Regents Earth Science

Lab Practical Visual Review

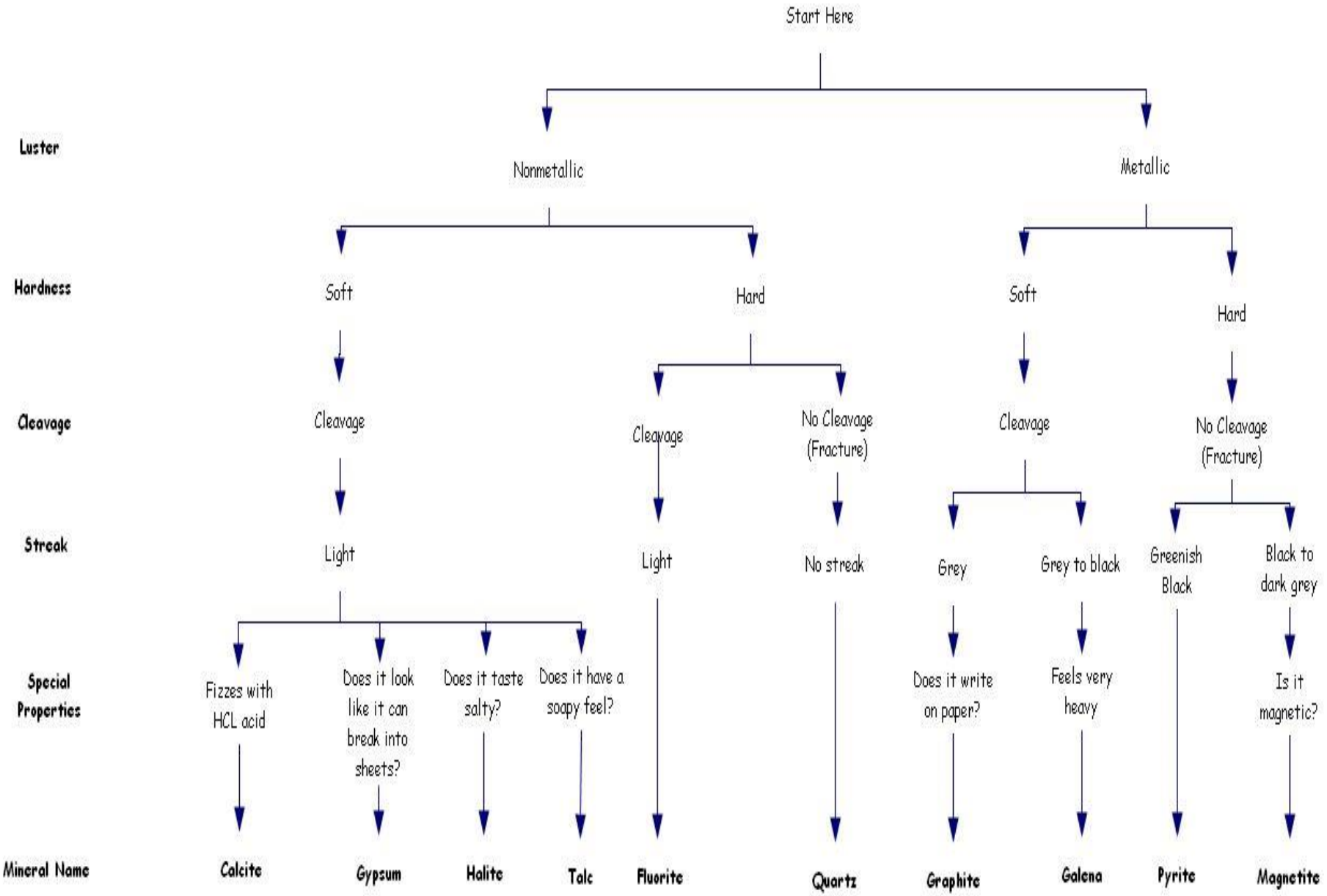
Introduction

- This PowerPoint is designed to help you to review for the lab practical in conjunction with the handouts you received in class
- Remember that the Lab Practical Exam is mandatory!
- There will be no vocabulary. There will be a few questions on what you found. They will be discussed here

ROCKS AND MINERALS

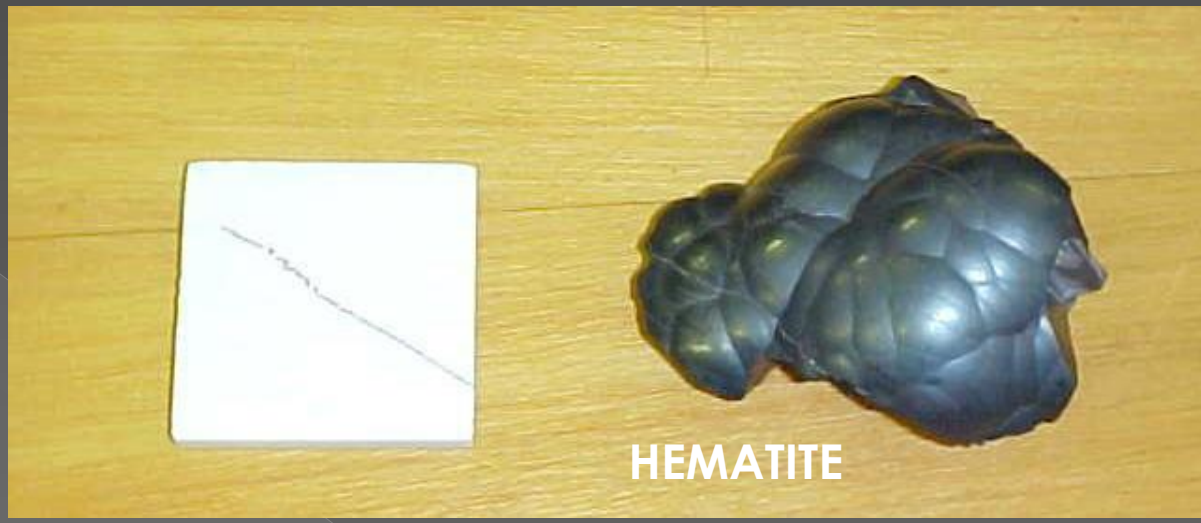
- For the rock and mineral lab, you will be given a streak plate, a glass plate, and a reference table for the rocks
- You will not need to give the name of the rocks or mineral. You will only need to use the flow chart to give the proper ID letter of the mineral or tell what type of rock it is based on a specific characteristics

Mineral Identification Chart

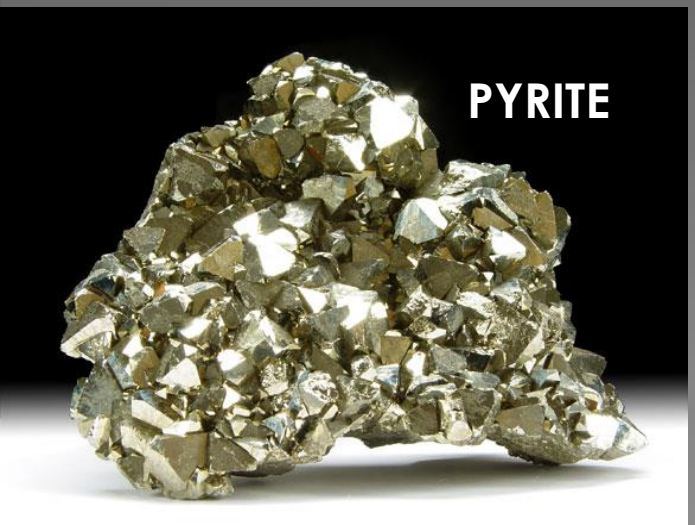


Minerals: Luster- Metallic

GALENA



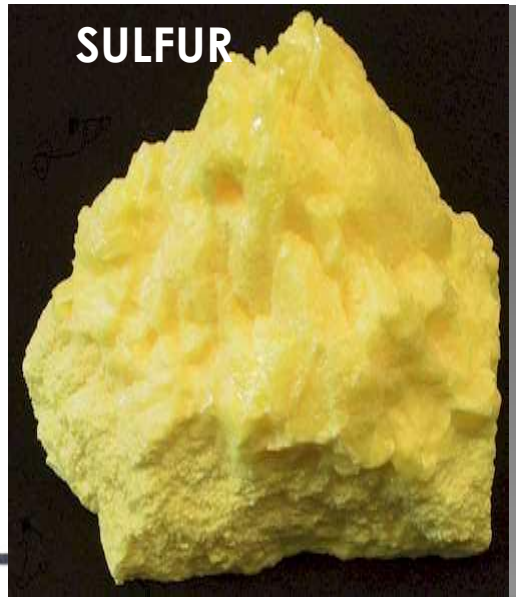
HEMATITE



PYRITE

Look for a reflective surface (similar to a mirror) or a dull surface like hematite. Verify by using the streak plate. A metallic mineral will leave a dark streak such as the one shown above

Minerals: Luster- Non-Metallic



Look for earthy, dull, white, or non-reflective surfaces. Check the streak- if there is any streak at all, it will be colorless to white or yellow

Mineral: Cleavage

If it cleaves, then it breaks along smooth, flat surfaces. Notice the illustration, this *Biotite (left)* cleaves into flat sheets on the top, but it fractures on the sides. Cleavage found in minerals is the result of the way the chemicals bond together. Cleavage is different than crystals (see below)!

Minerals: Fracture

If a mineral fractures, it breaks along rough edges.

Hardness

If a mineral scratches glass, the mineral has a hardness
Of more than 5.5 on Moh's scale and is considered to be hard. If the mineral does not scratch glass, the mineral has a hardness Of less than 5.5 on Moh's scale and it is considered to be soft

<- Scratches on glass

Identifying the Letter

- On the practical, you will not need to give the name of the mineral. Instead, you will be giving the letter that the mineral has been assigned. To find the mineral letter, you simply use the information from above and follow the flow chart given in the exam. You will then find the letter ID of the mineral, which you will record as an answer

ROCK IDENTIFICATION

- Classification: You will write the type of rock that you have- Igneous, Metamorphic or Sedimentary
- You will then write **ONE REASON** for giving the rock this classification. Don't forget to use your reference tables if you blank out!
- Example: Igneous; The rock has interconnected crystals in a random order

EXAMPLES

- Rock Type: Sedimentary
- Reason: Contains fossils

- Rock Type: Metamorphic
- Reason: Foliation

Igneous Rocks

- Crystals in random order- (THESE ARE NOT FRAGS OF OTHER ROCKS- THEY ARE MINERALS!!!!)

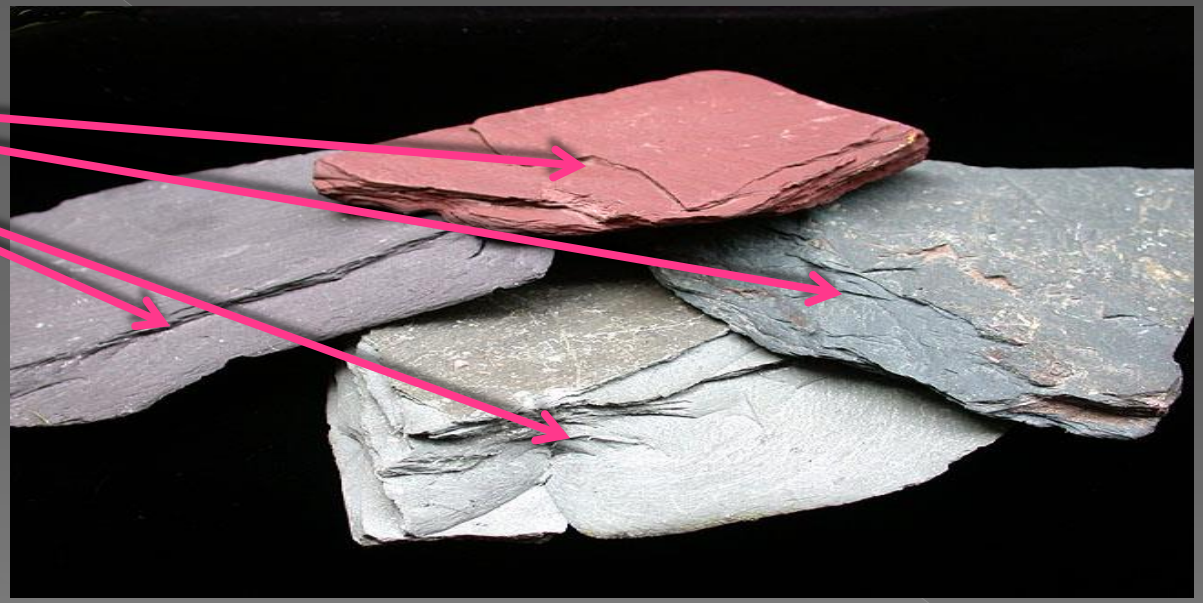


- Glassy Texture

- Gas Pockets/Vesicular -> -> ->

Metamorphic Rocks

- Foliation



SAFE BET… ALWAYS SAY "FOLIATED" FOR METAMORPHIC!

- Banding



- Mineral Alignment


METAMORPHIC REMINDER

- The type of metamorphism, such as regional or contact, will not help you to identify a rock as metamorphic alone. You need other information. Therefore, DO NOT USE TYPE OF METAMORPHISM AS A CHARACTERISTIC OF THE ROCK! Only use the texture column… foliation, banding, or mineral alignment

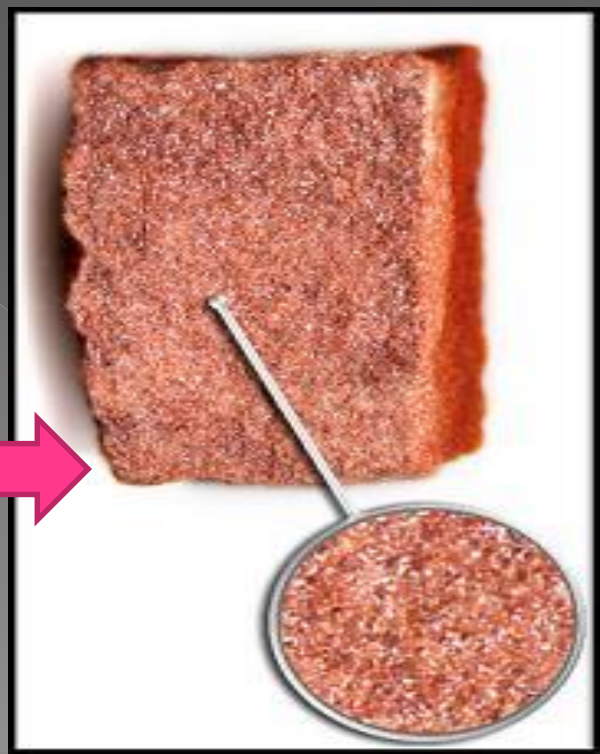
Sedimentary Rocks

- Pieces of rock cemented together

Sand Particles

Pebbles Within The Rock

The diagram to the right Shows a close-up of Sandstone. You can see the individual Sand grains. You will have a magnifying Glass. USE IT! ☺



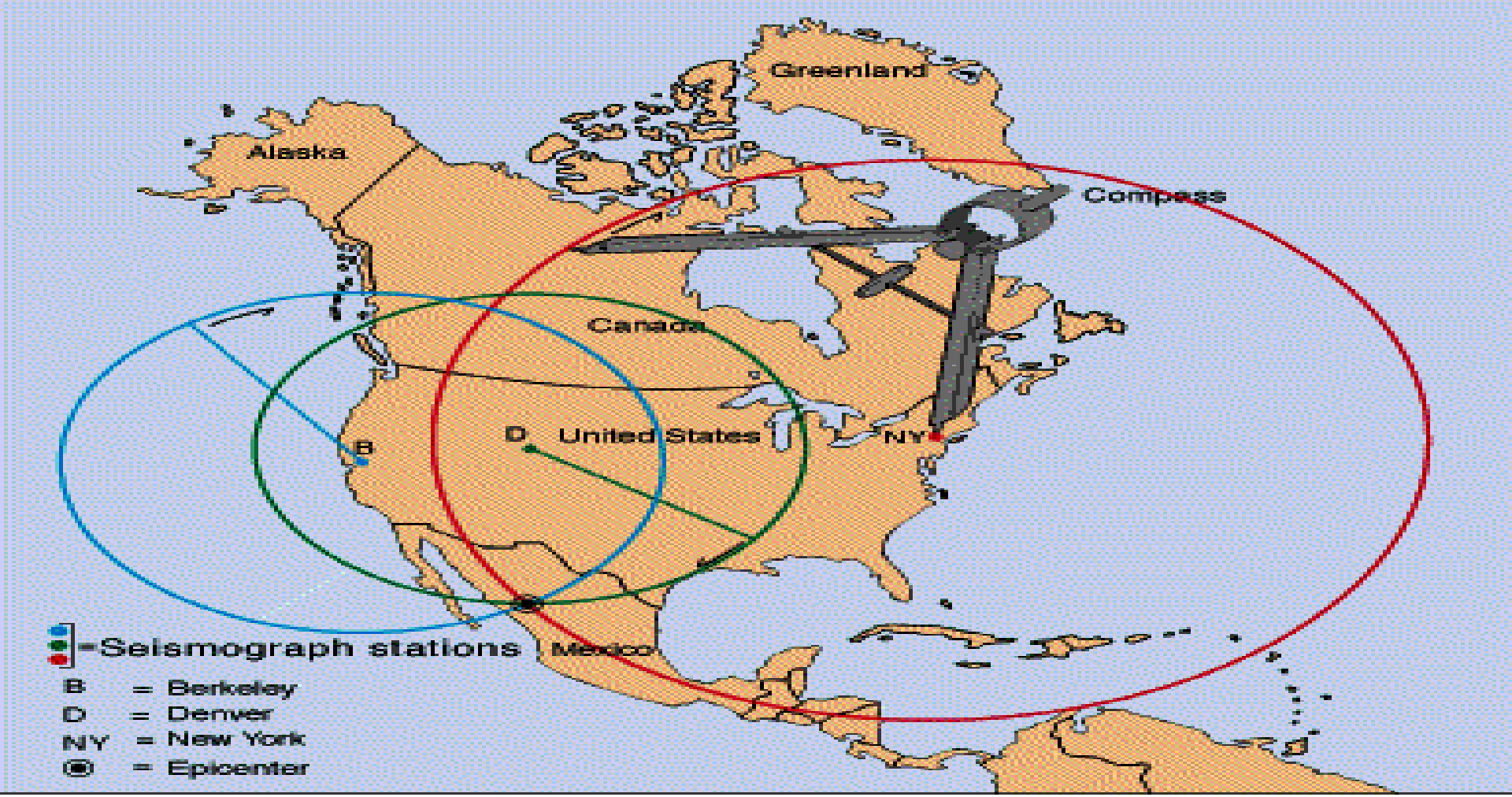
Fossils (fossils are destroyed in metamorphic and igneous rocks) REMEMBER TO LOOK FOR SHELL FRAGMENTS- fossils may not be whole

Locating the Epicenter

- Station A's circle will be drawn for you
- The exam will give you the distance to station B
- To calculate the distance from the epicenter to Station C, use the p-wave and s-wave seismograph information
- Subtract the time- remember that each line is 20 seconds because we're dealing with time!

- After finding the difference in arrival times of the p-wave and s-wave, use the reference table to determine how far Station C is from the epicenter. Write this number down on the exam where indicated.
- Draw your circles using the drawing compass and the map scale at the bottom- set one end of the compass on 0 and the other end at the distance given or calculated

- To find what each line is worth on the map scale, take the first marked number after the 0, count the lines in-between the 0 and that number, and divide them.
- Example: 1000 km/5 lines = 200 KM per line
- When drawing your circle, remember to center your compass on the Station letter, not Station A!!!!
- Where the 3 circles meet or form a triangle is where the epicenter is
- Mark this location with an “X”

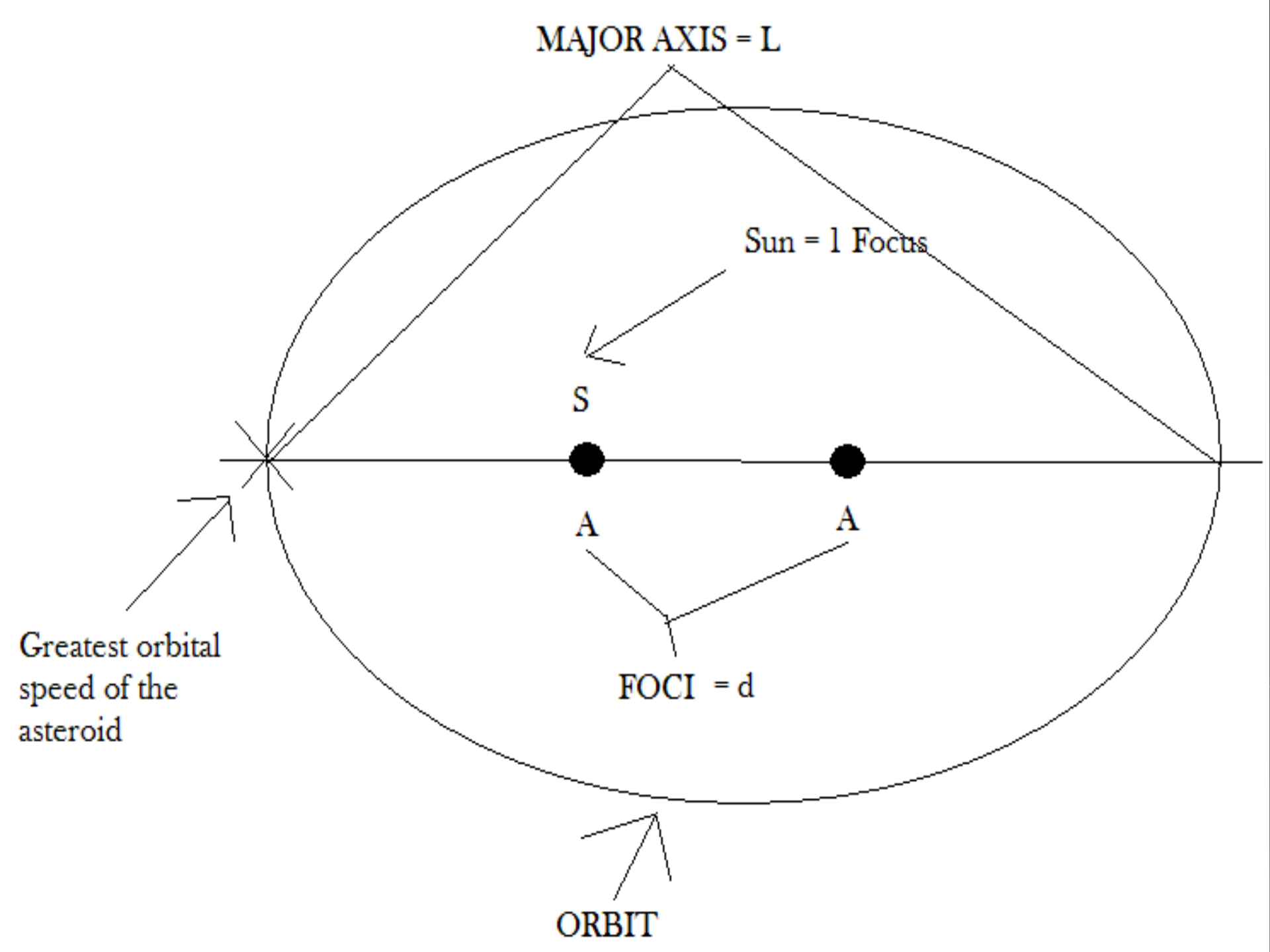


0 1000 2000 3000 4000

KM

Ellipses

- The exam will tell you which two dots to use on the diagram.
- Circle the two dots- these are your foci
- Put one thumbtack in each circled dot
- Use the string to draw your ellipse
- On your diagram, place an S over one of your foci- this is the sun
- Place an "X" on the orbit where the asteroid has the greatest speed- this will be where the asteroid is closest to the sun and where the orbit crosses the major axis due to the gravitational pull of the sun- see next slide!


MAJOR AXIS = L
Sun = 1 Focus
S
A
A
Greatest orbital speed of the asteroid
FOCI = d
ORBIT

Finding Eccentricity

- Eccentricity =

distance between foci/length of major axis

- Use the ruler provided to measure these distances.
- When you divide, you will be dividing the smaller number by the larger number, so your answer will be a decimal between 0 and 1
- Round to the THOUSANDTHS- this means three numbers after the decimal. If you don't have three numbers after the decimal (ex. 0.23) add a zero to hold the place (ex. 0.230)

- The exam will give you the name of a planet. You are to look up the eccentricity of the orbit of this planet on the reference table and write this number in your lab- be sure to keep it three numbers after the decimal!
- Compare your eccentricity to the eccentricity of the planet
- If your number is closer to 0 than the planet, it is less elliptical than the planet
- If your number is closer to 1 than the planet, than your ellipse is more elliptical
- You will need to support your answer by saying your ellipse is either closer to zero or closer to one.

- REMEMBER:
- Eccentricity of a circle = 0 (least eccentric)
- Eccentricity of a line = 1 (most eccentric)
- Remember: 0.023 is closer to zero than 0.123 because there is a number other than zero in the tenth's place in the second number
- ALSO: If the number on your calculator after you divide is 0.0235, be sure to round up to 0.024(5 or greater, round up)
- If the number on your calculator is 0.0234, then keep the third number the same: 0.023 (less than 5, keep the number the same)