

Name: _____

Start time: _____ End time: _____

MHS ROCKS AND MINERALS 2017 by Lauren Martin, Indiana University

Note from MHS coaches: This exam was initially created for Munster SO tryouts. Munster HS tryouts do not allow any reference materials regardless of event rules. They are taken by a single student in a 50-minute time period... scores are often low. Lauren Martin was the Indiana state champion for Rocks and Minerals in 2017. She wrote this as a volunteer. MHS is grateful for her talent and assistance.

_____ / 120 points

Section 1: (1pt each)

Match each of the following minerals to its proper hardness on the Mohs scale.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

- | |
|---|
| <ol style="list-style-type: none">a. Quartzb. Fluoritec. Diamondd. Corundume. Gypsumf. Orthoclaseg. Topazh. Talci. Apatitej. Calcite |
|---|

Section 2: (1pt each)

Match each of the following minerals to the proper mineral class.

1. _____ copper
2. _____ gypsum
3. _____ fluorite
4. _____ azurite
5. _____ quartz

- | |
|---|
| <ol style="list-style-type: none">a. Boratesb. Carbonatesc. Native elementsd. Halidese. Oxidesf. Phosphatesg. Sulfatesh. Sulfidesi. Silicates |
|---|

Section 3: (1pt each)

Identify each mineral class based on the description of its identifying characteristics (using the same box from section 2).

1. _____ Natural salts
2. _____ Base chemical formula SiO_2
3. _____ Majority of the most economically important ores
4. _____ Pure chemical formula (only one element)
5. _____ Often in marine settings (with the accumulation of dead plankton)

Section 4: (1pt each)

Match each of the following habits to its proper description.

1. _____ “bubbly” or grape-like spheres
2. _____ flat and tablet-shaped
3. _____ thin, tapered, and needle-like
4. _____ eight-sided
5. _____ box-like
6. _____ branching or tree-like

- | |
|---------------|
| a. Acicular |
| b. Botryoidal |
| c. Cubic |
| d. Dendritic |
| e. Fibrous |
| f. Octahedral |
| g. Platy |
| h. Plumose |

Section 5: (2pts each)

Answer the following questions about the different groupings of rocks.

1. What does a foliated rock look like? _____

2. Briefly describe the process of foliation. _____

3. How does an extrusive rock form? _____

4. What visible characteristic do most intrusive rocks share? _____

5. What type of rock are you most likely to find fossils in and why? _____

6. What is the difference between felsic and mafic rocks? _____

7. Will granite produce a chemical reaction when exposed to HCl? Why or why not?

8. How is a low-grade metamorphic rock different from a high-grade rock? _____

Section 6: (2pts each)

Answer the following questions about similar rocks and minerals.

1. What is the difference between pumice and scoria? _____

2. How are azurite and malachite related? _____

3. How can you tell the difference between halite and calcite? _____

4. Why is it that quartz varieties differ so much in coloration? _____

Section 7: (1pt each)

Define each of the following geological terms (each definition is only worth one point).

1. Specific gravity: _____

2. Conchoidal: _____

3. Plutonic: _____

4. Clastic: _____

5. Adularescence: _____

6. Effervescence: _____

7. Aphanitic: _____

8. Pseudomorph: _____

9. Secondary mineral: _____

10. Vitreous: _____

Section 8: (1pt per blank)

Complete the following chart (each blank is worth one point):

Mineral	Color	Cleavage/ Fracture	Hardness	Streak	Luster
Graphite	Grey/black	Basal			
Biotite	Black			White/ gray	Vitreous
Pyrite		Irregular	6-6.5		
	Yellow-green	Irregular fracture	6.5-7	White	Vitreous
Albite		2 faces @ 90 degrees	6-6.5	White	
	Very wide range	Perfect octahedral	4	White	vitreous

Section 9: (2pts each)

Answer the following questions on miscellaneous topics.

1. What is Bowen's reaction series? _____

2. What are the names of the two branches in Bowen's reaction series? _____

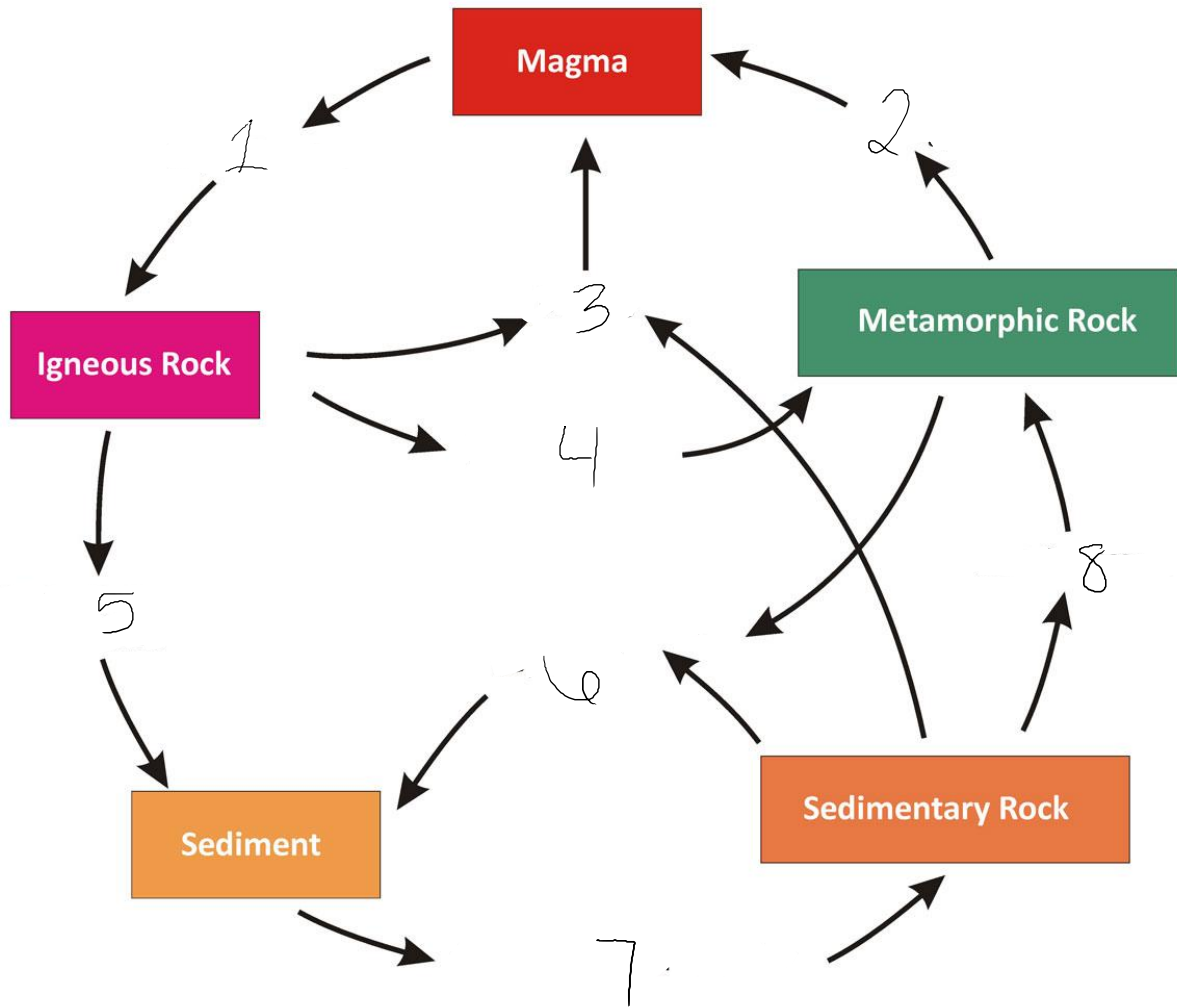
3. What is the difference between cleavage and fracture? _____

4. Name three of the defining characteristics of a mineral. _____

5. Why is it important to look at multiple physical properties when identifying a mineral? Provide evidence for your reasoning. _____

Section 10: (1pt each – 8pts total)

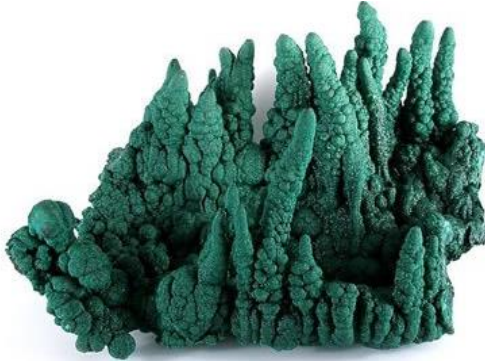
Fill in the blanks on the rock cycle diagram (each blank is worth one point).



1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Section 11 (the moment you've all been waiting for): (1pt each blank)

Identify each of the rock and mineral samples (one point each) and answer the question to follow (also one point each).



1. Sample: _____

2. What is this sample an ore of?



3. Sample: _____

4. What is the parent rock of this sample?



5. Sample: _____

6. What class does this mineral belong to?



7. Sample: _____

8. How is this sample formed?



9. Sample: _____

10. Is this sample intrusive or extrusive?



11. Sample: _____

12. What types of rock is this sample most often found in?



13. Sample: _____

14. Where does this rock get its name from? _____



15. Sample: _____

16. What is this particular sample nicknamed? _____



17. Sample: _____

18. What type of sedimentary rock is this sample commonly associated with?



19. Sample: _____

20. What mineral has the same chemical formula as this sample? _____



21. Sample: _____

22. Why are the crystals in this sample so large?



23. Sample: _____

24. What is this particular variety called?



25.

Sample: _____

26. What is this sample often used for?



27.

Sample: _____

28. What is the red version of this sample more commonly known as? _____



29.

Sample: _____

30. What is the nickname for this sample?
