

Name: \_\_\_\_\_

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## Science 8 Chapter 1 Homework Log – Cells

Date	Assignment	Complete	Late
	Section 1.1 Worksheet – Characteristics of Living Things both sides)		
	Activity 1.2 Worksheet – Parts of the Microscope (both sides)		
	Introduction to the Microscope Lab		
	<b>Quiz #1 - Sections 1.1 &amp; 1.2</b>		<b>Mark =</b>
	<b>Areas for improvement:</b>		
	Section 1.3 Worksheet – Plant & Animal Cells (both sides)		
	Section 1.6 Worksheet – Parts of a cell seen with an electron microscope (both sides)		
	Plant & Animal Cell Lab		
	<b>Quiz #2 - Sections 1.3 &amp; 1.6 (Parts of the Cell)</b>		<b>Mark =</b>
	<b>Areas for improvement</b>		
	Chapter 1 Review Crossword		
	<b>Unit Test</b>		<b>Mark =</b>

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## Section 1.1: Characteristics of Living Cells

**Key Question: What are the characteristics of all living things?**

### BEFORE YOU READ

Preview the photos, captions, and Table 1. How will they help you answer the key question?

### WHILE YOU READ

In the righthand column of the chart, write words or make sketches to help you remember the characteristics of living things.

Living things are made of cells	
Living things reproduce, grow, and repair themselves	
Living things require energy	
Living things respond to the environment	
Living things have a life span	
Living things produce waste	

### AFTER YOU READ

Create a mnemonic to help you remember the six characteristics of living things.

For example:

<b>C</b> ells	<b>C</b> an
<b>R</b> eproduce	<b>R</b> abbits
<b>N</b> eed Energy	<b>N</b> ibble
<b>R</b> espond	<b>R</b> eally
<b>L</b> ife Span	<b>L</b> efy
<b>P</b> roduce Waste	<b>P</b> roduce?

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## Characteristics of Living Things

Put a check mark in the table where the object shows the characteristics of living things.

Characteristics of living things	Soil	Automobile	Glacier	Human	Yogurt
Composed of cells					
Requires energy for metabolism					
Reproduces itself					
Grows					
Responds to the environment					
Has a specific limited life span					
Produces waste					

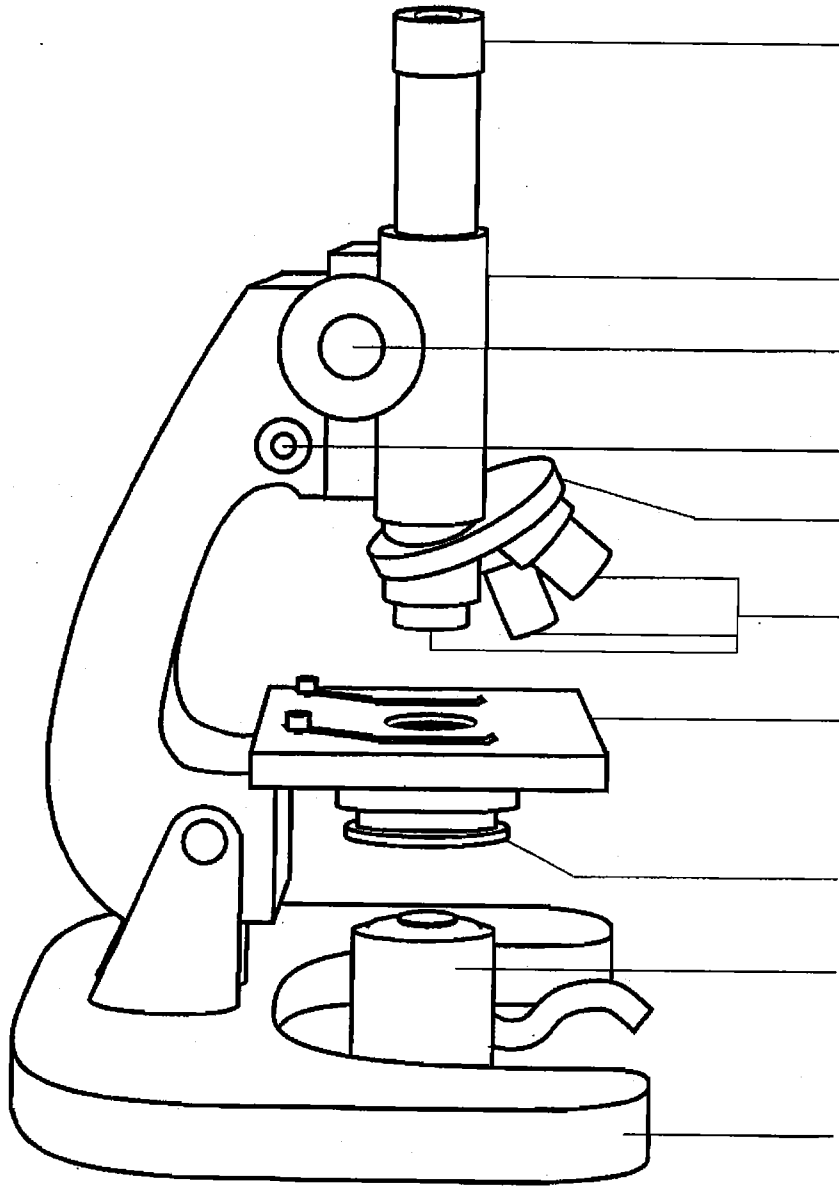
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## The Parts of a Compound Microscope and Their Uses

Structure	Function	Careful Use
Arm	Supports the body tube	<ul style="list-style-type: none"> <li>The microscope should be positioned so that the arm faces the viewer to avoid blocking the light.</li> <li>When carrying the microscope, have one hand around the arm and the other hand under the base for firm support.</li> </ul>
Base	Supports the microscope	<ul style="list-style-type: none"> <li>Position the base of the microscope on a firm, level surface.</li> </ul>
Mirror (not shown in the diagram on page 7)	Reflects light rays through the specimen and into the lenses	<ul style="list-style-type: none"> <li>Orient the mirror so that optimum light intensity is achieved.</li> </ul>
Light source	Shines light through the specimen and into the lenses	<ul style="list-style-type: none"> <li>Adjust and position the light so that optimum light intensity is achieved.</li> </ul>
Diaphragm		<ul style="list-style-type: none"> <li>Rotate the diaphragm to achieve the desired opening.</li> </ul>
Stage		<ul style="list-style-type: none"> <li>Keep the stage wiped clean at all times.</li> </ul>
Stage clips		<ul style="list-style-type: none"> <li>These have a tendency to become loose, fall out, and get lost. Make sure they are firmly secured to the stage.</li> </ul>
Nosepiece		<ul style="list-style-type: none"> <li>Make sure the desired objective lens clicks into position before viewing.</li> </ul>
Objective lenses: Low power Medium power High power		<ul style="list-style-type: none"> <li>Use the low power only for initial viewing and focusing of the specimen. This lens should be no closer to the slide than 0.5 cm.</li> </ul>
Body tube (not labelled in diagram on page 7)		<ul style="list-style-type: none"> <li>Take care not to bang the body tube against a hard surface when transporting the microscope.</li> </ul>
Coarse-adjustment knob		<ul style="list-style-type: none"> <li>Use only when focusing under the low-power objective.</li> <li>When using the coarse-adjustment knob, view the microscope from the side to avoid hitting the stage and damaging the slide and/or the objective lens.</li> <li>Focus by moving the lens away from the stage.</li> </ul>
Fine-adjustment knob		<ul style="list-style-type: none"> <li>Use only after the specimen has been located and focused under the low-power objective.</li> </ul>
Ocular lens (eyepiece)		<ul style="list-style-type: none"> <li>Special attention must be given to avoid scratching this lens.</li> </ul>

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## Diagram for Labelling: Microscope



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## Activity 1.2 "Microscope" Lab

**Question:** Can a microscope be used to estimate the size of small objects?

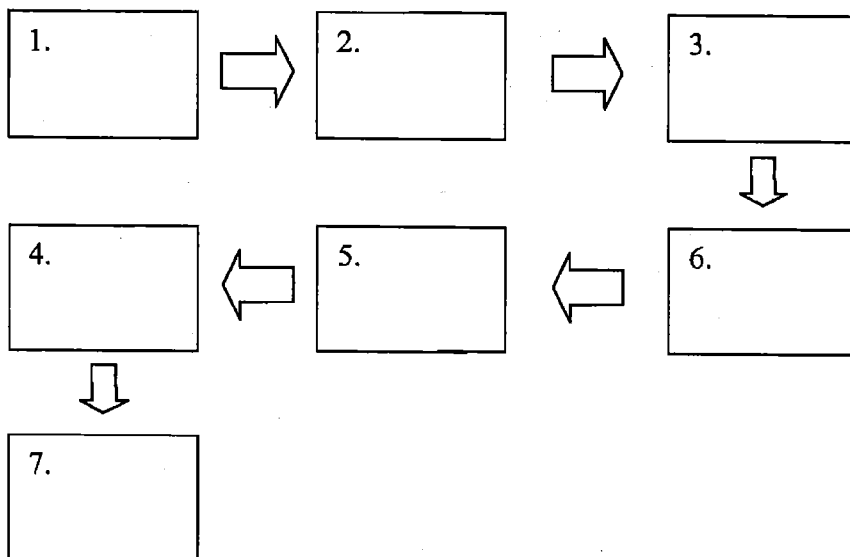
**Hypothesis:**

I think \_\_\_\_\_  
because \_\_\_\_\_

**Procedure:**

Refer to Science Probe 8 p.8-9

Write each step in point form and draw a picture to describe the step.



**Results & Observations:**

Power of Microscope	Diameter of the field of view (mm)
Low	
Medium	
High	

Calculation: (show your work)

$$\text{Ratio} = \frac{\text{Magnification of high power lens}}{\text{Magnification of low power lens}} =$$

$$\text{Diameter of field (high power)} = \frac{\text{Diameter of field (low power)}}{\text{Ratio}} =$$

The estimate<sup>of</sup> how many letter "e"s could fit across the field of view is \_\_\_\_\_.

**Discussion:**

1. Why should the coarse-adjustment knob not be used with the medium and high power lenses?
2. What happens to the diameter of the field of view as you move from low to high magnification?
3. Explain your method to estimate the size of the letter "e"
4. Which magnification would be best for scanning several objects?
5. See Figure 2 page 9. Shown in the figure is a cell viewed under low power. When you rotate the microscope to high power, you cannot see the image, no matter how much you try to focus.
  - a. Why can't the image be seen?
  - b. Suggest a solution.

**Conclusion:**

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## Section 1.3: Plant and Animal Cells

**Key Question:** How are plant and animal cells similar and different?

### BEFORE YOU READ

Look at the yellow-highlighted words in the section. Which words are new to you? Which words do you already know? Use each word you already know in a sentence.

New words	Words I already know and can use

### WHILE YOU READ

#### Animal Cell Structures

Cell Structure	Description	Function
Nucleus		
Chromosomes		
Cell membrane		
Cytoplasm		
Vacuole		
Flagellum		
Cilia		

#### Plant Cell Structures

Cell Structure	Description	Function
Vacuole		
Cell wall		
Chloroplasts		

### AFTER YOU READ

Explain how animal and plant cells are similar and different. Be sure to use some of the yellow-highlighted words from the section.

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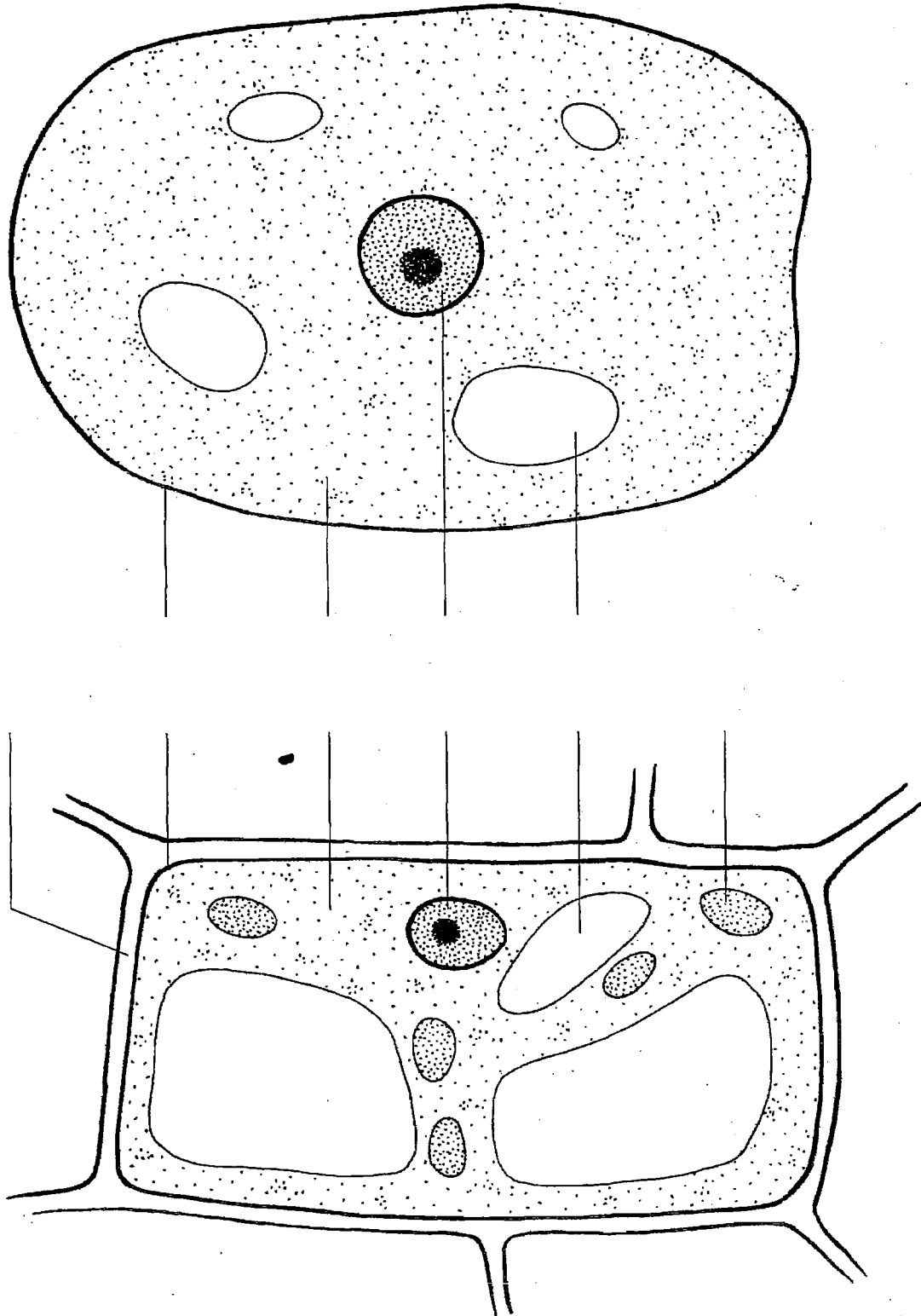


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### Diagram for Labelling: Parts of Plant and Animal Cells Seen through a Light Microscope



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## Section 1.6: Parts of a Cell Seen with an Electron Microscope

**Key Question:** What are organelles and what are their functions?

### BEFORE YOU READ

With a partner, locate each yellow-highlighted word and read the words around it to determine the meaning. Also, look at the figures and captions for clues.

### WHILE YOU READ

As you read, complete the following chart.

Organelle	Function	Description
Mitochondria	Energy production	
Ribosomes		
Endoplasmic reticulum		
Golgi apparatus		
Lysosomes		

### AFTER YOU READ

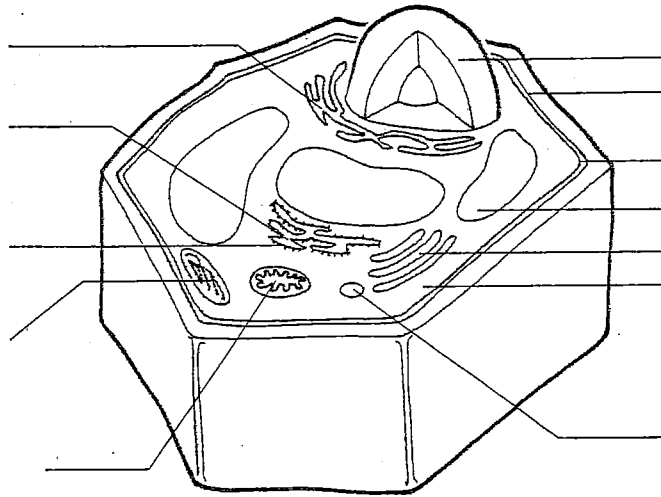
Compare your chart with that of a partner. After the discussion, add any information you wish to your chart. What are the key ideas you should remember?

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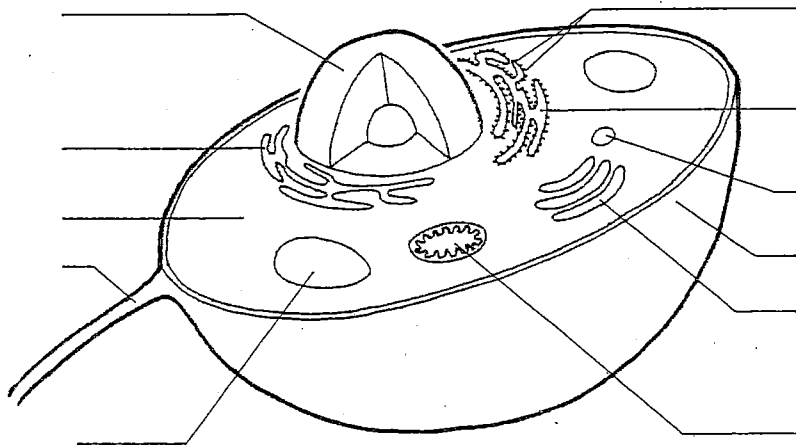
## Diagram for Labelling: Parts of Plant and Animal Cells Seen in an Electron Micrograph

Label the organelles in the plant and animal cells.

Plant Cell



Animal Cell



**Moving Materials In and out of Cells**

NAME \_\_\_\_\_  
DATE \_\_\_\_\_

**Learning Outcomes Addressed**

*B2. relate the main features and properties of cells to their function  
- relate the concepts of osmosis and diffusion to transport of materials across cell membranes*

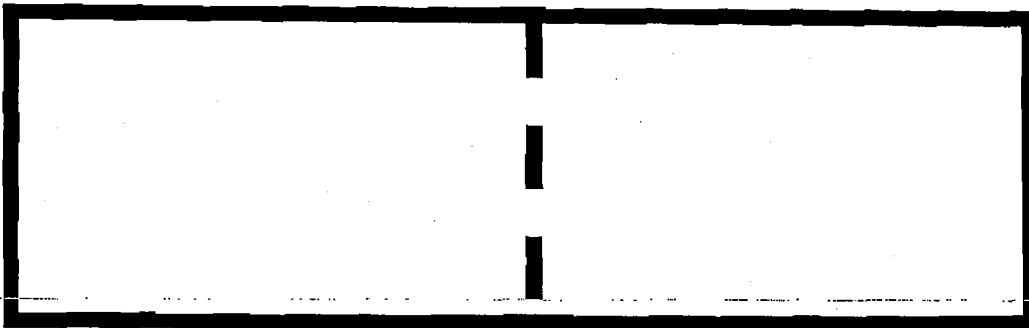
Cells and all of their organelles need \_\_\_\_\_ and \_\_\_\_\_ to function and make energy SO there must be a way of getting these into the cell. Cells also must be able to get rid of \_\_\_\_\_.

The outer layer of plant cells is the \_\_\_\_\_ and the outer layer of animal cells is the \_\_\_\_\_. All materials entering and leaving the cell must pass through this. The cell wall just has openings in it which most materials can pass through.

The \_\_\_\_\_ is what actually acts as the \_\_\_\_\_ of the cell and controls what enters and leaves the cell.

**CELL MEMBRANES**

*example: the small molecules can pass through the membrane but the large molecules cannot and thus stay on one side.*



## How do these molecules move?

### 1. DIFFUSION

When a cell needs certain nutrients there is less of the material inside the cell than there is outside the cell. Therefore, the nutrients will move inside the cell automatically because of the concentration difference.

A real life example of diffusion:

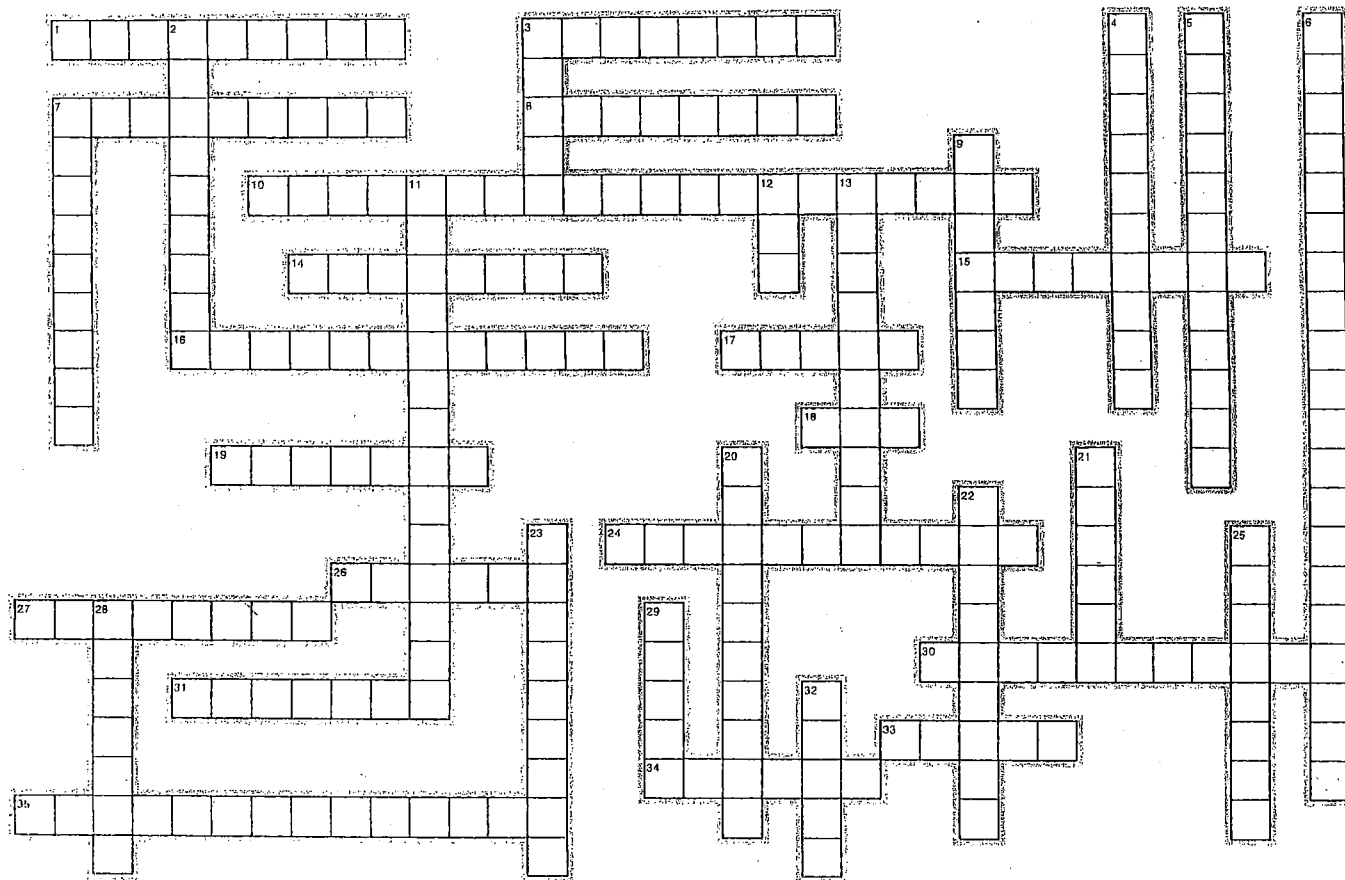
### 2. OSMOSIS

Cells are made up of \_\_\_\_\_ and this is very important in the functioning of cells.

Osmosis is just a fancy word for the \_\_\_\_\_. It is the process by which cells take in water or lose water and it helps them maintain proper balance.

**WHAT HAPPENS WHEN A MOLECULE IS TOO BIG TO FIT THROUGH THE OPENINGS IN THE CELL MEMBRANE BUT NEEDS TO GET INTO THE CELL?**

# Chapter 1 Review Crossword



EclipseCrossword.com

## Across

1. the movement of molecules from areas of high concentration to areas of low concentration
3. structure surrounding the cell membrane in plant cells
7. a structure found inside of a cell which carries out a specific function
8. all living things have a limited \_\_\_\_\_
10. folded layers of membrane which act as transport corridors through the cytoplasm of the cell
14. organelle responsible for protein synthesis
15. specialized vacuoles which contain digestive enzymes used to break down unwanted materials within the cell
16. organelles which provide energy to the cell
17. all living things produce \_\_\_\_\_
18. only existing cells can give rise to \_\_\_\_\_ cells
19. all living things \_\_\_\_\_ to their environment
24. cells which do not have a true nucleus - usually smaller in size

26. all living things require \_\_\_\_\_
27. diffusion occurs because of the \_\_\_\_\_ of particles in a fluid like water or air
30. organelle which conducts photosynthesis
31. the diffusion of water through a membrane from areas of high concentration to areas of low concentration
33. the type of cell characterized by a cell wall and chloroplasts
34. the type of cell which does not have a cell wall or chloroplasts
35. organelle which stores and packages proteins within the cell

## Down

2. a whip-like projection from the cell used for locomotion
3. all living things are made up of one or more \_\_\_\_\_
4. structure found in the nucleus made up of DNA
5. structure which surrounds the cell contents and monitors the passage of materials in and out of the cell

## Down

6. process that takes place in mitochondria where sugar and oxygen are combined to produce carbon dioxide, water, and energy
7. the name given to the three lenses which can be interchanged to produce different magnifications
9. part of the cell responsible for controlling cellular functions
11. this is the process that goes on in the chloroplasts of cells which produces sugars (food) for the cell
12. the number of hands which must be used to carry a microscope safely
13. the idea that all living organisms are composed of cells and that only cells can produce new cells
20. cells which have a membrane-bound nucleus
21. the name given to the eyepiece lens of the microscope
22. the structure which controls the amount of light entering the microscope
23. watery fluid found inside of a cell
25. an individual living thing
28. an organelle used for the storage of various substances within the cell
29. short hair-like structures which aid in cell locomotion
32. the location on the microscope where slides are placed