



Name:



Preparatory Work for BTEC Cell Structure Assignment

You should find this piece of work straightforward as it is based on work that you have probably covered at school. You will find it very useful to review these basic concepts, as we will come across them again at the beginning of your BTEC course. Obviously, you can choose when you do the work but we suggest you leave it until you are fairly close to starting your BTEC course so it is fresh in your mind when you come back to college in September. The exercises we are asking you to do will help you to complete one of the early assignments of the course.

Using a pencil, draw and label 3 A4 pictures of the following:

- Eukaryotic animal cell
- Eukaryotic plant cell
- Prokaryotic cell

The picture of the cell should fill at least 2/3 of the page. All organelles within the cell must be clearly labelled with their name. A ruler must be used to draw the label lines.

You should also include a table giving descriptions of the functions of each of the organelles that you have labelled.

This homework must be brought to your first lesson at the start of the course.

What are cells like?



Name.....

Preparatory Work for BTEC Atomic Structure Assignment

What are atoms like?

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1. Go to the **BBC GCSE BiteSize** website and work through the section on **atomic structure** (activity first, then revise, then test):

<http://www.bbc.co.uk/education/guides/zsp4jxs/revision>

2. Use a GCSE science textbook or your own notes or the BiteSize website and write a definition of the following scientific terms (i.e. explain what they mean).

(a) Atom

.....

(b) Molecule

.....

.....

(c) Ion

.....

.....

(d) Atomic number (Z)

.....

(e) Mass number (A)

.....

.....

(f) Isotopes

.....

.....

(g) Relative Atomic Mass (Ar)

.....

.....

3. Calculate the relative formula mass (M_r) by adding the relative atomic masses.

Example M_r of $MgCl_2 = 24.3 + 35.5 \times 2 = 95.3$

(a) Iodine molecules, I_2

(b) Methane CH_4

(c) Sodium carbonate Na_2CO_3

(d) Copper sulphate-5-water $CuSO_4 \cdot 5H_2O$

.....

4. Complete this table, which covers properties of fundamental particles.

Particle	Relative Mass	Relative Charge	Location in atom
Proton			
Neutron			
Electron			

5. You will remember that electrons in atoms are arranged in energy levels or shells.

(a) How many electrons can occupy each of the first three energy levels?

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(b) Choose a metal and a non-metal, which each contain at least ten electrons.

For each of these, write out the electron shell configuration.

Metal: Electronic configuration

Non-metal: Electronic configuration.....

6. Finally complete this table on the atomic and electronic structure of atoms or ions.

You will need to be careful with the last two as they are ions not atoms.

Species	Mass Number	Atomic Number	Number of electrons	Number of protons	Number of neutrons	Electronic Structure
Calcium (Ca)	40	20				
Sulphur (S)			16		16	

Chloride ion (Cl ⁻)	35	17				
Sodium Ion (Na ⁺)				11	12	