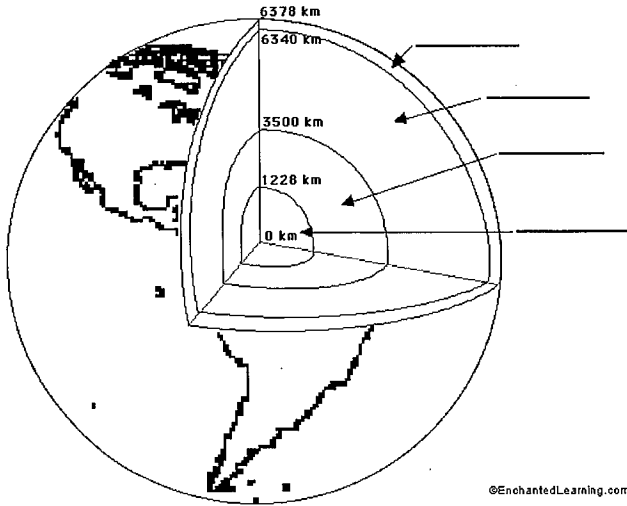


# Year 8 Science EXAM REVISION – Rock My World

Complete the following questions in your notebooks, using your notes and textbooks

1. Label the diagram of the Earth's layers below, and describe what each layer is like (eg: solid/liquid, temperature, main constituents)



Layer of the Earth	Thickness (km)	Solid or liquid?	Temperature (°C)	Main metals in it?
Crust	≈ 40	solid	20-500	all metals
Mantle	2800	solid (ish)	500-2000	varies
Outer core	2300	liquid	3000	Iron (+nickel)
Inner core	1200 radius	solid	4000	Iron (+nickel)

2. Explain how a mineral is different from a rock?

a mineral is a pure substance, and therefore has a specific chemical formula and crystal structure. A rock is not a pure substance.

3. Define the following terms relating to minerals, and give an example where possible:

- a) Lustre the way light is reflected from the surface
- b) Streak the colour of the powdered form of the mineral
- c) Cleavage when a mineral breaks off in layers
- d) Hardness relative hardness based on MOH scale, 1 to 10 (hardest)
- e) Density mass to volume ratio
- f) Colour wavelength of visible light

4. Explain the difference between magma and lava.

technically a rock must be solid, but molten rock

both are molten ("rock") Magma is molten material below the earth's surface, lava is molten material above the earth's surface

5. Identify which type of rock (igneous, sedimentary or metamorphic) is being described by each statement below:

- a) has layers
- b) has pebbles all cemented together
- c) Has wavy uneven layers
- d) has crystals which interlock with each other
- e) formed by cooling molten magma
- f) formed by changing existing rocks with heat and pressure
- g) may contain fossils
- h) formed from lava

sedimentary  
sedimentary  
metamorphic  
igneous  
igneous  
metamorphic  
sedimentary  
igneous

- i) This rock is formed from weathering, erosion, deposition, compaction, and cementation
- j) There are two main types of this rock – contact and regional.
- k) Formed from magma.
- l) Granite and pumice are examples of this type of rock
- m) Marble and gneiss are examples of this type of rock
- n) Sandstone and conglomerate are examples of this type of rock.

sedimentary  
 metamorphic  
 igneous  
 igneous  
 metamorphic  
 sedimentary

6. Explain the relationship between cooling rate of igneous rock and the size of the crystals that form in the rock.

low (or slow) cooling rate = large crystals  
 high (or fast) cooling rate = small crystals

7. Explain the difference between an intrusive and an extrusive igneous rock in terms of

(a) How they are formed

intrusive rock is formed underneath the earth's surface.  
 extrusive rock is formed above the surface of the earth

(b) Their appearance

intrusive rocks have larger crystals  
 extrusive rocks have smaller crystals

8. a) Explain what a fossil is.

evidence of a previous life form

b) Describe how fossils are formed.

Organism dies, remains are not disturbed, covered by sediment, layers of sediment build up, remains decay or replaced by minerals.

c) Explain why fossils are useful to science.

provide evidence of previous life forms, which allows scientists to judge conditions of the earth and the way organisms have evolved over time.

9. Summarise the main characteristics of the three types of rocks by completing the table:

TYPE OF ROCK	HOW are they formed?	WHAT do they commonly look like?	Names of some EXAMPLES
Igneous	from molten material (magma or lava) cooling	"speckled" with crystals - large or small	Granite, pumice

Sedimentary	from sediments being cemented together	have particles with cementation between particles, often layered	Sandstone Conglomerate
Metamorphic	from other rock being subjected to heat + pressure	often appear to have wavy layers. Particles or crystals very defined.	slate Gneiss

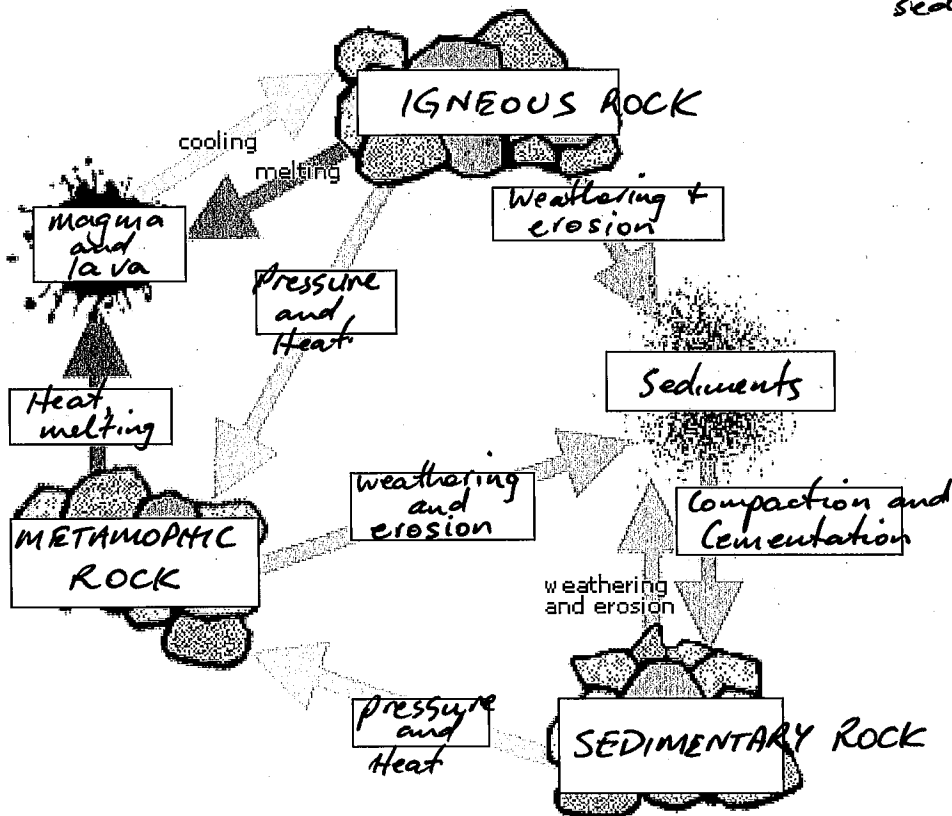
10. Explain which type(s) of rock you would expect to find fossils in, and which type(s) you would not expect to find fossils in. (explain means provide detail or reasons)

(i) Fossils commonly occur in sedimentary rock. When "remains" get covered with sediment they are most likely to turn into a fossil. (ii) Remains would not survive being in molten rock as they would be destroyed. Metamorphic rock is formed underground ~~is~~ ~~very~~ and subject to great heat + pressure so any existing fossils would be destroyed or deformed and unrecognisable.

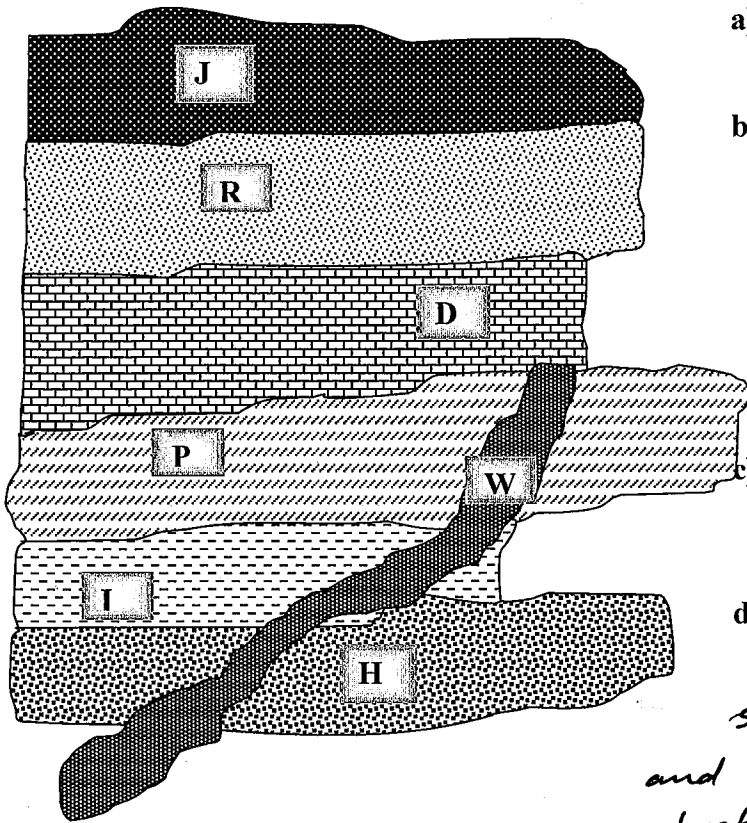
11. Explain how each of the following processes contribute to making sedimentary rock: weathering, erosion, compaction, cementation.

Weathering breaks existing rock into sediment. Erosion ~~is~~ when this sediment is moved by (wind) running water. Deposition (not listed) is when the sediment is deposited in one place (lakes, oceans). As the sediment builds up, compaction occurs due to the depth of sediment. Cementation is when the chemical structure of the rock changes due to minerals being ~~deposited~~ precipitated ~~and~~ between the sediment particles.

12. Complete the diagram of the rock cycle below:



13. The following questions refer to this rock face:



a) List the rock types from oldest to youngest

H, I, P, W, D, R, J

b) Explain how you decided where Rock "W" was placed.

W is a volcanic intrusion into existing rock layers, so P, I, H must already have existed when W formed. There is no intrusion into D, so it is younger than W.

c) Identify which layer is the most resistant to weathering.

P

d) Explain how you know for (c)

Assuming rock layers were originally similar in size, P is the largest (width) and most exposed layer, so has been broken down (weathered) the least.

14. Identify which type of rocks would take the longest to form, and explain why.

No real correct answer except NOT IGNEOUS, which forms relatively quickly as molten rock cools. Create an argument for either sedimentary or metamorphic (my money is on sedimentary)

15. Predict which would have the greatest pressure, and explain why – a finger pressed into the palm of your hand, or a pin pushed into the palm of your hand – both with the same amount of force.

Pressure is force per unit area. re. maths equation of Pressure =  $\frac{\text{Force}}{\text{area}}$ .

Since force is the same in both situations, the one with the force exerted on the smallest area will create the greatest pressure.

16. Classify the following rocks as either Igneous, Sedimentary or Metamorphic:

- |              |                            |                 |                            |
|--------------|----------------------------|-----------------|----------------------------|
| (a) Shale    | <u>sedimentary</u>         | e) Basalt       | <u>igneous (intrusive)</u> |
| (b) Granite  | <u>igneous (intrusive)</u> | f) Conglomerate | <u>sedimentary</u>         |
| (c) Mudstone | <u>sedimentary</u>         | g) Pumice       | <u>igneous (extrusive)</u> |
| (d) Marble   | <u>metamorphic</u>         | h) Slate        | <u>metamorphic</u>         |

17. Use the information below to put the six substances mentioned (*in underlined italics*) in order from hardest to softest:

A steel file can scratch a pen knife blade

Calcite scratches a copper coin

A pen knife blade scratches calcite

Quartz can leave a mark on a steel file

Quartz is scratched by topaz

HARDEST

TOPAZ

QUARTZ

STEEL FILE

PEN KNIFE BLADE

CALCITE

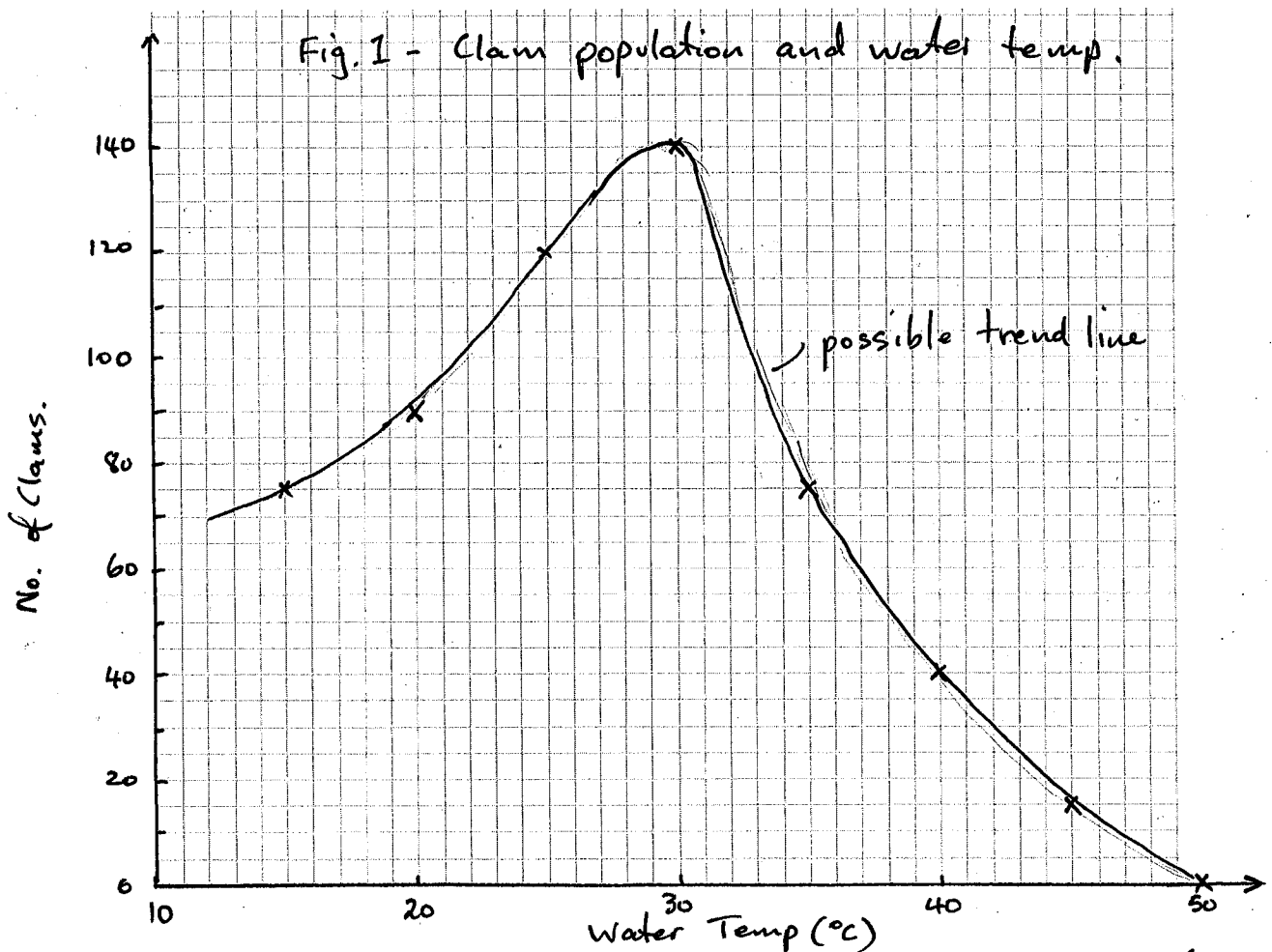
SOFTEST

COPPER COIN

18. A clam farmer has been keeping records of water temperature and the number of clams developing from fertilised eggs. The data is shown in the table below:

Water Temperature (°C)	Number of Clams
15	75
20	90
25	120
30	140
35	75
40	40
45	15
50	0

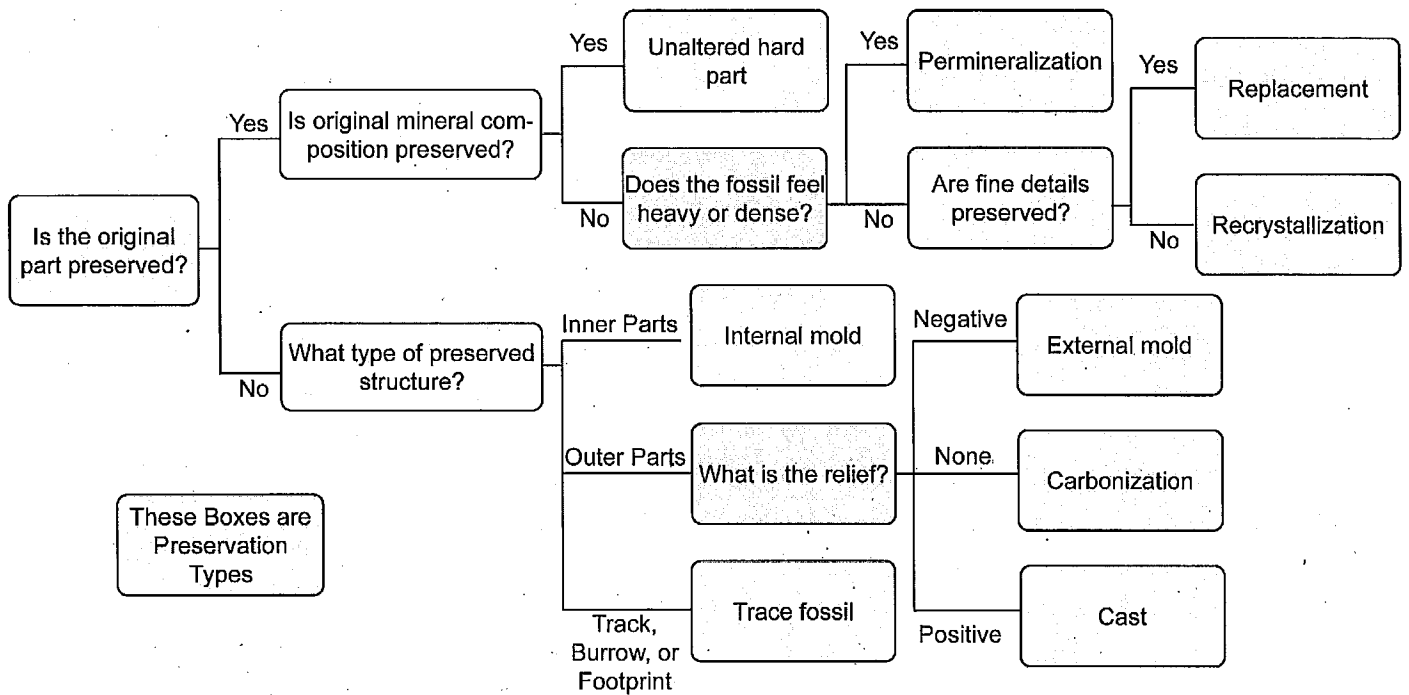
a) Use the information in the table below to **construct** a line graph:



(b) What conclusion can be reached from the information in the table/graph? (I have 3)

- The Development of clams from fertilized eggs is dependant on water temp
- Clams are more likely to develop from eggs in the 25 to 30°C range.
- Temp exceeding 35°C means clams are far less likely to develop from eggs.

19. Consider the flowchart below about the formation of fossils. Use this information to answer the questions below.



(a) What information is given in the flowchart above explaining the difference between internal mould fossils, and trace fossils?

*Internal mould fossils are from the inner parts while trace fossils are from tracks, burrows, or footprints*

(b) What two characteristics do permineralized fossils and replacement fossils have in common? What different is there between these two types of fossils?

*got this wrong*

*Actually have 3 in common. Original part is preserved, original mineral composition is NOT preserved, fossil*

(c) If you find a fossil and it "not dense", does that mean it must be a fossil created by recrystallization? Explain your answer

*No. 2 reasons needed*

*1. an alternative process that is labelled "not dense" is replacement*

*2. Density is not used to describe the fossils created in the bottom part of the flowchart. These fossils could therefore also be "not dense".*