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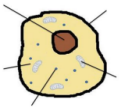
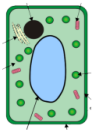
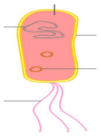
Topic 1a: Cell Structure & Microscopes Name: _____ Group ___

REVISION TASKS to HELP YOU SUCCEED

1a. Define a eukaryotic cell and give an example:	1b. Define a prokaryotic cell and give an example:

2 Label the following cells using these key words:

nucleus cell membrane cell wall vacuole ribosomes mitochondria cytoplasm flagellum chloroplasts Plasmid DNA Chromosomal DNA vacuole

Animal Cell	Plant Cell	Bacterial cell
		

3 Complete the table to describe the functions of the cell parts

Part	Function
nucleus	
cell membrane	
cell wall	
Permanent vacuole	
ribosomes	
mitochondria	
Cytoplasm	
Chloroplasts	
flagellum	
Plasmid DNA	
Chromosomal DNA	

4a Label the diagram of the microscope using the following words:

a eyepiece lens
b objective lens
c stage
d slide
e focusing wheel

4b The microscope has an eyepiece lens with a ×5 magnification. It has three objective lenses: ×10,×20 and ×30. When the ×10 objective lens is used, the total magnification is: 5 × 10 = ×50

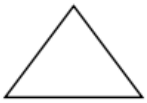
a Calculate the total magnification when the ×20 objective lens is used. Show your working.

_____

b Calculate the total magnification when the ×30 objective lens is used. Show your working.

_____

5a Write the equation used to work out magnification. Add the symbols into the triangle.



5b Shiv examines some animal hairs using a microscope. Hair X is 20 µm wide and hair Y is 60 µm wide.

a How many times wider is hair Y compared with hair X? Show your working.

_____

b Shiv examines hair X using a total magnification of ×150. How wide will the hair appear under the microscope, in micrometres?

_____

c Give your answer to part b in millimetres

i) Calculate the magnification if you have a magnified image that's 5mm wide and an object that is 0.05mm wide.

ii) Calculate the image size if your specimen is 0.1mm wide and the magnification is x20.

6 Match up the key words and definitions

Key Word	Definition
Magnification	How well a microscope distinguishes between 2 points that are close together. (How detailed the image is.)
Image	The view of the specimen as seen down the microscope (when it is magnified)
Resolution	A dye used to colour parts of a cell to make them easier to see. e.g. methylene blue can stain the nucleus blue
Stain	The number of times bigger the image appears than the actual object is.

7. **1 µm = 1 000 000 pm**

a What do the unit symbols µm and pm stand for? _____

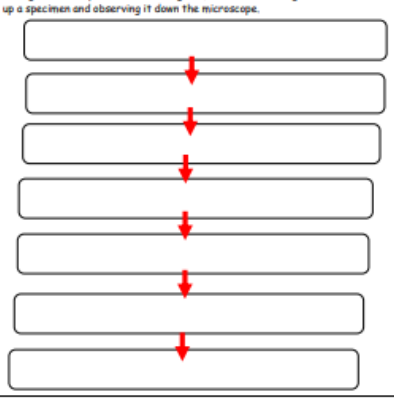
b Complete this sentence: 1 µm = 1000 nm and 1 nm = _____ pm.

Differences between Light Microscopes & Electron Microscopes

Task 4: Complete the table using these words: X 2 million x 1,500 / light, electron beam / High, Low / Cheap, Expensive / Simple& quick, Complex & takes a long time

LIGHT Microscope	Feature	ELECTRON Microscope
	Image seen using..	
	Maximum Magnification	
	Resolution	
	Cost	
	Preparation of specimen	

Task 5: Using the sheet provided/revision guide, create a flow diagram of the method for setting up a specimen and observing it down the microscope.



9a Define the word - Differentiation	9b Define the word - Specialised

9c In **animals**, how are the following cells specialised for their function?

Sperm cell	**Nerve (neurone) cell**	**Muscle cell**
Acrosome:	Long Axon:	Lots of mitochondria:
Flagellum:	Dendrites:	Protein filaments:
½ DNA:	Myelin Sheath:	
Lots of mitochondria:		

9d. In **plants**, how are the following cells specialised for their function?

Root hair cell	**Xylem cell**	**Phloem cell**
One cell thick:	Thickened walls:	Sieve plates
Large surface area:	Connected open end to end :	Companion cells:

10 ***Required Practical - Using a light microscope***

a) Give 3 features of a good scientific drawing

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Name a piece of apparatus that you can use to help measure a specimen

11 Circle the **two** processes that result in growth of a plant seedling.

cell differentiation

cell division

cell elongation