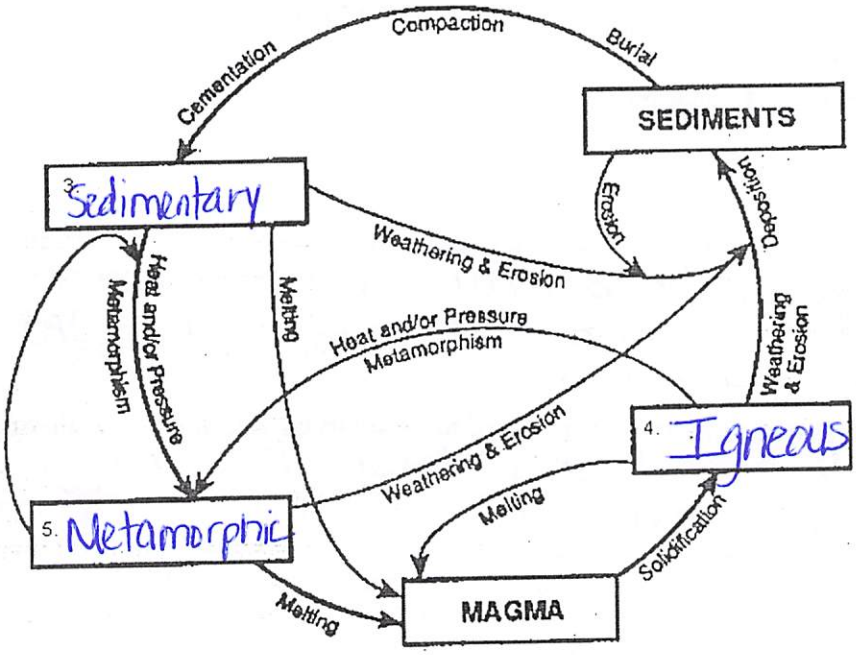
Rock Cycle Review Name: Key Favorite Rock: _____

Use your notes and your rock labs. **Complete sentences are required.**

Fill in Sedimentary, Igneous or Metamorphic in each box.

Rock Cycle in Earth's Crust



1. As magma cools, it forms igneous rock by the process of solidification or crystallization
2. Igneous rocks can form sedimentary, igneous and metamorphic rocks.
3. Sediments form Sedimentary Rocks by the process of weathering, erosion, deposition, compaction, and cementation (lithification)
4. Sediments form from the process of weathering, erosion, deposition
5. Sedimentary rocks can form igneous, sedimentary and metamorphic rocks.
6. Which process changes igneous rock into metamorphic rock? heat and pressure
7. Which process changes sedimentary rock into igneous rock? melting, magma, cooling (solidification/crystallization)
8. Which process changes metamorphic rock into sedimentary rock? weathering, erosion, deposition, → sediments → lithification (compaction and cementation)
9. Metamorphism involves the addition of heat and pressure to pre-existing rocks.

10. Compaction & cementation of sediments forms Sedimentary rocks.
11. Subjecting sedimentary rocks to extreme heat & pressure forms metamorphic rocks.
12. Solidification of molten materials forms igneous rocks.
13. Deposition and burial of sediments forms Sedimentary rocks.
14. Deposited sediments may be particles of which types of rock? Sedimentary, metamorphic and igneous rocks.

15. Heat & Pressure acting on igneous rocks forms metamorphic rocks
16. Solid magma forms igneous rocks.
17. In order to form magma, what must happen to sedimentary, metamorphic or igneous rocks? melting

18. For weathering & erosion to occur, what process will the rock usually go through first or at the same time? Uplifting would expose the rock to the surface, allowing it to be exposed to the processes of weathering and erosion.
19. Can sedimentary rock form directly from metamorphic rock? Explain your answer.
Yes, they must first be exposed to undergo weathering and erosion.

20. All rocks follow the same pathway through the rock cycle is a false statement. Why? Any rock family can turn into any rock family

21. How does granite (igneous) change into sandstone (sedimentary)? it must undergo weathering, erosion, deposition, → sediment, and lithification.

22. Define igneous rocks. Rocks that form due to the melting, cooling, and crystallization (or solidification) of magma or lava.
23. Define sedimentary rock. Rock that forms due to weathering, erosion, deposition (of sediments) and lithification of sediment. Forms in layers, usually near water.
24. Define Metamorphic rock. When existing rock goes through heat (from surrounding areas of magma) and pressure (from mountain building processes)
25. What does foliated mean? when pressure in one or two directions causes the minerals in metamorphic rock to form visible bands or layers.

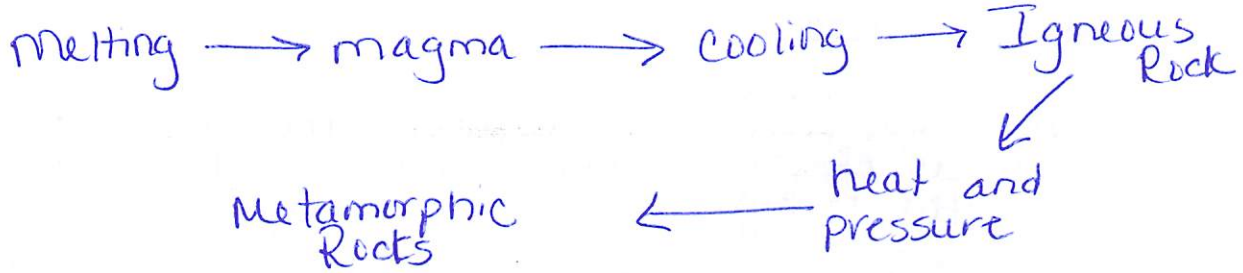
Pathway 1
Between New Zealand and South America, at the bottom of the Pacific Ocean, Molten material from the mantle rises through the crust. As the material comes into contact with the very cold ocean water, it cools quickly to become rock. Over time this rock ever so slowly moves across the ocean floor. About 200 million years later, the rock is pushed downwards. As the rock moves downward, it experiences great amounts of heat and pressure.

Pathway 2
Deep underground, a new rock forms as heat and pressure change its crystals and cause its grains to become foliated. Over millions of years, this rock is uplifted to become part of a mountain. Then, layers of rock above the foliated rock wear away, until it becomes exposed at the surface. Destructive forces wear it down, and its fragments are carried away by a river's swift-flowing water. Eventually, these fragments flow into the ocean. Ocean water carries the rock fragments away from the river and they are deposited on a beach. Over time, more and more sediment is deposited there, until the fragments that came from the foliated rock become cemented into a new rock. Then more and more rock forms above this rock, until the heat and pressure change its crystals and cause its grains to become foliated.

26. Which major group or groups of rocks are involved in the description of Pathway 1?

Igneous rocks change into metamorphic rocks.

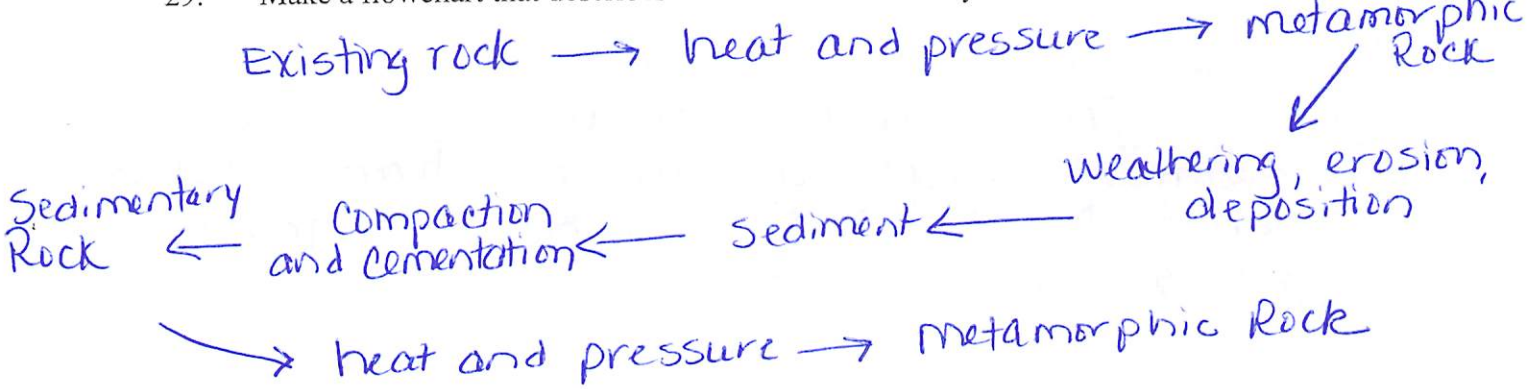
27. Make a flowchart that describes what occurs in pathway 1



28. Which major group or groups of rocks are involved in the description of pathway 2?

Metamorphic rocks change into sedimentary, then back into metamorphic.

29. Make a flowchart that describes what occurs in Pathway 2.



30. Write a description of another pathway through the rock cycle. In your description, tell how igneous rock changes to metamorphic rock, which then changes to sedimentary rock.

Igneous rock goes through heat and pressure which forms metamorphic rock. Metamorphic rock then goes through weathering, erosion, deposition, (Sediment), compaction and cementation into sedimentary rock.

31. Where are intrusive igneous rocks formed? What size of crystals will they have?

Intrusive igneous rocks form from the cooling of magma. Slow cooling forms large crystals.

32. Where are extrusive igneous rocks formed? What size of crystals will they have?

Extrusive igneous rocks form from the cooling of lava. Fast cooling forms small crystals.

33. What are clastic rocks? Sedimentary rocks that are made of rock pieces (pebbles, sand, silt, clay, shells)

34. What are foliations in metamorphic rocks? Visible bands / layers of minerals in metamorphic rocks. (Pressure in 1 or 2 directions)

35. How do chemical sedimentary rocks form? From minerals precipitating out of solution (ex: oceans, lakes) and layering on the bottom

OR

water evaporating, leaving minerals behind

36. How do organic sedimentary rocks form?

from the remains of once-living plants and/or animals.

Ex: Coal

37. Why would you tend to find lots of fossils in sedimentary rocks? Why not in other rocks? Fossils would remain undisturbed in sedimentary rocks as they form in lithified layers of sediment. Metamorphic and Igneous processes would destroy the fossil.