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Earth Science 11 - PHYSICAL PROPERTIES OF MINERALS

Samples Needed:

M1 (crystal and massive), M2, M3, M4, M5, M6, M7, M8, M9, M11, M12, M16 (brassy yellow), M19, M22, M24, M25, M27, M29, M31, MR3 (red mineral), and MR9 (blue mineral).

Q1. Describe the **Crystal Habit** for the following minerals:

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Sample	Habit
MR3 - red mineral - garnet	
MR9 - blue mineral – kyanite	
M4 - biotite	
M1 - quartz crystal	

Q2. Describe the **Luster** of the following minerals (remember that you are looking for surface shine, NOT colour, transparency, or opaqueness):

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Sample	Luster Description (in your own words)	Luster (tech. term)
M12 - Galena		
M1 - quartz crystal		
M19 - Magnetite		
M24 - Halite		
M1 - massive quartz		
M25 - Kaolinite		
MR3 -red mineral- garnet		
M9 -Talc		
M5 – biotite		
M29 - serpentine		

Q3. Describe the **cleavage** and **fracture** of the following minerals:

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Samples with cleavage	Describe the cleavage
M5 – muscovite	
M2 – feldspar	
M12 – galena	
M27 – calcite	
Samples with Fracture	**Describe the fracture**
M1 - quartz crystal	
MR3 - red mineral - garnet	
M25 - kaolinite	

Q4. Examine a quartz **crystal** (M1). Notice the flat planes on this sample. Since all quartz minerals have fracture, not cleavage, how would you account for the flat planes in this natural sample of quartz?

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Q5. Examine samples M16 and M24. For each sample, sketch the planar features.

M16 **M24**

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a) Which sample has fracture and crystal faces?

b) Which sample has cleavage?

Q6. Examine samples M2, M11, M12 and M22. Put one sample in your hand and look at it to judge their relative density (the reason you should look at the sample is to allow your eyes to judge the size while your hands judge the weight, together the two give you an estimate of the density).

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Now rank the samples in order of their density from least dense to most dense.

Q7. Examine samples M1, M3, M9 and M24. Test the hardness of these minerals using the penny, knife or nail and streak plate and arrange in order of increasing hardness.

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