Culinary Geologist Names_____Date_____

Modeling a Rock Cycle

The rock cycle is a never-ending process. Igneous rock forms from cooled magma or lava. Weathering breaks rocks into sediments such as pebbles and sand. These small pieces can be compacted and cemented under pressure into sedimentary rock. Under great heat and pressure inside the Earth's crust, igneous and sedimentary rocks are changed into metamorphic rocks. These rocks are pushed to the Earth's surface where they are weathered again into sediments to become sedimentary rocks or pushed into the mantle where they melt into magma.

Materials

10 chocolate chips	plastic knife	heavy books
10 white chocolate chips	sheet of aluminum foil	ice cube tray (to share)
10 butterscotch chips	paper plate	microwave (adult use)
	timer	

Safety: The hot materials can cause burns. Be careful.

Part 1 Weathering Rocks Procedure

A. Pour one color of chips on the plate and cut them into little pieces and shavings with the plastic knife. (The smaller the pieces and shavings, the better)

B. Pour the little pieces and shavings on to the aluminum foil.

C. Take another color of chips and cut them up into little pieces.

D. Pour the little pieces and shavings on top of the other color on the foil.

E. Repeat with the last color.

1. Describe your observations.

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_____

2. Draw and color what you see from the top.

3. Draw and color what you see from the side.

Part 2 Making Sedimentary Rock Procedure

A. Fold the aluminum foil over your three layers of chips.

B. Place two or three heavy books over the aluminum foil and leave for 3 minutes.

C. Take off the books and observe the chips.

4. Describe your observations.

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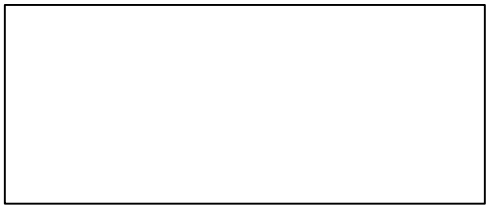
5. Draw and color what you see from the top.



6. Draw and color what you see from the side.

Part 3 Making Metamorphic Rock Procedure

A. Fold the aluminum foil over the chips again.

B. Press very hard on the foil with your hands for 30 seconds, pass to your partner.

C. Your partner does the same for another 30 seconds.

D. Continue doing this until both partners have done it 4 times.

E. Unwrap the aluminum foil and observe the chips.

7. Describe your observations.

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8. Draw and color what you see from the top.

9. Draw and color what you see from the side.

Part 4 Making Igneous Rock Procedure

A. Place your chocolate "metamorphic rock" in an ice cube tray space.

B. Your teacher will microwave the full tray in 30 second intervals until a magma state is reached. (In the real rock cycle, the pressure and heat of the inside of the earth would do this over millions of years.)

C. Do not touch the tray for at least **10 minutes** (work on questions 13 – 20 while you wait)**.**

D. Your teacher will give you your chocolate "rock" for observation.

10. Describe your observations.

11. Draw and color what you see from the top.

12. Draw and color what you see from the side.

Questions

13. What did your group do to model weathering rocks?

14. What did your group do to make the sedimentary rocks stick together?

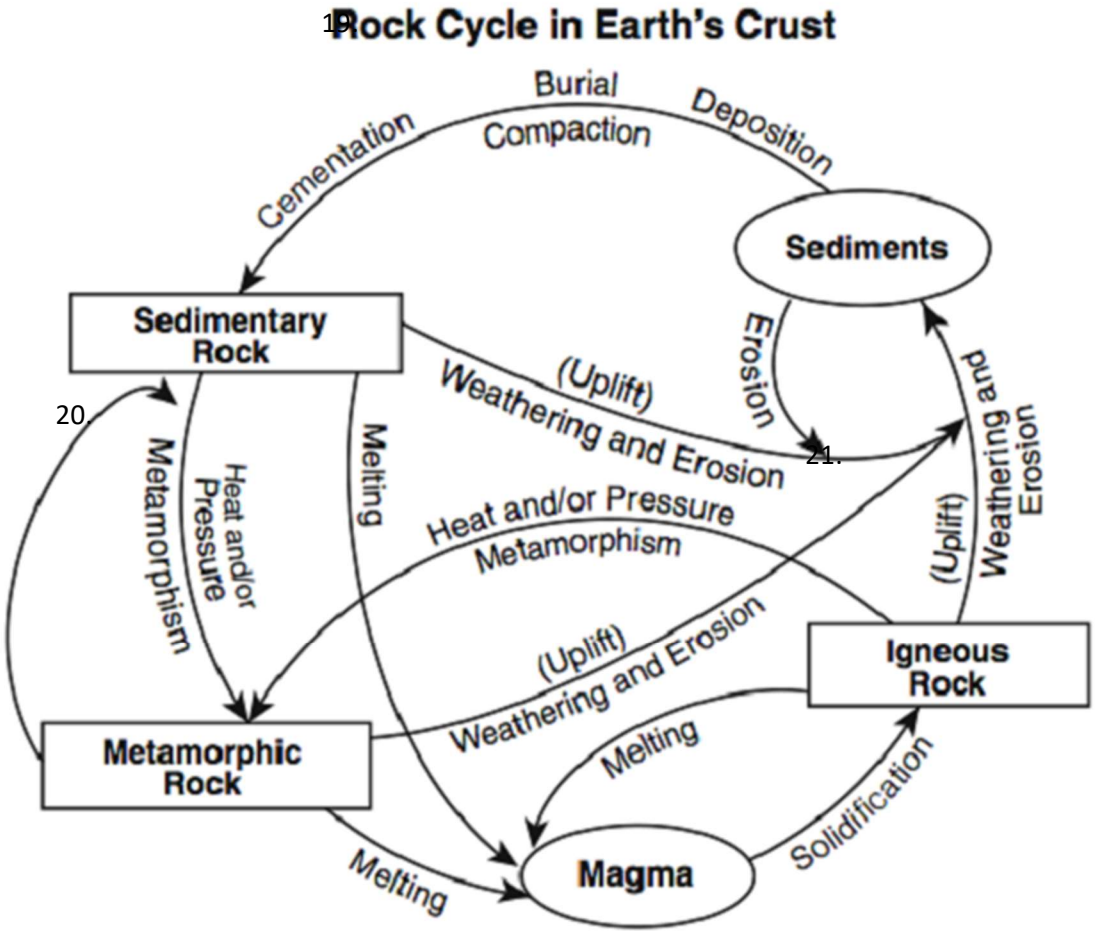
15. What did your group do to make the metamorphic rocks stick together?

16. What was the difference between what you did to make sedimentary rocks and what you did to make metamorphic rocks?

17. What did your group do to make the igneous rocks?

18. What was different about what you did to make metamorphic rocks and to make igneous rocks?

Fill in the diagram with: **Sedimentary Rocks, Metamorphic Rocks, and Igneous Rocks**



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