

ANSWERS

Year 8 Science EXAM REVISION

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

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

A mineral has a defined and set chemical composition, a rock does not.

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

- a) Lustre reflectiveness of light (metallic lustre)
- b) Streak Colour a mineral leaves when rubbed on a rough surface
- c) Cleavage The way a mineral breaks apart
- d) Hardness How hard a mineral is (Moh's hardness scale)
- e) Density How dense (weight per volume) a mineral is
- f) Colour The colour of the mineral


3. Explain the difference between magma and lava.

Magma exists under the surface of the earth, lava exists above ground.

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

- a) has layers sedimentary
- b) has pebbles all cemented together sedimentary
- c) Has wavy uneven layers metamorphic
- d) has crystals which interlock with each other metamorphic
- e) formed by cooling molten magma igneous
- f) formed by changing existing rocks with heat and pressure metamorphic
- g) may contain fossils sedimentary
- h) formed from lava igneous (extrusive)
- i) This rock is formed from weathering, erosion, deposition, compaction, and cementation sedimentary
- j) There are two main types of this rock – contact and regional. metamorphic
- k) Formed from magma. igneous (intrusive)
- l) Granite and pumice are examples of this type of rock igneous
- m) Marble and gneiss are examples of this type of rock metamorphic
- n) Sandstone and conglomerate are examples of this type of rock. sedimentary

5. Identify the igneous, metamorphic and sedimentary rock below:

Metamorphic	Sedimentary	Igneous
		

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

(a) How they are formed

Intrusive igneous rocks are formed under the ground from molten magma. Extrusive igneous rocks are formed above ground from lava.

(b) Their appearance – the size of the crystals

Intrusive – has large crystals as it cools slowly

Extrusive – has small crystals as it cools quickly

7. a) Explain what a fossil is.

The ~~dead~~ ^{preserved} remains of a lifeform which existed many years ago.

b) Describe how fossils are formed.

Remains of animal or plant remain relatively undisturbed; covered with layers of sediment, compaction & cementation turns sediment into rock while soft parts decompose.

c) Explain why fossils are useful to science.

- Provide an insight to previous lifeforms that may no longer exist
- Can allow scientist to "date" rock layers by comparing the fossils in them.

8. 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 cooling magma or lava (molten rock)	have crystals (large or small)	granite pumice basalt
Sedimentary	from sediment via weathering, erosion, deposition, compaction and cementation	have layers	conglomerate sandstone siltstone
Metamorphic	From other rocks subject to intense heat and pressure	have rounded, interlocking crystals or uneven, wavy layers	marble Gneiss slate

9. 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.

Sedimentary rocks contain fossils. They form from layers of sediment so can cover the remains of an animal or plant. The heat in igneous/molten rock, and the heat and pressure of metamorphic rock would destroy or distort the fossils evidence

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

Weathering - breaking the ^{original} rock into tiny sediments via wind, water.

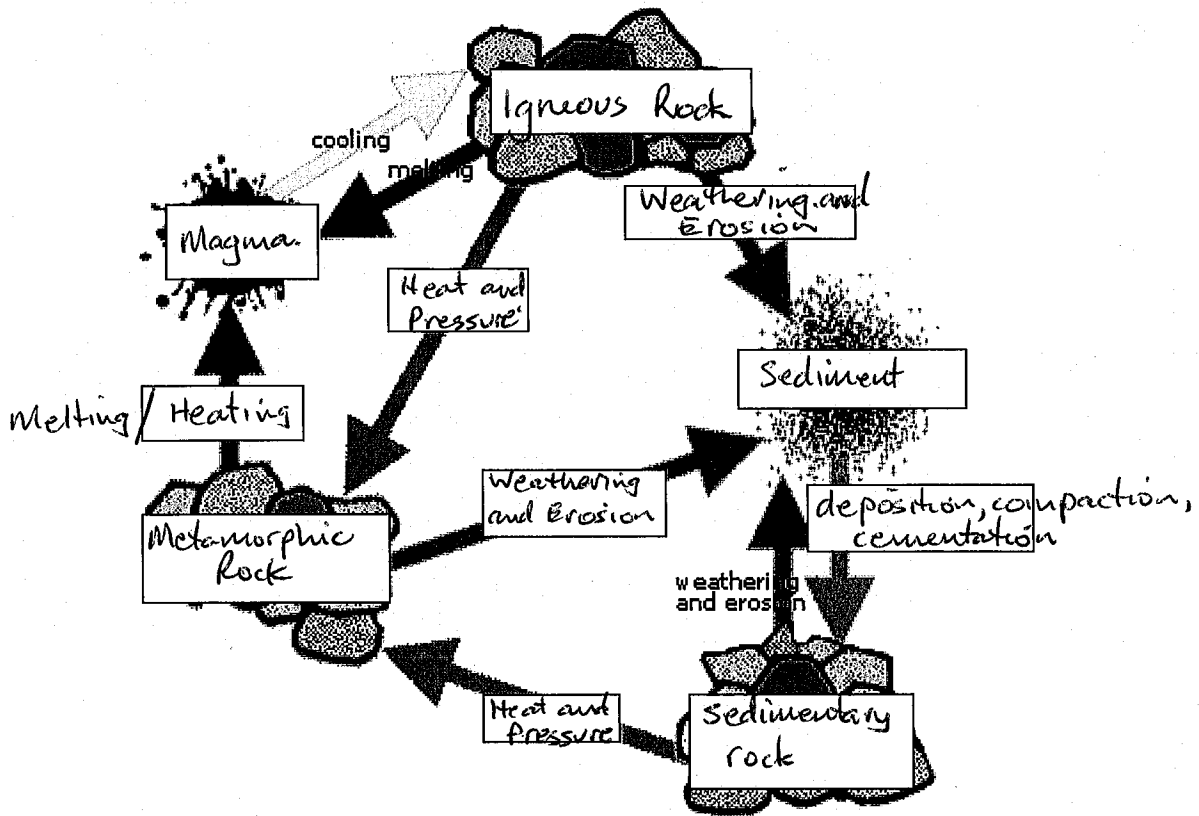
Erosion - moving the sediments via wind or water

Sedimentation - ~~to~~ deposition of the sediment in an area

compaction - layers of sediment build up and compact the layers down.

Cementation - the sediments get cemented together gradually over time by chemical leaching through the layers.

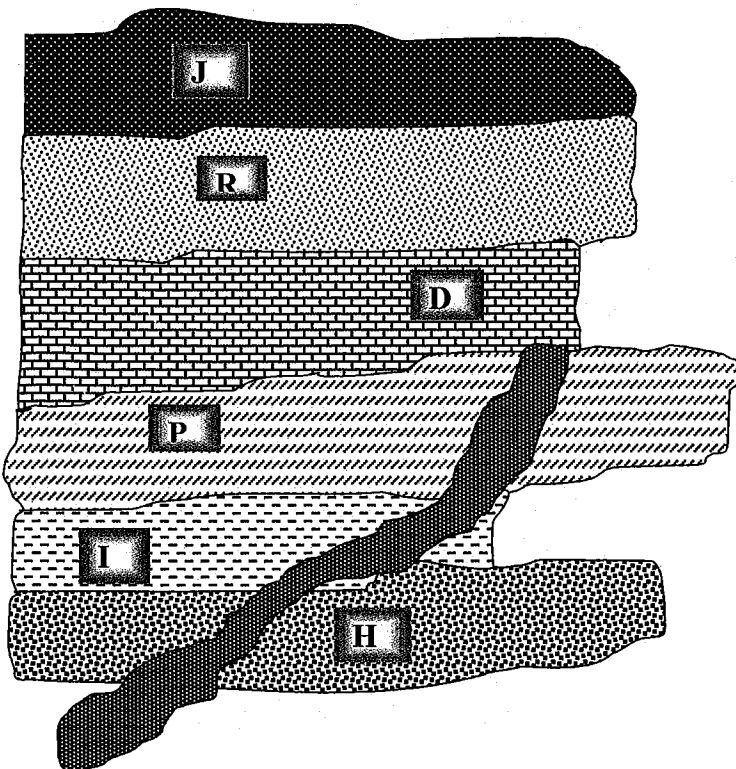
11. Complete the diagram of the rock cycle below:



12. Use the diagram to explain how the rock cycle is NOT a one-way process:

Any one type of rock can be changed into any other type of rock (use the examples from above). Any rock type can be turned back into the type of rock it was formed from. This is a two direction process, not just one way.

13. The following questions refer to this rock face:



a) List the rock types from oldest to youngest:

H, I, P, D, R, J (top)

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

P

c) Explain how you know for (b)
Weathering would occur at the right hand edge. P has been weathered the least.

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

Any answer is okay - it is the explanation that gets the marks. I would say sedimentary as it goes through more stages - weathering, erosion, deposition, compaction, cementation. You could argue these 5 stages would take the longest time.

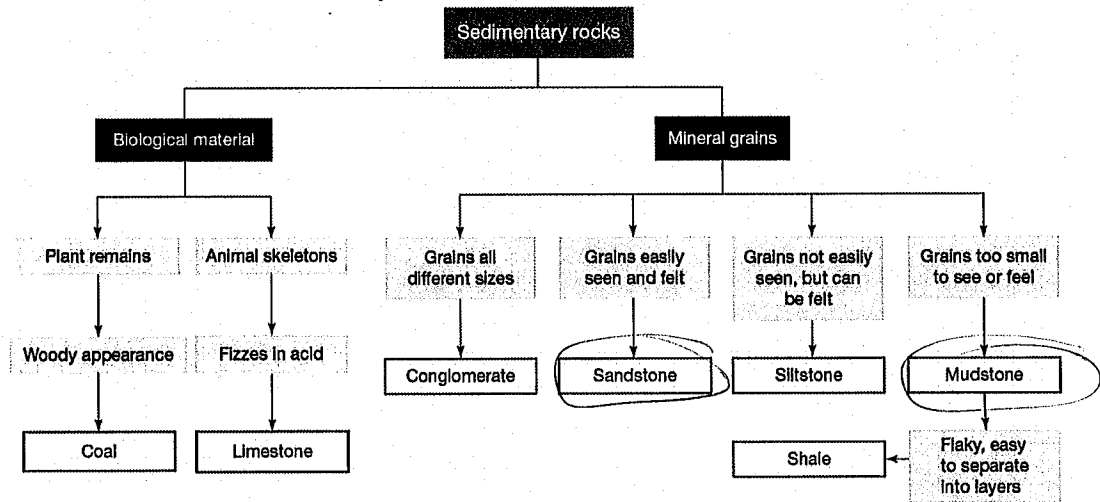
15. Predict which would have the greatest pressure, and explain why - a finger pressed into the palm of your hand, or a pin pushed into the palm of your hand - both with the same amount of force.

Pressure is force felt over a certain area. Both have the same force but the pin is felt in a tiny area, so has a large pressure (& hurt more)

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

- | | | | |
|--------------|--------------------|------------------|--------------------|
| (a) Shale | <u>Sedimentary</u> | (e) Basalt | <u>Igneous</u> |
| (b) Granite | <u>igneous</u> | (f) Conglomerate | <u>Sedimentary</u> |
| (c) Mudstone | <u>Sedimentary</u> | (g) Pumice | <u>Igneous</u> |
| (d) Marble | <u>Metamorphic</u> | (h) Slate | <u>Metamorphic</u> |

17. Use the information below to identify the difference between mudstone and sandstone:



In mudstone the grains are too small to see or feel, but in sandstone the grains are easily felt and seen.

18. Summarise the importance of the mining rehabilitation process.

Mining rehabilitation is important as it restores the natural, indigenous flora and fauna of the site where mining occurs. It therefore ensures no ongoing negative environmental effects from the mining.

19. Use the table below to answer the questions.

Examples of mineral commodities used in mobile devices				
Mineral commodity	Leading global countries by value of exports in 2014	Mineral cover(s)	Applicable properties of the commodity	Where the commodity is used in mobile devices
Germanium	China ¹	Sphalerite	Conducts electricity	Battery, display, electronics and circuitry, and vibration components.
Graphite	China, India	Graphite	Resists heat, conducts electricity and heat, resists corrosion, and has a high performance-to-weight ratio	Battery anodes.
Indium	China, Republic of Korea	Sphalerite	Transparent and conducts electricity	Liquid crystal displays.
Lithium	Australia, Chile, Argentina, China	Amblygonite, petalite, lepidolite, and spodumene	Chemically reactive and has a high performance-to-weight ratio	Battery cathodes.
Platinum-group metals	South Africa, Russia, Canada	More than 100 different minerals	Conducts electricity	Circuitry, capacitors, and plating.
Potassium	Canada, Russia, Belarus	Langbeinite, sylvite, and sylvinite	Strengthens glass	Screen glass.
Rare-earth elements	China	Bastnäsite, ion adsorption clays, loparite, monazite, and xenotime	Highly magnetic; blue, green, red, and yellow phosphors; and optical-quality glass	LED phosphors, screens, speakers, and vibration motors.
Sand, industrial	China, ² United States	Silica sand	Gives glass clarity	Screen glass and semiconductors.
Silicon	China	Quartz	Conducts electricity	Semiconductors.
Silver	Mexico, China, Peru	Argentite and tetrahedrite	Conducts electricity	Circuitry.
Tantalum	Rwanda, Brazil, Congo (Kinshasa)	Columbite and tantalite	Stores electrical charge well	Capacitors.
Tin	China, Indonesia, Burma, Peru	Cassiterite	Transparent and conducts electricity	Liquid crystal displays and circuit board solder.
Tungsten	China	Scheelite and wolframite	Highly dense and durable for vibrator's weight component	Vibrator.

a) Identify from the table, a mineral that is mined in Mexico that is used in mobile phones

Silver

b) Identify the 2 minerals that are used in screen glass in mobile phones.

Potassium, Sand

c) Using the properties of the minerals identified in question 20, explain why they have been chosen for use in screen glass.

Potassium - provides the screen with strength.

Sand - makes the screen clear and see-through (clarity).