

Task Booklet  
Year 8 Science



# ***Materials***

# ***And***

# ***Rocks***



Student Name:  
Science Teacher:

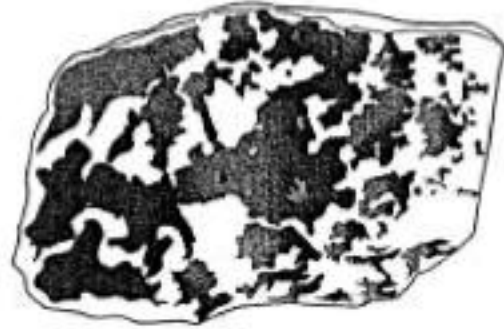
Task 1 - Rock Hunt

Core

Look at these drawings and descriptions of rocks. Use the rock key to identify what these rocks could be.

**Rock A**

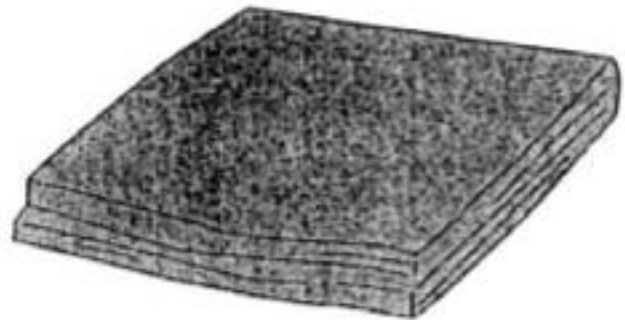
Light coloured, pink, speckled rock with large shiny crystals of lots of different colours. Does not react with acid. It is hard and the crystals point in all sorts of directions.



**Rock A is**

**Rock B**

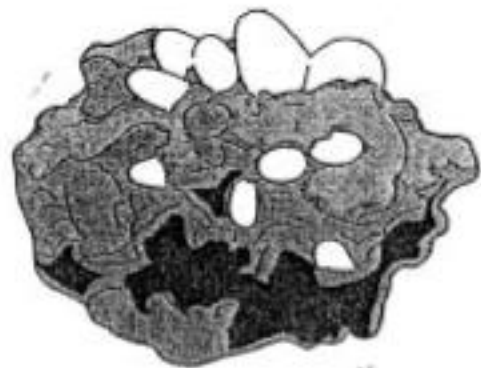
Dark coloured, hard rock. Does not react with acid but makes flakes when hit with a hammer. Does not absorb water.



**Rock B is**

**Rock C**

Does not react with acid. The rock has no crystals but is made of layers of hard, round particles stuck together. Some of the particles are the size of a pea.



**Rock C is**

**Rock D**

Smooth, white rock with coloured lines running through it. Shiny in parts and makes a fizz with acids. Quite hard and has a layered structure.



**Rock D is**

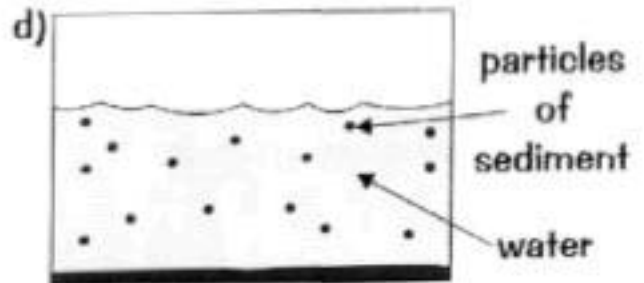
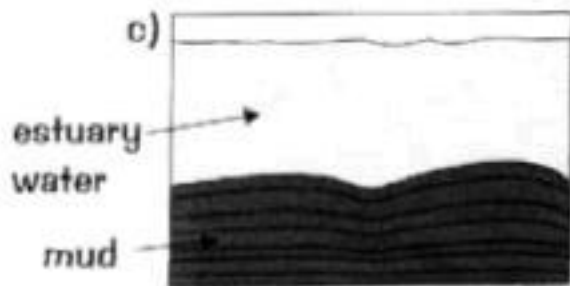
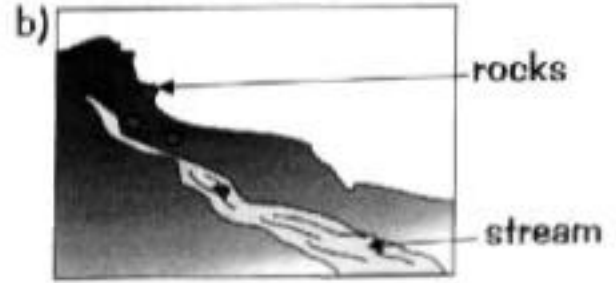
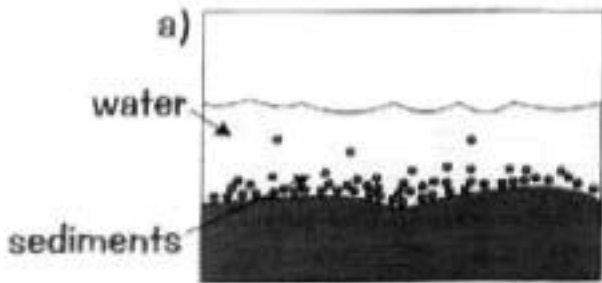
Rocks Key



**Core**

**Task 2 - The Effects of Weathering**

1. Put these pictures in the correct sequence.  
Write the letters in order in the boxes below.



**Standard**

2. Bits of rock get carried along by the moving water.  
Are bits of rock more likely to be deposited where the water is moving quickly or where it is moving more slowly?

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3. How does the size of the sediment affect the distance that it can be carried along by the river?

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**Standard**

4. The table and the passage below show what happens when you shake cubes of plaster in a container.

<b>Number of shakes</b>	0	5	10	15	20
<b>Number of particles</b>	10	13	19	28	22 + dust

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***The shape of the particles went from cubes at the beginning to much more like spheres at the end. After 10 shakes there were a few little bits in the bottom of the container. After 20 shakes there was quite a bit of dust at the bottom of the container.***

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- (a) Why do the bits of plaster get rounder?

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- (b) Would you expect sediment grains in a river to get smaller as time went on? Explain your answer.

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**Extension**

5. After a big storm the water in a river is at a higher level. It also looks dirty and brown.

- (a) Why does the water look dirty?

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- (b) If buildings are flooded 'sludge' gets left behind when the water level drops. Where does it come from?

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**Task 3 - Types of Rock**

**Core**

1. What is sediment?

\_\_\_\_\_

2. Name two sedimentary rocks.

\_\_\_\_\_ and \_\_\_\_\_

**Standard**

3. Which of these statements about sedimentary rocks are true?  
Circle 'True' or 'False' for each one.

(a) Sedimentary rocks are made of grains of sediment. True / False

(b) Sedimentary rocks are non-porous. True / False

(c) Sedimentary rocks may contain fossils. True / False

4. Which of the rocks below are metamorphic rocks?  
Circle the correct answers.

(a) Quartzite

(b) Granite

(c) Shale

(d) Slate

(e) Marble

(f) Chalk

5. Use words from the box to complete the sentences below.

**water content   sedimentary   pressure   temperature  
erosion   metamorphic   altitude   big**

*\_\_\_\_\_ rocks are formed by the \_\_\_\_\_ of  
sediment layers. \_\_\_\_\_ are formed from pre-existing rocks  
as a result of high \_\_\_\_\_ and / or high \_\_\_\_\_.*

### Standard

### Task 4 - Fossils

Fossils are a definite record of the past - the word 'fossil' actually means something that has to be dug up. Only a small number of the countless organisms that have existed become fossils. The reason that the fossil record is so incomplete lies in the way that fossils are preserved.

For a shell, tooth, bone, plant stem or footprint to be preserved it has to be present in the formation of sedimentary rock. The heat involved when igneous and metamorphic rocks are formed destroys fossil evidence. It helps if the animal or plant remains have hard parts as these make an impression in the smooth layers of sediment. It is not the actual living material that is preserved but the shape it made. Over the years the impression, or hole in the rock, gets filled with minerals crystallising out from water in the rock. These hard minerals take the place of the living material but preserve the record of its shape as a different type of rock. This process is called **petrification**.

Fossils are often dated by the rocks around them giving us a unique clue as to how evolution progressed.



is of  
300

million years ago.

**Standard**

**Questions**

1. What does the word fossil mean?

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2. Explain what is involved in 'petrification'.

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3. Why are so many creatures with shells found as fossils?

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4. How do we know what dinosaurs were like?

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5. What sort of rock are fossils found in? Why?

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6. In millions of years, people may find fossil evidence of our lives. What do you think they will find? Draw pictures to show what they might find.

**Standard**

**Task 5 - Rock Hunt**

Read the information in the box.

Igneous rock	Usually made from tightly interlocking crystals in a random pattern. Usually hard but not as hard as metamorphic rock. Formed when molten magma cools and solidifies.
Sedimentary Rock	No crystals. A collection of tiny bits cemented together. Sometimes contains fossils or the remains of dead animals. Usually softer than igneous or metamorphic rock. Formed by water movement eroding other rocks into small particles, then depositing them in layers.
Metamorphic Rock	Made from crystals in layers or definite bands. Usually very hard rocks. Formed when areas of sedimentary rock get heated and compressed. The rocks do not melt.

**Questions**

1. Why are there no layers in igneous rocks?

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2. Why are metamorphic rocks harder than the others?

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3. Why do sedimentary rocks often crumble into smaller pieces?

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**Extension**

4. Complete the last two columns of the table.

Put the type of rock (igneous, metamorphic or sedimentary) in the third column.

Give the reason for your choice in the last column.

<b><i>Name</i></b>	<b><i>Description</i></b>	<b><i>Rock Type</i></b>	<b><i>Reason</i></b>
Granite	Large crystals in no particular pattern. Quite a hard rock.		
Basalt	Small crystals in a random pattern. Quite a hard rock.		
Chalk	Soft rock. No crystals.		
Limestone	Made from remains of shell fish squashed together. No crystals.		
Slate	Hard rock made of lots of thin layers squashed together.		
Gneiss	A hard rock with bands of different coloured crystals.		

**Standard**

**Task 6 - Rock Cycle: Million Year Mixer**

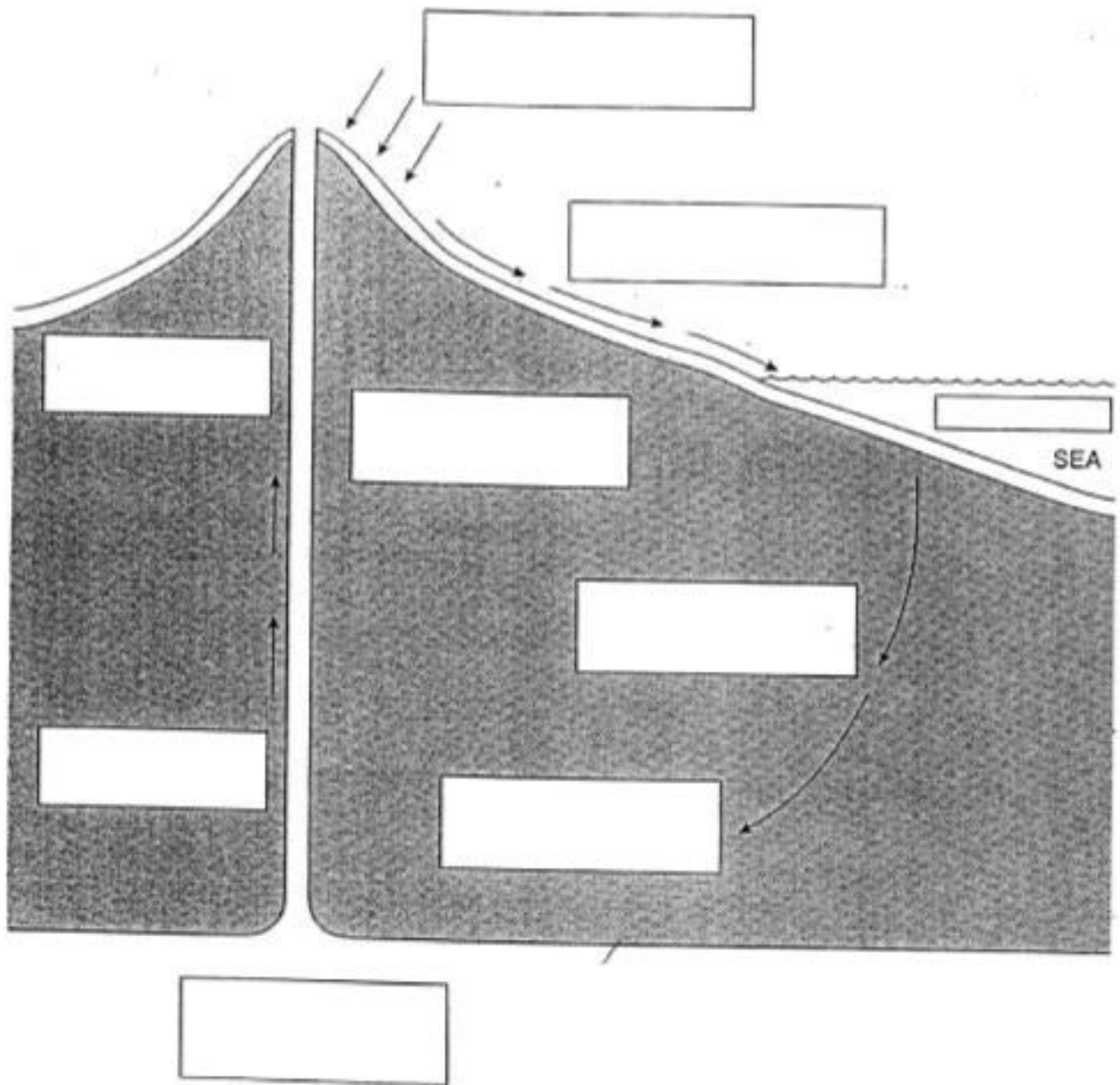
**On the next page you will see a diagram of the rock cycle.**

**Write these labels in the correct box on the diagram.**

**You may write the label or the letter.**

- A Igneous rocks trapped here cool slowly forming large crystals
- B ice, wind and rain break up rocks on the surface
- C heat rises from below
- D sediment turns to rock as it is buried
- E molten rock
- F layers of sediment form in sea
- G pressure from weight of rocks above
- H igneous rocks cool rapidly on surface forming small crystals
- I rivers wash small rocks out to sea

Standard



**Rocks and Rock Cycle - Year 8**

**Task 7**

**Core**

**Task 7 - Rocks**

1. (a) Complete the table below. Classify each of the rocks as sedimentary, igneous or metamorphic.

<b><i>Rock</i></b>	<b><i>Description</i></b>	<b><i>Type</i></b>
Mudstone	Grains too small to see (microscopic) and rounded in shape. Very soft and crumbly. Layered	
Granite	Pale coloured, large crystals. No layers. Crystals in tight-fitting pattern. Hard.	
Basalt	Small, dark coloured crystals. No layers. Crystals in tight pattern. Hard	
Slate	Very hard rock. Layer structure splits in flat sheets. No crystals visible.	

**Standard**

(b) Why is slate so hard?

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(c) Which formed more slowly, slate or granite?

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(d) Where was rock like mudstone formed? Describe what must have happened.

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(e) Draw a rock cycle and put each of the rocks in the table in it.

**Standard**

2. Use the words below to complete the gaps in the passage.

***crust lava basalt magma volcanoes rock***

'Inside the Earth it is very hot. There is molten \_\_\_\_\_ called \_\_\_\_\_  
On top of the molten rock there is solid rock, called the Earth's \_\_\_\_\_. We  
live on this. Sometimes the magma forces its way through the crust; then hills called  
\_\_\_\_\_ are formed. When the magma escapes through the volcanoes it is  
called \_\_\_\_\_. It cools to form solid rocks like \_\_\_\_\_.'

3. Draw lines to match the rocks with their description.

granite	Soft rock; white in colour; very easily scratched; fizzes with acid
chalk	Black, flaky rock; does not react with acids; quite hard and waterproof
slate	White rock; can be polished smooth; fizzes with acids; quite hard
marble	Very hard rock made of different types of crystals

**Extension**

4. Molten magma may push up from underneath, heating the sedimentary rock so it turns into metamorphic rock. The magma forms new igneous rock.

(a) What does it tell you about how the rock cooled if it has large crystals?

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(b) What does it tell you about how the rock cooled if it has small crystals?

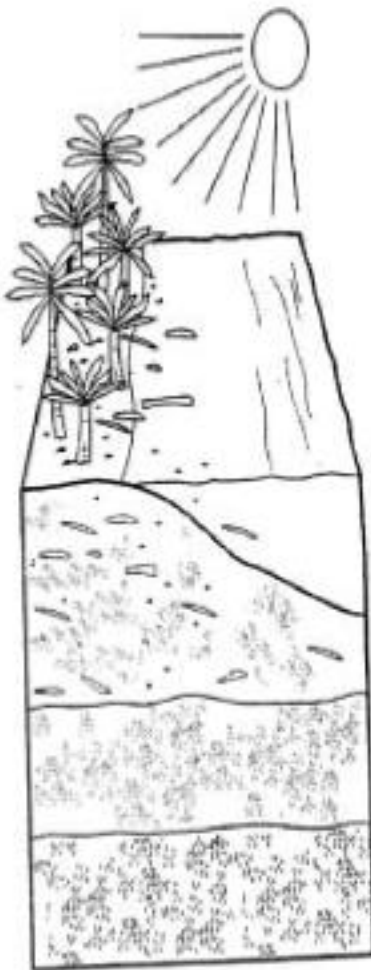
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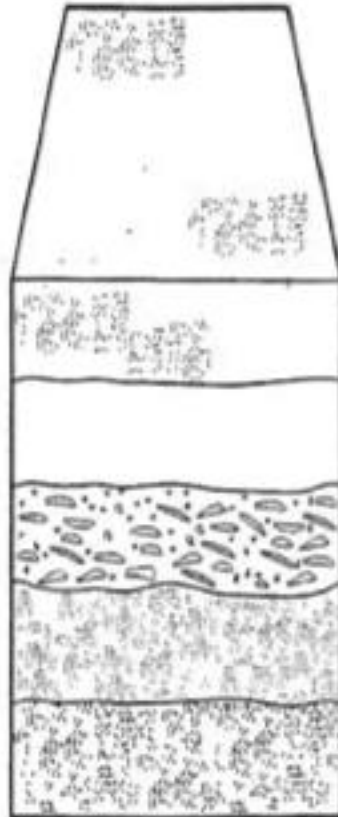
(c) Give the name of a metamorphic rock that you know.

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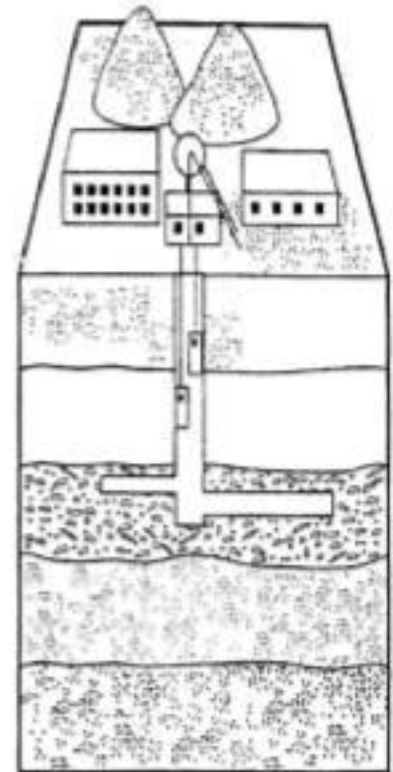
Task 8 - Crude Oil



*800 million years ago plants stored energy from the sun. Dead plants fell into the water and the mud stopped them rotting away.*



*As the layers of mud piled up they squashed the plants. After millions of years under pressure the mud turns to rock and the dead plants become coal.*



*Miners dig shafts to reach the coal. Fossils of plants are sometimes found in lumps of coal.*

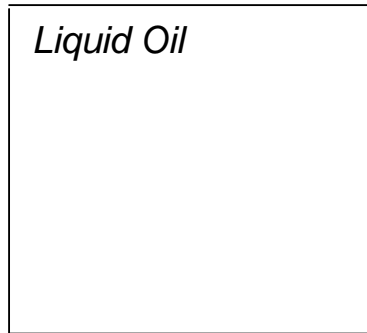
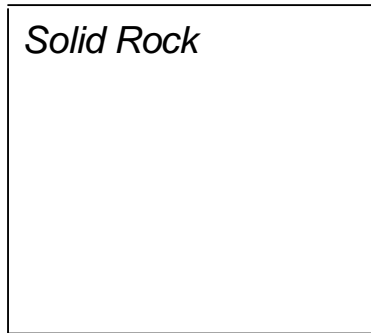
The rock cycle forms layers of rock on top of other layers. The layers get twisted and folded by the movements in the magma below. As the rock gets formed it often traps animal and plant remains as fossils. This organic matter decays into a mixture of simpler chemicals. Some of this gets trapped under a dome or fault in hard rock. This is crude oil. Crude oil is a mixture of very useful and valuable substances.

Oil companies look for areas like this. When they find one they drill down and collect the oil.

**Standard**

**Questions**

1. In the boxes below draw particle diagrams for the solid impervious rock that traps the oil and for the liquid oil itself.



2. Describe what happens to the rock when it is exposed to weather at the surface.

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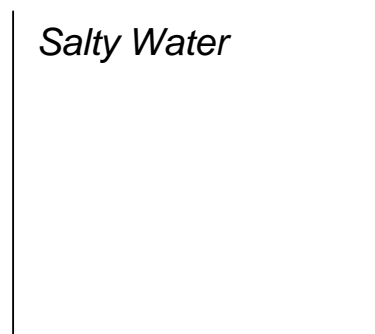
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3. Above the trapped oil there is a pocket of natural gas which is under pressure. What happens to the particles of the gas when they reach the surface and the pressure is released?

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4. In the soft rock under the oil there is salty water. Draw a particle picture for salty water in the box.



5. The soft rock is a sedimentary rock. Explain what this means.

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6. The sedimentary rock can be changed into a different sort of rock,  
(a) What sort of rock does it become?

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- (b) How does it get changed?

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**Standard**

**Task 9 - Rock Types**

Use the words in the box to complete the gaps in the passage.  
Words may be used once, more than once, or not at all.

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layers changes seas crystals randomly fossils  
millions age cooled crystals pressure three  
molten long minerals heat volcano older salt

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'There are \_\_\_\_\_ different types of rock. Igneous rocks are made from \_\_\_\_\_ molten magma which has \_\_\_\_\_ and solidified. Where the rock reaches the surface we sometimes get a \_\_\_\_\_. The rocks contain \_\_\_\_\_ which are made from various \_\_\_\_\_. The \_\_\_\_\_ are arranged

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Sedimentary rocks are formed from \_\_\_\_\_ of sediment laid down in lakes or \_\_\_\_\_ over \_\_\_\_\_ of years. The particles are then cemented together by crystals of \_\_\_\_\_. Sometimes the remains of long dead plants and animals are found in the rock. These are called \_\_\_\_\_. Scientists study the types of \_\_\_\_\_ to work out the \_\_\_\_\_ of the rock. In general, the deeper the rock, the \_\_\_\_\_ it is.

Metamorphic rocks are formed by \_\_\_\_\_ to other types of rock. They can be caused by \_\_\_\_\_ or \_\_\_\_\_ effects, or both. The changes take a \_\_\_\_\_ time. Metamorphic rocks can contain tiny \_\_\_\_\_ and may also have \_\_\_\_\_.'

**Core**

**Task 10 - Classifying Rocks**

1. Solve the anagrams below to identify the words that are all part of the rock cycle.

<i>Anagram</i>	<i>Description</i>	<i>Unscrambled word</i>
STNARTNOIPROAT	Moving rocks from one place to another	
OXRUSEPE	The result of uplift on rocks	
PEDSIOGTNI	Putting down sediment	
GAWTNIREHE	Breaking down rocks	
LARIBU / SNERPMOCSIO	Covering and squashing layers to form rock	
TEMGLIN	Change to liquid caused by Intense heat	
SOENIOR	Wearing away of rocks	
GOLCNIO	Causes molten rock to solidify	
THAE / RUSPEERS	Cause changes to rock inside the Earth	

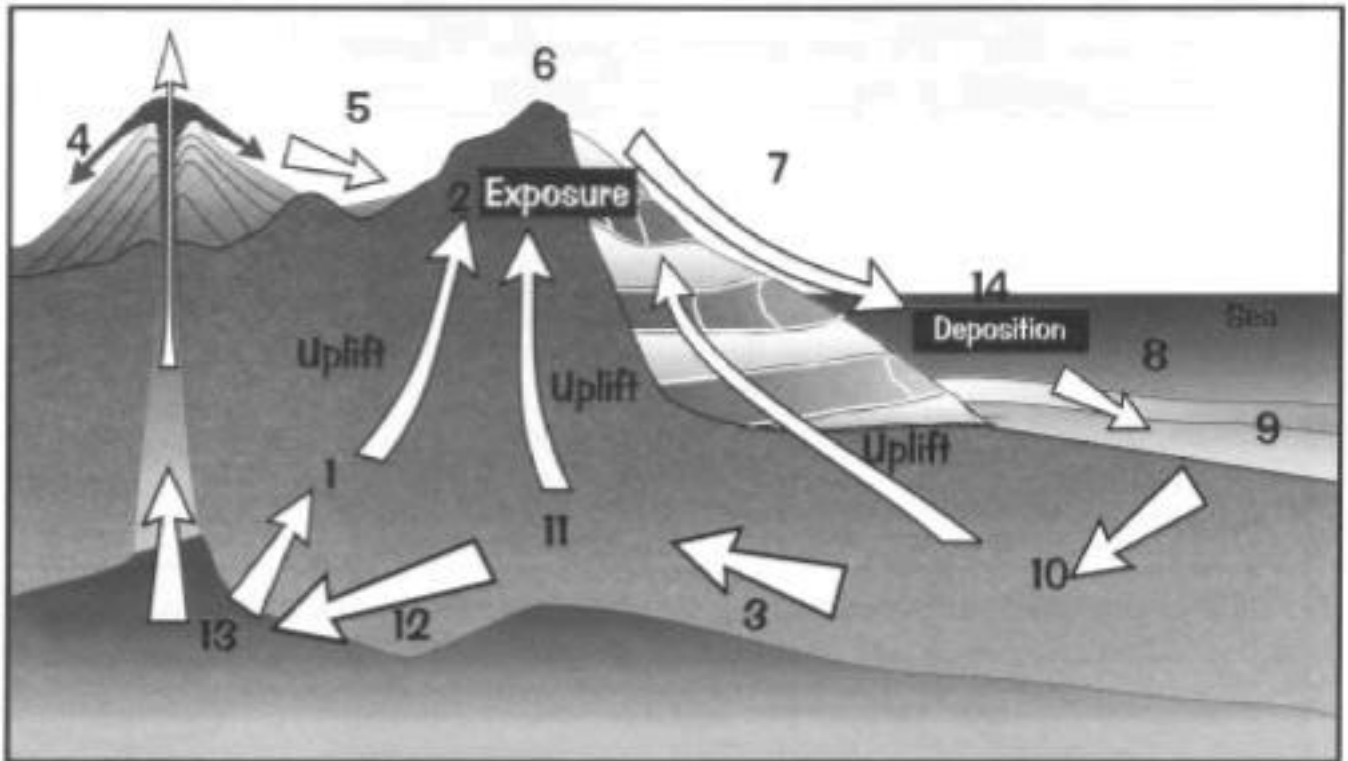
**Standard**

2. Decide whether the statements below are true or false.

	<i>True</i>	<i>False</i>
Igneous rocks change into sedimentary rocks		
Sedimentary rocks are formed by weathering other rocks		
Molten rock in the Earth is called lava		
Crystallisation of magma forms metamorphic rocks		
Burial of sediment makes igneous rocks		
Erosion is weathering and transportation of sediment		
Extrusive igneous rocks form on the Earth's surface		
Intrusive igneous rocks form on the Earth's surface		
Exposure happens inside the Earth		

**Extension**

3. The diagram below shows the rock cycle. The numbers represent rock types and changes that are happening to the rocks or other material.



Match the numbers to the labels in the table below.  
Words in lower case represent processes.

<b><i>Rock / Change</i></b>	<b><i>Number</i></b>
IGNEOUS ROCK	
SEDIMENTARY ROCK	
METAMORPHIC ROCK	
SEDIMENT	
MAGMA	
Weathering	
Transportation	
Deposition	
Exposure	
Heat and pressure	
Cooling	
Melting	
Burial and compression	
Lava	

**Standard****Task 11 - Classifying Rocks 2**

1. Look at the descriptions of the rocks in the table below. Identify each rock as igneous, sedimentary or metamorphic and write it into the table below.

<b><i>Rock</i></b>	<b><i>Description</i></b>	<b><i>Igneous, Sedimentary or Metamorphic?</i></b>
BASALT	Dark rock with small crystals. Formed on the surface of the Earth.	
CHALK	White rock made from shells of sea animals which collected at bottom of shallow seas	
SLATE	Dark rock with tiny crystals and layers. Formed from shale by heat and pressure.	
GRIT	Rock formed from small particles stuck together. Also called CONGLOMERATE.	
GRANITE	Speckled crystals formed from melted rock cooling slowly inside the Earth.	
MARBLE	White with crystals and layers. Made from chalk or limestone by heat and pressure.	
BRECCIA	Rock made from different sized angular particles collected and cemented together.	
OBSIDIAN	Glass like rock from volcanoes. Melted rock cooled very quickly forming tiny crystals.	
PUMICE	Rock containing air bubbles. Formed when volcanic rocks cools trapping air inside.	
SANDSTONE	Formed from small grains of sand squeezed tightly together.	
MARL	Formed from small dark grey fragments squeezed tightly together.	
QUARTZITE	Crystalline rock formed from sandstone due to heat and pressure within the Earth.	

2. Sedimentary and metamorphic rocks are always formed deep underground but can be found on the Earth's surface. Explain.

**Ext**

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