.



B. Formulas, Equations, and Physical Constants

1. A cube is 3 cm on a side. If its mass is 67.5g, what is its density? (Show work)

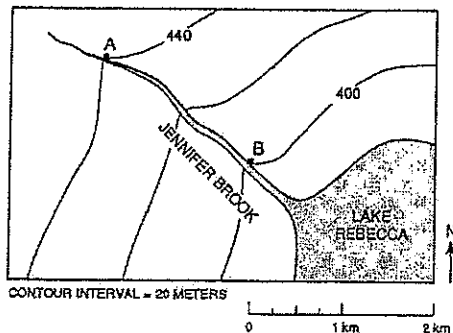
_____ g/cm³

2. Between 6 A.M. and 11 A.M., the temperature inside a greenhouse rose from 13°C to 20°C. Calculate the rate of temperature change inside the greenhouse. (Show work)

$$ROC = \frac{\Delta T}{\text{time}} = \frac{20^{\circ}\text{C} - 13^{\circ}\text{C}}{5 \text{ hrs}} = \frac{7^{\circ}\text{C}}{5 \text{ hrs}} = 1.4^{\circ}\text{C/hr}$$

3. On the contour map below, calculate the gradient of this stream from points A to B.

(Show work) _____ m/km



4. At what temperature is the density of water equal to 1.0g/ml? _____

C. Geologic Map of New York State pg. 3 ESRT

1. What is the longitude of Elmira? (to the nearest minute) _____
2. What is the latitude of Oswego? (to the nearest minute) _____
3. What is the distance, in miles, from Oswego to Syracuse? _____
4. What is the distance, in kilometers, from Elmira to Utica? _____

D. Properties of Common Minerals pg. 16 ESRT

1. What are the two main types of luster? _____
2. What is the dominant form of breakage in graphite? _____
3. What are the colors of Fluorite? _____
4. What happens to Calcite when exposed to acid? _____
5. What is the hardness of Olivine? _____
6. What is the hardness of Quartz? _____
7. What is the chemical composition of Halite? _____
8. What mineral has a nonmetallic luster, a hardness of 7, shows fracture, and is often dark red to green? _____
9. What is a common use of Sulfur? _____
10. What is the color of the streak of Hematite? _____

E. The Rock Cycle pg. 6 / pg. 7 ESRT

1. List the steps in the formation of sedimentary rocks. _____

2. List the steps in the formation of igneous rocks. _____

3. List the steps in the formation of metamorphic rocks. _____

4. List the rocks that can form metamorphic rocks. _____

5. What rocks can form sedimentary rocks. _____

F. Igneous Rocks *pg. 6 ESRT*

1. Where does granite form? _____
2. Where does obsidian form? _____
3. As a rock becomes more dense, its color usually becomes _____
4. As the percent of iron in an igneous rock increases its density will _____
5. As the percent of aluminum in an igneous rock increases, the color of the rock will usually become _____
6. List the minerals that make up granite. _____

7. List the minerals that make up basalt. _____
8. A dense igneous rock that cooled slowly is called _____
9. A light color felsic rock that cooled on the surface is called _____
10. List the minerals that make up peridotite. _____
11. Vesicular rocks have these. _____
12. Pumice has this texture. _____
13. What is the name of the rock that has medium color, a fine texture, and is vesicular (has gas pockets)? _____

G. Sedimentary Rocks *pg. 7*

1. What grain sizes make up conglomerate rocks? _____
2. Sand sized sediments may form into which sedimentary rock? _____
3. Which land derived sedimentary rock is made of the smallest sediments? _____
4. Which two sedimentary rocks may form from biological activities? _____

5. Name the three sedimentary rocks that may form from the evaporation of seawater.

6. What sedimentary rock is made of particles that are 0.003 cm in diameter? _____
7. What is the difference between conglomerate and breccia? _____
8. Which sedimentary rock is composed of:
 - a. Calcite _____
 - b. Carbon _____

H. Metamorphic Rocks

pg. 7

1. List the minerals found in gneiss? _____
2. What happens to heat and pressure as depth within the Earth increases? _____
3. What rock is formed from the low – grade metamorphism of shale? _____
4. What rock contains distorted or stretched pebbles? _____
5. Quartzite is a metamorphic rock that is formed from the rock _____
and is composed of the mineral _____
6. What happens to the grain sizes in a rock as it goes from low to high grade
metamorphism? _____
7. What are the two types of foliation? _____
8. Which metamorphic rock has shiny foliation surfaces from microscopic crystals of clay
or feldspar? _____

I. Stream Velocity Graph

pg. 6

1. How fast must a stream flow to carry a particle 0.1 cm in diameter? _____ cm/sec
2. How fast must a stream flow to carry a particle 10.0 cm in diameter? _____ cm/sec
3. How would you classify a particle of 0.0073 cm? _____
4. What is the size range of a cobble? _____ cm to _____ cm
5. What types of particles can be carried by a stream with a velocity of 250 cm/sec?

6. As the velocity of a stream increases, the sizes of the particles carried by the stream will

1

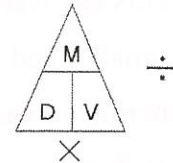


NAME: _____

(Key)

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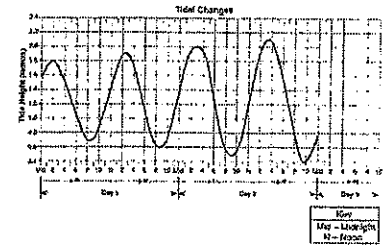
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Rocks and Minerals (ESRT pages are huge here, Rock pages on 6, 7, 16 and 1)

Weathering, Erosion, Deposition, (ESRT page 6 top right) Latitude and Longitude (page 2)

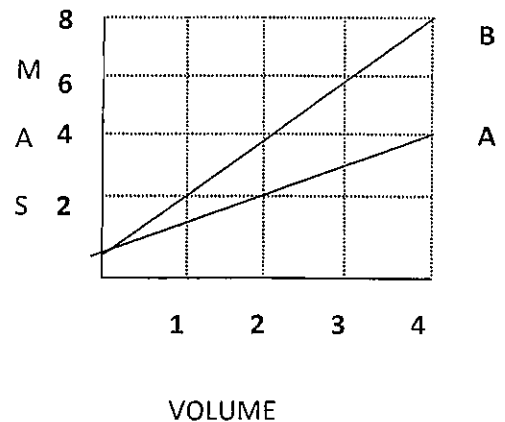
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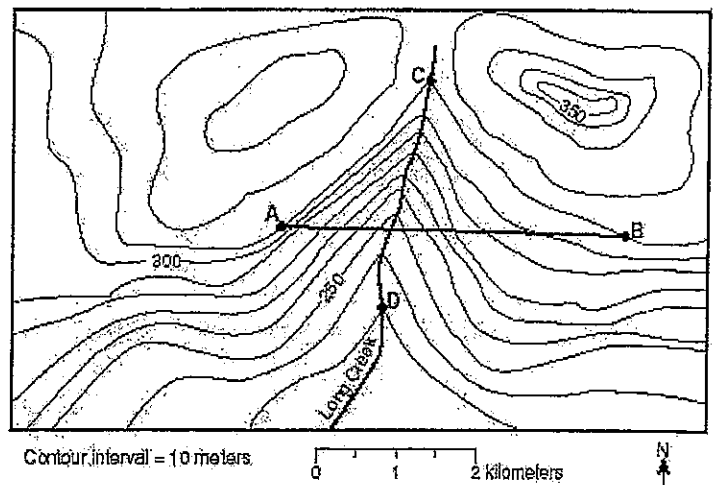
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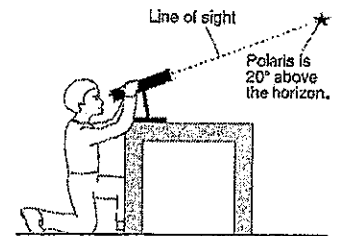
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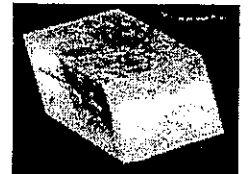
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- Determine the latitude and longitude (in degrees and minutes) of a location, with the correct directions i.e. N, S, etc.
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MINERALS

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- Does the mineral sample to the right show fracture or cleavage? How can you tell?



ROCKS

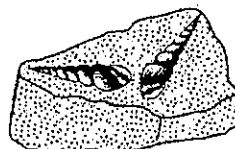
- State if the rock is igneous, metamorphic, or sedimentary and write a sentence explaining how you made your decision:



Sample A



Sample B



Sample C

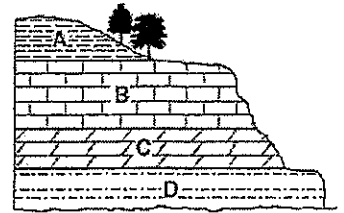


Sample D

- Is sample A an igneous, sedimentary, or metamorphic rock? How can you tell?
- Is sample B an igneous, sedimentary, or metamorphic rock? How can you tell?
- Is sample C an igneous, sedimentary, or metamorphic rock? How can you tell?
- Is sample D an igneous, sedimentary, or metamorphic rock? How can you tell?

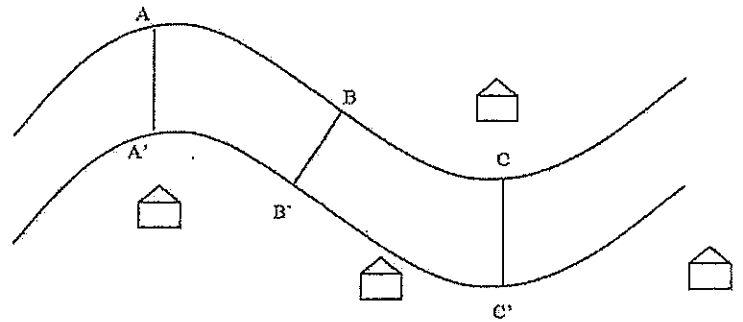
WEATHERING

1. Why are streets and highways damaged so much more in the winter months than in the summer months in most of the United States?
2. Sandstones cemented by calcite usually weather much more rapidly than those cemented by quartz. Why?
3. With specific reference to weathering, explain why Egypt is a good location for a monument such as Cleopatra's Needle, and why New York City is a poor location.
4. On the diagram to the right, which layer is most resistant to weathering? How can you tell? The least?
5. What are the two major materials of which soil is composed?



EROSION

1. How are landscapes eroded by a glacier different from the landscapes eroded by a stream?
2. Why does one gram of finely ground up salt dissolve quicker than one gram of coarsely ground salt?
3. What two factors does the velocity of a stream depend on?
4. Given the diagram of a meandering stream to the right, you should be able to identify the points of maximum and minimum velocity, where erosion and deposition are greatest, and how the water depth varies at different points across the stream.
5. What effect does stream velocity have on the size of the sediments that can be transported? (As.....)
6. You should be able to use the reference tables [page 1 (ruler) & 6 (graph)] to determine if a particle is a cobble, boulder, etc.



DEPOSITION

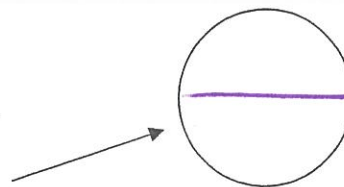
1. How are sediments deposited by a glacier different from the sediments deposited by a stream? (Two differences)
2. What effect does particle size have on settling time? (As.....)
3. What effect does particle shape have on settling time? (As)
4. How will unsorted sediments look after being deposited in water?

REVIEW FOR THE EARTH SCIENCE REFERENCE TABLES

The answers to all of these questions are found within your reference tables. Use your tables. Practice using your tables. Place the answer to the question in the space provided.

A. Measurement

- The length of this paper is 27.5 cm.
- The width of this paper is 21.5 cm.
- The diameter of this circle is 2.2 cm.



B. Formulas, Equations, and Physical Constants

- A cube is 3 cm on a side. Its mass is 67.5g, what is its density? (Show work)

2.5 g/cm³ g/cm³

$$V = L \times W \times H$$

$$V = 3 \times 3 \times 3 = 27 \text{ cm}^3$$

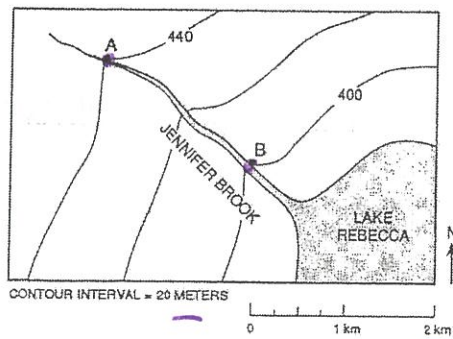
$$D = \frac{m}{V} = \frac{67.5 \text{ g}}{27 \text{ cm}^3} = 2.5 \text{ g/cm}^3$$

- Between 6 A.M. and 11 A.M., the temperature inside a greenhouse rose from 13°C to 20°C. Calculate the rate of temperature change inside the greenhouse. (Show work)

$$ROC = \frac{\Delta T}{\text{time}} = \frac{20^\circ\text{C} - 13^\circ\text{C}}{5 \text{ hrs}} = \frac{7^\circ\text{C}}{5 \text{ hrs}} = 1.4^\circ\text{C/hr}$$

- On the contour map below, calculate the gradient of this stream from points A to B.

(Show work) _____ m/km



$$G = \frac{\Delta T}{\text{distance}} = \frac{440 - 400 \text{ m}}{2 \text{ km}} = \frac{40 \text{ m}}{2 \text{ km}} = 20 \text{ m/km}$$

- At what temperature is the density of water equal to 1.0g/ml?

3.98°C

C. Geologic Map of New York State pg. 3

1. What is the longitude of Elmira? (to the nearest minute) ^W 76° 45' W
2. What is the latitude of Oswego? (to the nearest minute) ^N 43° 20' N
3. What is the distance, in miles, from Oswego to Syracuse? 30 miles
4. What is the distance, in kilometers, from Elmira to Utica? 170 Km.

D. Properties of Common Minerals pg. 16

1. What are the two main types of luster? Metallic and NonMetallic
2. What is the dominant form of breakage in graphite? cleavage
3. What are the colors of Fluorite? colorless or variable
4. What happens to Calcite when exposed to acid? it bubbles
5. What is the hardness of Olivine? 6.5
6. What is the hardness of Quartz? 7
7. What is the chemical composition of Halite? NaCl
8. What mineral has a nonmetallic luster, a hardness of 7, shows fracture, and is often dark red to green? Garnet
9. What is a common use of Sulfur? sulfuric acid
10. What is the color of the streak of Hematite? red - brown streak

E. The Rock Cycle pg. 6

1. List the steps in the formation of sedimentary rocks. compaction / cementation
deposition & burial → sediments, weathering + erosion.
2. List the steps in the formation of igneous rocks. melting, magma
and solidification
3. List the steps in the formation of metamorphic rocks. Heat and/or
pressure (metamorphism).
4. List the rocks that can form metamorphic rocks. Igneous, metamorphic,
sedimentary
5. What rocks can form sedimentary rocks. Igneous, metamorphic
sedimentary

F. Igneous Rocks pg. 6

1. Where does granite form? Intrusive
2. Where does obsidian form? Extrusive
3. As a rock becomes more dense, its color usually becomes darker
4. As the percent of iron in an igneous rock increases its density will increase
5. As the percent of aluminum in an igneous rock increases, the color of the rock will usually become lighter
6. List the minerals that make up granite. Pot. feldspar, Quartz, Plag. feldspar, Biotite, Amphibole
7. List the minerals that make up basalt. Plag, Pyroxene, Biotite, Olivine, amphibole.
8. A dense igneous rock that cooled slowly is called Gabbro
9. A light color felsic rock that cooled on the surface is called Rhyolite
10. List the minerals that make up peridotite. Pyroxene & Olivine
11. Vesicular rocks have these. gas pockets
12. Pumice has this texture. glassy & gas pockets
13. What is the name of the rock that has medium color, a fine texture, and is vesicular (has gas pockets)? Vesicular Andesite

G. Sedimentary Rocks pg. 7

1. What grain sizes make up conglomerate rocks? pebbles, cobble, boulders, sand, silt, clay
2. Sand sized sediments may form into which sedimentary rock? sandstone
3. Which land derived sedimentary rock is made of the smallest sediments? shale
4. Which two sedimentary rocks may form from biological activities? Limestone and Bituminous Coal
5. Name the three sedimentary rocks that may form from the evaporation of seawater. Rock salt, Rock gypsum and Dolostone
6. What sedimentary rock is made of particles that are 0.003 cm in diameter? Siltstone
7. What is the difference between conglomerate and breccia? round vs. angular fragments
8. Which sedimentary rock is composed of:
 - a. Calcite Limestone
 - b. Carbon Bituminous Coal

H. Metamorphic Rocks

- pg. 7 mica
1. List the minerals found in gneiss? pyroxene, garnet, amphibole, feldspar, quartz
 2. What happens to heat and pressure as depth within the Earth increases? increases
 3. What rock is formed from the low - grade metamorphism of shale? slate
 4. What rock contains distorted or stretched pebbles? Metaconglomerate
 5. Quartzite is a metamorphic rock that is formed from the rock sandstone and is composed of the mineral quartz
 6. What happens to the grain sizes in a rock as it goes from low to high grade metamorphism? small → large grain size
 7. What are the two types of foliation? banding + mineral alignment
 8. Which metamorphic rock has shiny foliation surfaces from microscopic crystals of clay or feldspar? Schist

I. Stream Velocity Graph

- pg. 6
1. How fast must a stream flow to carry a particle 0.1 cm in diameter? 5 cm/sec
 2. How fast must a stream flow to carry a particle 10.0 cm in diameter? 200 cm/sec
 3. How would you classify a particle of 0.0073 cm? Silt
 4. What is the size range of a cobble? 6.4 cm to 25.6 cm
 5. What types of particles can be carried by a stream with a velocity of 250 cm/sec?
Boulders, cobbles, pebbles, sand, silt, clay
 6. As the velocity of a stream increases, the sizes of the particles carried by the stream will
increase (get bigger)

