



Chemistry

10. Using Resources

Revisiting Booklet

Name:

Contents:

- 1) Using the Earth's resources
- 2) Potable Water
- 3) Waste water treatment
- 4) Alternative methods for extracting metals
- 5) Life cycle assessments
- 6) Ways of reducing the use of resources

Using the Earth's resources

What resources do humans need to survive?

- 1)
- 2)
- 3)
- 4)

Sort the following in to natural and human-made products;

Wool, timber, concrete, stone, polythene, rubber, coal, plastic, metals, cotton, brick,

Natural:

Human-made:

Define what is meant by a renewable resource

.....

.....

.....

Define what is meant by a finite resource

.....

.....

.....

Potable Water

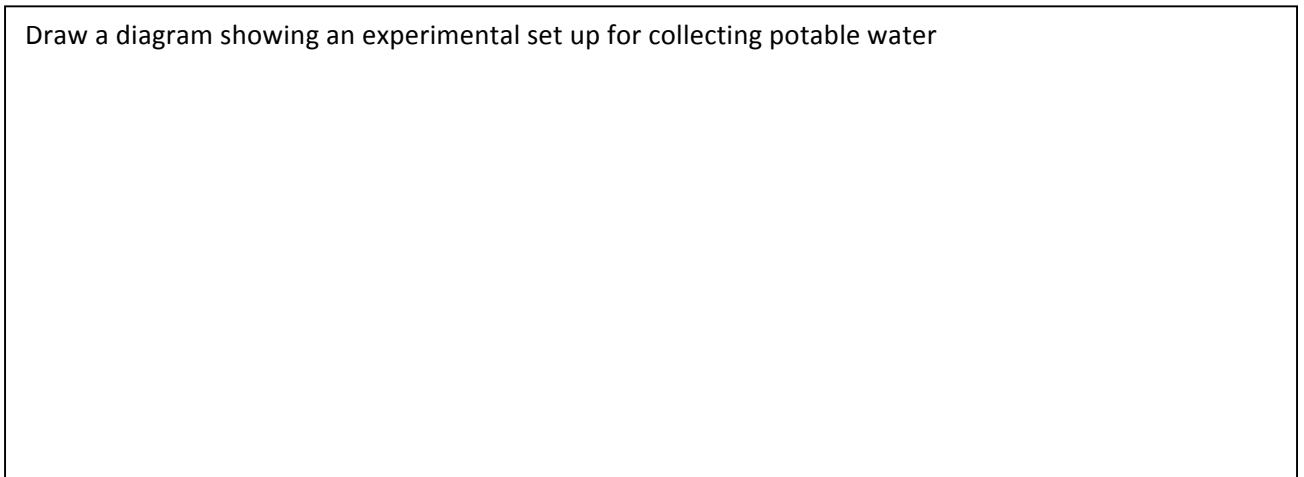
What is meant by pure water?

What is meant by potable water?

Sort these keywords with their definition and the order the processes occur;

Collection	Any micro-organisms in the water are killed.	First
Sterilisation	A source of fresh water is chosen. This is the water source	Second
Distribution	The water is passed through a mesh to remove and particles in the water	Third
Filtration	The clean and drinkable water being sent around the country and in to people's homes	Fourth

Draw a diagram showing an experimental set up for collecting potable water



Describe how you would determine the pH of a water sample

.....

.....

Describe the test for sodium ions

.....

.....

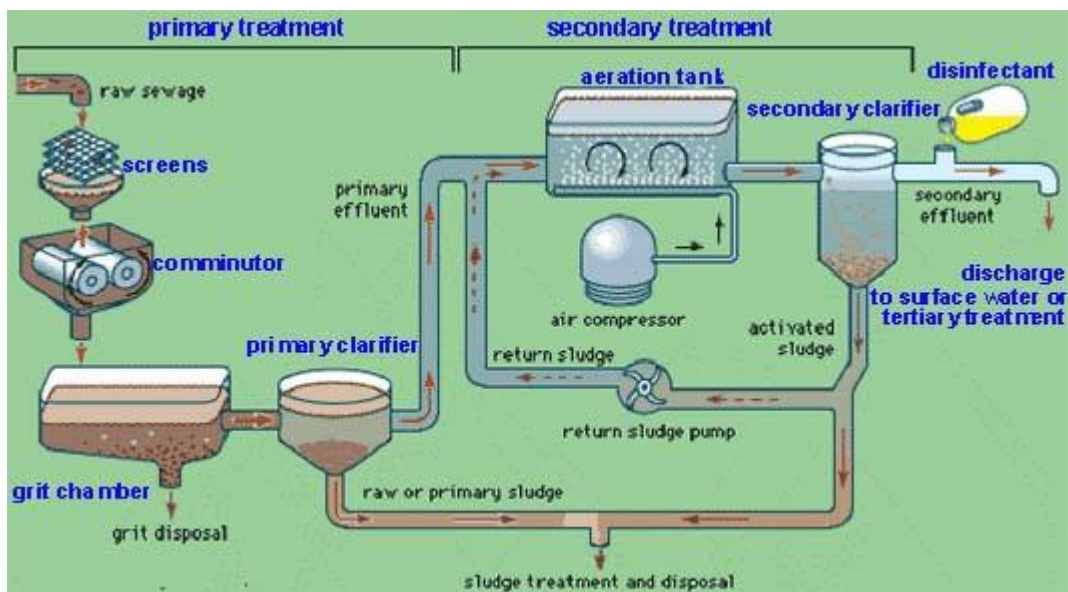
Describe the test for chloride ions

.....

.....

Before being returned to a water source (either a river or the sea) waste water from sewage needs to be treated to make it safe. Annotate the following points on to the diagram what is meant by each of the following stages.

- screening and grit removal
- sedimentation to produce sewage sludge and effluent
- anaerobic digestion of sewage sludge
- aerobic biological treatment of effluent.




Alternative methods for extracting metals

Bioleaching

Bioleaching uses bacteria to extract metals from the ore.

Miners use bioleaching where there are *lower concentrations* of metals that need extracting.

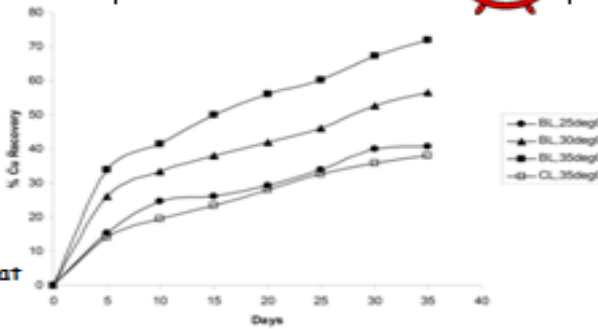
Bioleaching works by **bacteria** feeding on nutrients in metals, which separates the metal from the other elements. When the metal is **excreted** from the bacteria's system (it leaves the system) the metal can be collected in solution. This is called a **leachate**.



For some metals and in some areas of the world, bioleaching is a simple, effective and low cost method for extracting metals. ✓

For some metals, such as copper, bioleaching is not always fast enough or cost effective – this means it might cost more to extract than the metal fetches when it is sold. ⌚

Bioleaching is efficient and environmentally responsible – this means that it does not do any damage to our environment.



Days	BL_25degC	BL_30degC	BL_35degC	CL_35degC
0	0	0	0	0
5	15	25	35	10
10	25	35	45	20
15	30	40	55	25
20	35	45	60	30
25	40	50	65	35
30	45	55	70	40
35	48	58	75	42

GRAPH: Copper recovered at different temperatures of bioleaching.

Read the information and produce a 4 – point method for how bioleaching works

- 1)
- 2)
- 3)
- 4)

What are the advantages of bioleaching?

.....

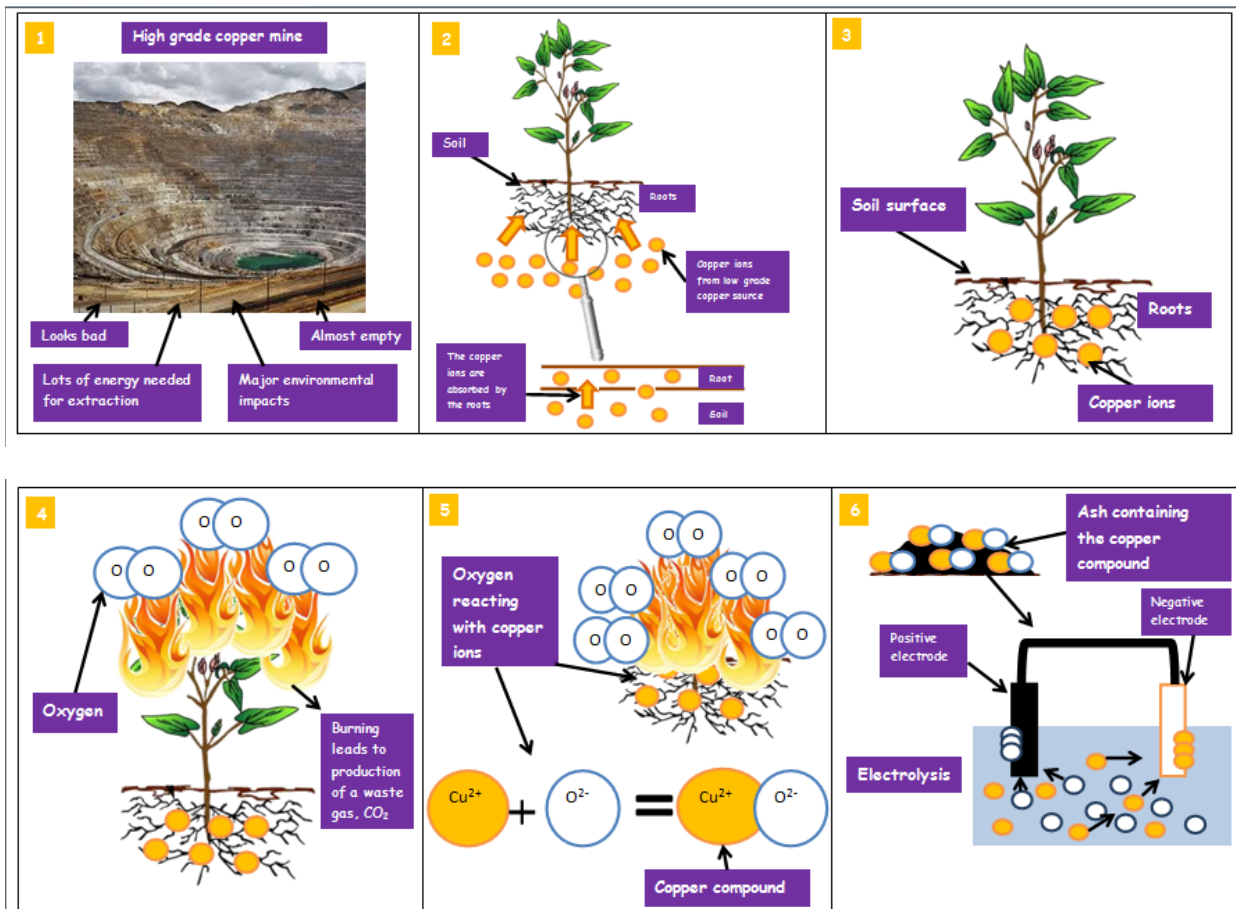
.....

What are the disadvantages of bioleaching?

.....

.....

Phytomining (HT)



Read the information and produce a 4 – point method for how phytomining works

- 1)
- 2)
- 3)
- 4)

What are the advantages of phytomining?

.....

.....

What are the disadvantages of phytomining?

.....

.....

Life cycle assessments

For this sheet of paper answer the following;

What was the raw material that it came from?.....

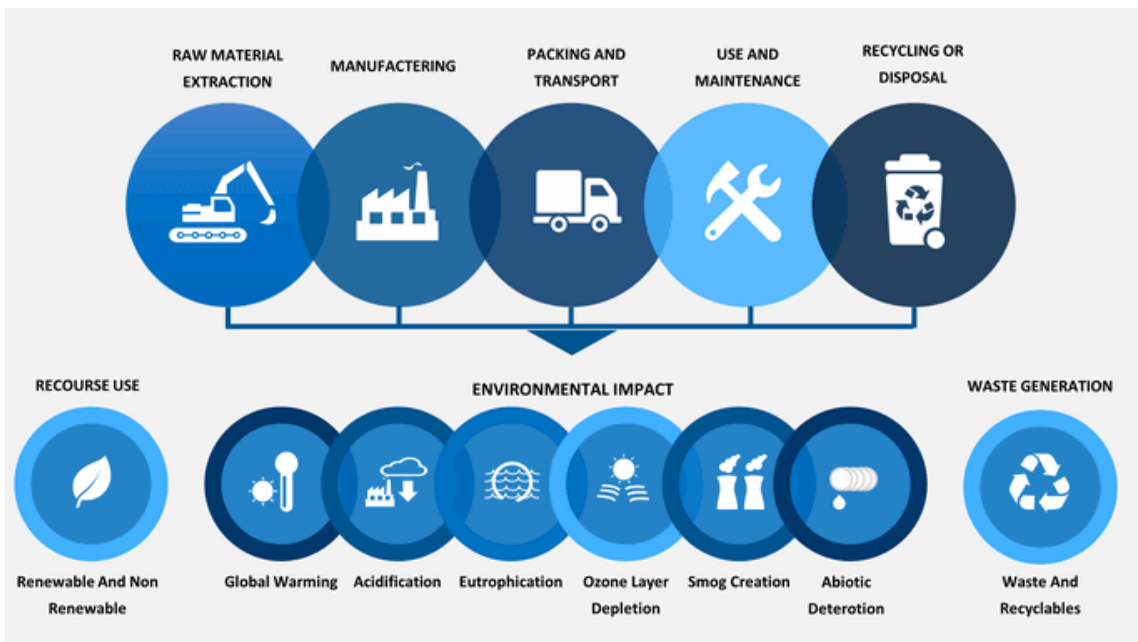
How was it turned in to paper?.....

How do you think it was transported to this building?.....

What packaging may have been used?.....

How will it be used?.....

What will happen to it after it is used?.....



Describe three resources that can be recycled

- 1)
- 2)
- 3)

Describe three things which can be re-used

- 1)
- 2)
- 3)

