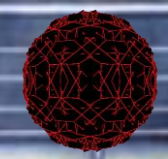
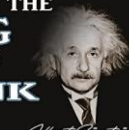


EDUCATION IS NOT THE LEARNING  
OF FACTS BUT THE  
**TRAINING**  
OF THE MIND TO  
**THINK**



Welcome to Ms. Kaumudi's  
virtual Science classroom  
Grade 6



# قواعد الصف



الالتزام بالزي  
المدرسي

4



عدم مقاطعة المعلمة  
بأي شكل

3



التفاعل الإيجابي

2



الالتزام بالوقت  
المعدة للحصص

1



التعامل الصحيح مع جهاز الحاسوب  
و المعلومات المخزنة به  
و عدم محاولة التخريب أو الأتلاف.

8



فتح الكاميرا أثناء  
الحصة

7



الالتزام بالسياسة العامة  
لاستخدام الأجهزة والبرامج  
التعليمية

6



اتباع تعليمات  
المعلمة

5





# Class Rules

Al Zallaqa School, Cycle 2



Wear the  
School  
Uniform

4



Listen to your teacher  
and try not to interrupt  
her while teaching

3



Participate in the  
lessons

2



Be on time and  
keep your mic  
on Mute.

1



Ensure correct handling  
of your computer and data  
stored in it

8



Switch on your  
camera during the  
lessons

7



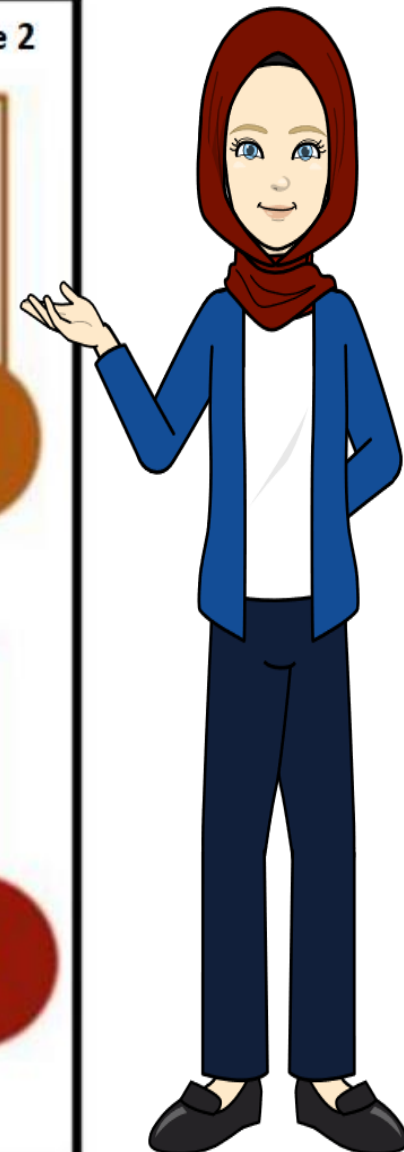
Adhere to the  
general policy of  
using educational  
programs.

6



Raise hands and  
take Turns to  
speak

5



# السلامة الرقمية

## نصائح يجب علينا الالتزام بها



3- وضع جهاز الحاسوب في مكان امن ونظيف اثناء الاستخدام وعدم تناول الاكل والشرب بجانبه.

2- حماية المعلومات المهمة داخل الجهاز وعدم العبث بالتطبيقات الخاصة بالوزارة او المدرسة.

1- الاحتفاظ بسرية المعلومات الشخصية وعدم الإفصاح بها لأي شخص كان.

6- عدم الدخول لأي مواقع محظورة تخالف القيم والأخلاق وعدم الاشتراك بإيميلك الشخصي في أي منها.

5- إغلاق الطالبة لحسابها (تسجيل خروج) بعد الانتهاء من استخدام الحاسوب.

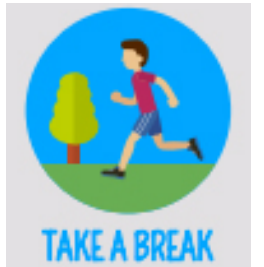
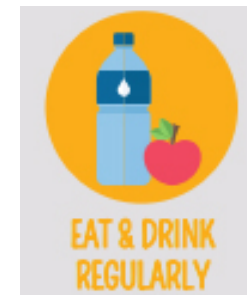
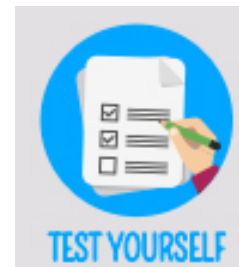
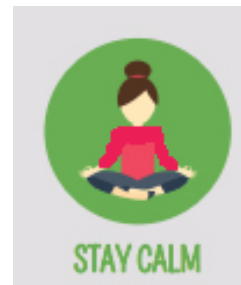
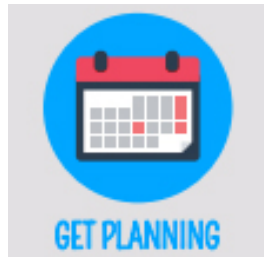
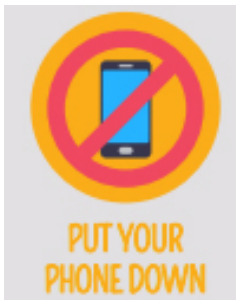
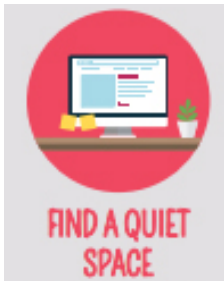
4- عند التعرض لاختراق المعلومات الشخصية نلجأ لإبلاغ إدارة المدرسة أو جهاز حماية المعلومات.

فريق المدرسة الامنة  
أقدر

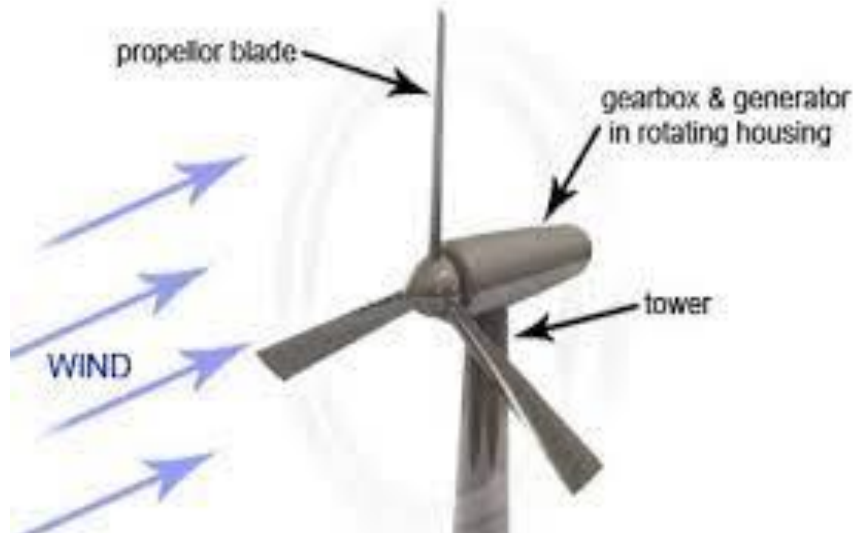
مديرة المدرسة  
انسام العيساني

# Grade 6 Term 2 Exam Revision

- ✓ Read it
- ✓ Write it
- ✓ Say it
- ✓ Explain it
- ✓ Ask someone to test you on it



- ✓ Kinetic energy –energy from movement can change into electric energy –energy carried in a current.
- ✓ Wind turbines use kinetic energy to make electric energy when they are moving.
- ✓ The amount of kinetic energy they use depends on mass and speed.
- ✓ The harder the wind, the faster the blades on the turbines move, the more kinetic energy there will be.
- ✓ When the blades turn, they turn a generator that creates electricity.



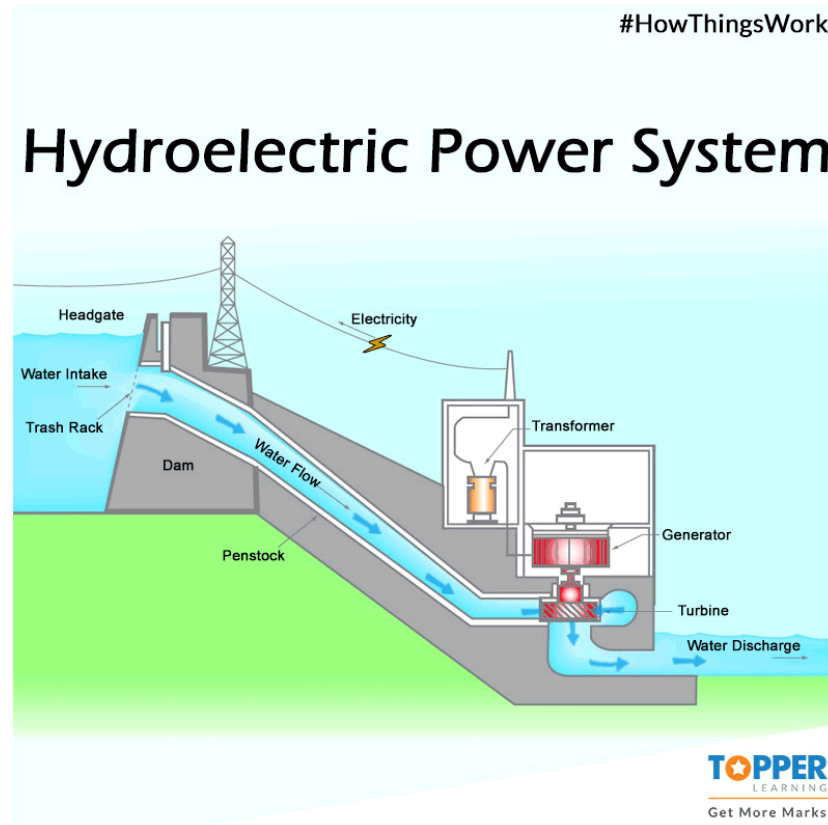
Which of the following increases the kinetic energy of an object?

- A. decreasing the mass of the object
- B. decreasing the volume of the object
- C. increasing the object's height
- D. increasing the object's speed

- ✓ Potential energy is stored energy.
- ✓ Gravitational energy makes things fall.
- ✓ The more mass and distance from earth, the more gravitational potential energy something will have.
- ✓ Gravity is used when water falls and turns the turbines to make electricity.



Figure 3 Hydroelectric energy plants use the gravitational potential energy stored in water to produce electricity.



Which of the following is gravitational potential energy?

- A. the energy stored in an object that is 10 m above the ground
- B. the energy of an electron moving through a copper wire
- C. the energy stored in the bonds of a carbohydrate molecule
- D. the energy stored in the nucleus of a uranium atom

Which of the following types of electric energy plants transforms gravitational potential energy to electric energy?

- A. fossil fuel
- B. geothermal
- C. hydroelectric
- D. nuclear



**Figure 11** Electric energy is transformed into thermal energy in the heat lamp. Thermal energy from the lamp is transferred to the egg.

An energy transformation happens when one type of energy is transformed (changed) into another.  
Energy can be transformed (changed) but not created or destroyed.

What energy transformation occurs in a clothes iron?

- A. chemical to electric
- B. electric to thermal
- C. kinetic to chemical
- D. thermal to electric

Which is true of energy?

- A. It cannot be destroyed.
- B. It cannot be transmitted.
- C. It cannot change matter.
- D. It cannot be transformed.



- ✓ Work is done when a force is moving an object.
- ✓ Force is measured in Newtons (N)
- ✓ Distance is measured in meters (m)
- ✓ Work is calculated in joules (J)
- ✓ We calculate work by multiplying force and distance.

### Work Equation

work (in joules) = force (in newtons) × distance (in meters)  
 $W = Fd$

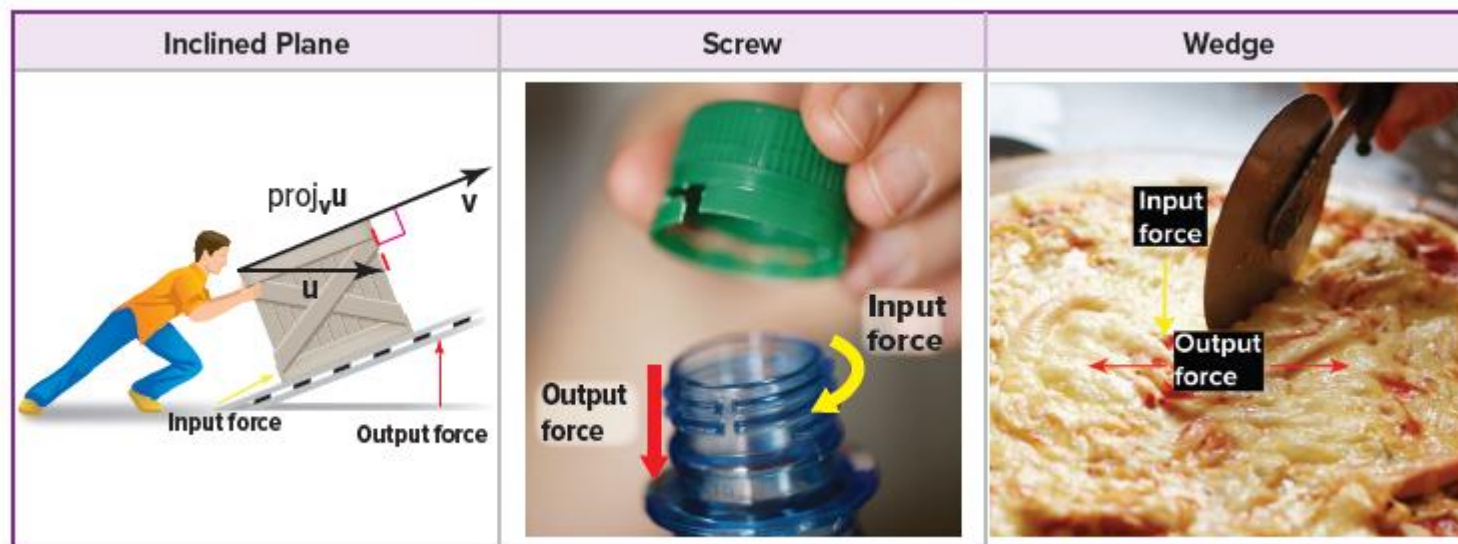
How much work did the man do on the toolbox in the illustration below?



- A. 0.06 m/N
- B. 17 N/m
- C. 425 J
- D. 2,125 J

Which equation shows how work and force are related?

- A. work = force + distance
- B. work = force - distance
- C. work = force × distance
- ~~D. work = force ÷ distance~~




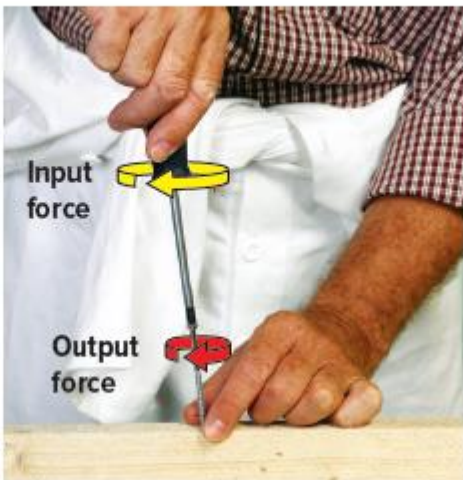

Which is NOT a simple machine?

- A. inclined plane
- B. lever
- C. loop and hook
- D. wheel and axle

How can simple machines make work easier?

- A. by increasing the amount of work done
- B. by decreasing the amount of work done
- C. by changing the distance or the force needed to do work
- D. by getting rid of the work needed to move an object

- ✓ Simple machines do work with one movement.
- ✓ They can change the amount of force needed.
- ✓ They can change the direction of the force.

Lever	Wheel and Axle	Pulley
		

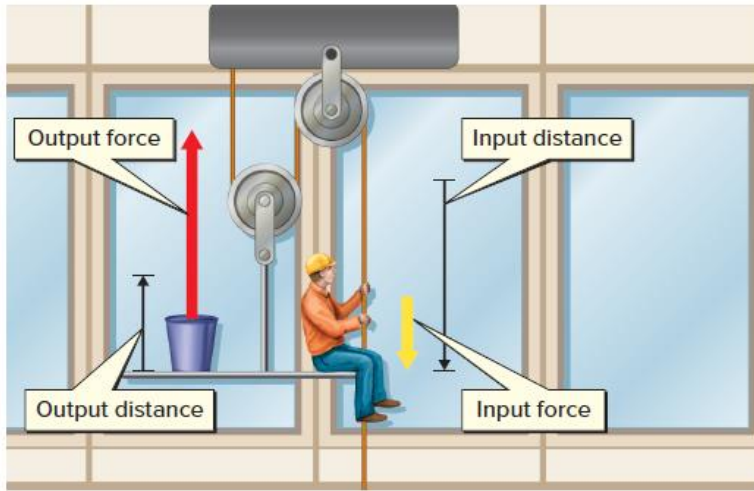
Use the figure below to answer question 8.



- 8 The figure shows a person using a hammer to remove a nail from a board. Which simple machine describes how the hammer is being used in this picture?
- A inclined plane
  - B lever
  - C pulley
  - D wedge

- ✓ A lever pivots on a fixed point – we need to pull the tab to open the drink.
- ✓ A wheel and axle has a shaft and a wheel that both turn. We turn the handle to screw into the wood.
- ✓ A pulley is a rope wrapped around a wheel – we pull on the pulley to lift the stone.

Efficiency is the ratio of **output work (machine's work)** to **input work (human's work)**



- ✓ The pulley increases the distance the man can go.
- ✓ It also decreases the work he must do to move (input work).
- ✓ **The output force is big. (the work the machine does)**
- ✓ **The input force is small (the work the man does)**

### Efficiency Equation

$$\text{efficiency (in \%)} = \frac{\text{output work (in J)}}{\text{input work (in J)}} \times 100\% = \frac{W_{out}}{W_{in}} \times 100\%$$

We divide the **output** by the **input** and multiply by 100 to get a **percentage %**

Efficiency is never 100% as some work is always transferred as heat.

The input work Shelly does on a rake is 80 J. The output work the rake does on the leaves is 70 J. What is the efficiency of the rake?

- A. 70 percent
- B. 80 percent
- C. 87.5 percent
- D. 95.4 percent

- ✓ Unicellular organisms are made of one cell
- ✓ They grow by increasing in size
- ✓ They reproduce by dividing
  
- ✓ Multicellular organisms are made or two or more cells
- ✓ They grow by increasing the number of cells
- ✓ They reproduce with specialised reproduction cells.

What feature of living things do the terms *unicellular* and *multicellular* describe?

- A how they are organized
- B how they reproduce
- C how they maintain temperature
- D how they produce macromolecules

Use the diagram below to answer question 2.



Which is an example of growth and development?

- A. a caterpillar becoming a butterfly
- B. a chicken laying eggs
- C. a dog panting
- D. a rabbit eating carrots

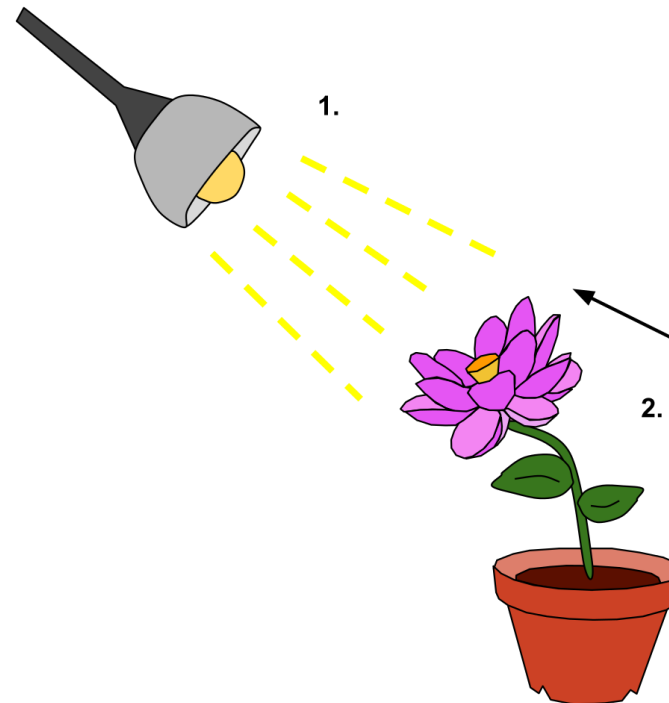
Which characteristic of life does the diagram show?

- A homeostasis
- B organization
- C growth and development
- D response to stimuli



## Response to Stimuli

- ✓ All living things respond to changes in the environment.
- ✓ Internal stimuli – you feel hungry and look for food, you feel thirsty and look for water.
- ✓ External stimuli – light – plants grow towards the light, our skin can change colour in sunlight
- ✓ External stimuli – temperature – some animals respond to temperature changes when their blood flows more because it is hot

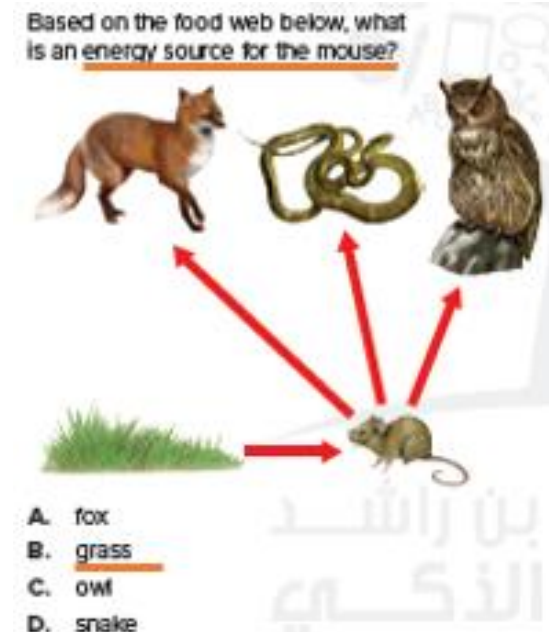


Which is an internal stimulus?

- A. an increase in moisture
- B. feelings of hunger
- C. number of hours of daylight
- D. the temperature at night

## 6. Energy

- ✓ Everything organisms do, needs energy. Digesting food, sleeping, thinking, walking, and all the other characteristics of life too.
- ✓ All energy originally comes from the sun. the sun gives energy to the plants, the plants give energy to the animals and us.









- ✓ The classification method we use is called systematics.
- ✓ We can classify living things according to: cell type, habitat, structure and function of features, how it gets its food and common ancestry.
- ✓ Scientists used this information to classify living things into 3 domains: Bacteria, Archaea and Eukarya.
- ✓ Carl Linnaeus classified living things into 2 kingdoms – according to similar structures and now we have 6 kingdoms: Bacteria, Archaea, Protista, Fungi, Animalia and Plantae.

Which information about organisms is excluded in the study of systematics?

- A calendar age
- B molecular analysis
- C energy source
- D normal habitat



**Table 2 Domains and Kingdoms**

Domain	Bacteria	Archaea	Eukarya			
Kingdom	Bacteria	Archaea	Protista	Fungi	Plantae	Animalia
Example						
Characteristics	<u>Bacteria</u> are simple unicellular organisms.	<u>Archaea</u> are simple unicellular organisms that often live in extreme environments.	Protists are unicellular and are more complex than bacteria or archaea.	Fungi are unicellular or multicellular and absorb food.	Plants are multicellular and make their own food.	Animals are multicellular and take in their food.

Unicellular organisms are members of which kingdoms?

- A Animalia, Archaea, Plantae
- B Archaea, Bacteria, Protista
- C Bacteria, Fungi, Plantae
- D Fungi, Plantae, Protista

The organism shown below belongs in which kingdom?



- A. Animalia
- B. Archaea
- C. Bacteria
- D. Plantae

A newly discovered organism is 1 m tall, multicellular, green, and it grows on land and performs photosynthesis. To which kingdom does it most likely belong?

- A Animalia
- B Fungi
- C Plantae
- D Protista

Linnaeus had the idea to give each organism a two-part Latin scientific name made up of the genus and species – This is called binomial nomenclature.

A genus is a group of similar species.

A species have similar traits and can produce offspring.

The genus starts with a capital letter and the species with a small letter:


Panthera Leo

Homo sapiens

Ursus arctos

Which statement is false?

- A Binomial names are given to all known organisms.
- B Binomial names are less precise than common names.
- C Binomial names differ from common names.
- D Binomial names enable scientists to communicate accurately.

Genus <i>Ursus</i>	4	
Species <i>Ursus arctos</i>	1	



Light microscopes use light and lenses to enlarge the image of an object. (make something look bigger - magnify).

Compound microscopes use more than one lens – first with the objective lens and then the ocular lens.

These microscopes can be used to observe living and non-living objects.

The total magnification = the magnification of objective lens x magnification of ocular lens

What type of microscope would most likely be used to obtain an image of a live roundworm?

- A. compound light microscope
- B. scanning electron microscope
- C. simple light microscope
- D. transmission electron microscope

Which best describes a compound microscope?

- A. uses electrons to magnify the image of an object
- B. uses multiple lenses to magnify the image of an object
- C. uses one lens to magnify the image of an object
- D. uses sound waves to magnify the image of an object

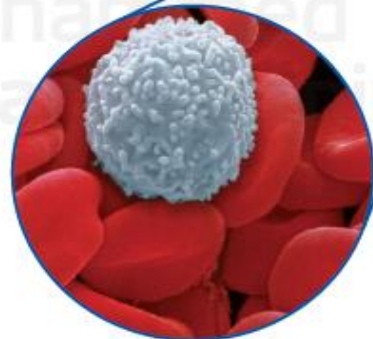
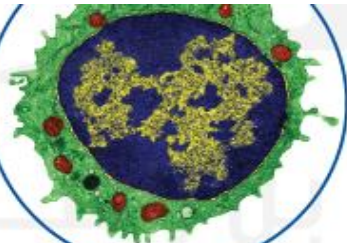


## TEM – Transmission Microscopes:

- Electrons pass through an object and computer produces an image
- View the dead cells
- Used to look at very small things



Transmission electron microscope



## SEM – Scanning Microscopes:

- Electrons bounce off the object & the computer produces 3D image
- View the surface of the cells



Scanning electron microscope

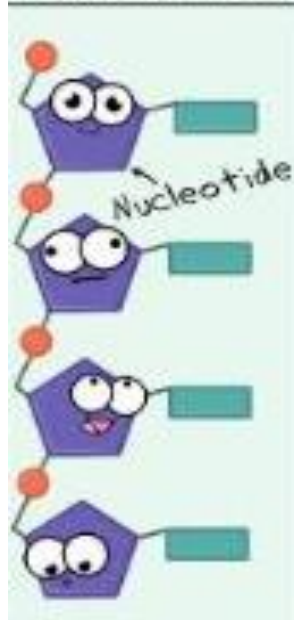
Which microscope would best magnify the outer surface of a cell?

- A compound light
- B scanning electron
- C simple dissecting
- D transmission electron

## Macromolecules

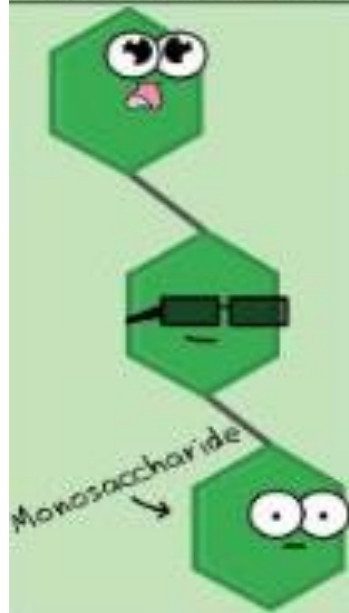
There are 4 types of macromolecules. Each one has special jobs in the cell.

Nucleic Acid



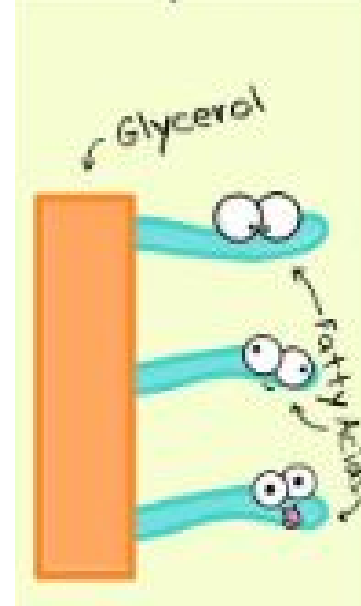
- Contains genetic information
- DNA – instructions for cell growth, reproduction and processes
- RNA – makes protein

Carbohydrate



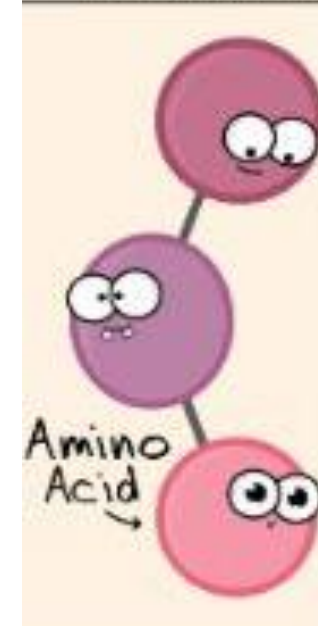
- Sugar molecules
- Stores energy
- Gives structural support
- Used to communicate between cells

Lipid



- Doesn't dissolve in water
- Stores energy
- Creates protective membrane
- Used to communicate between cells

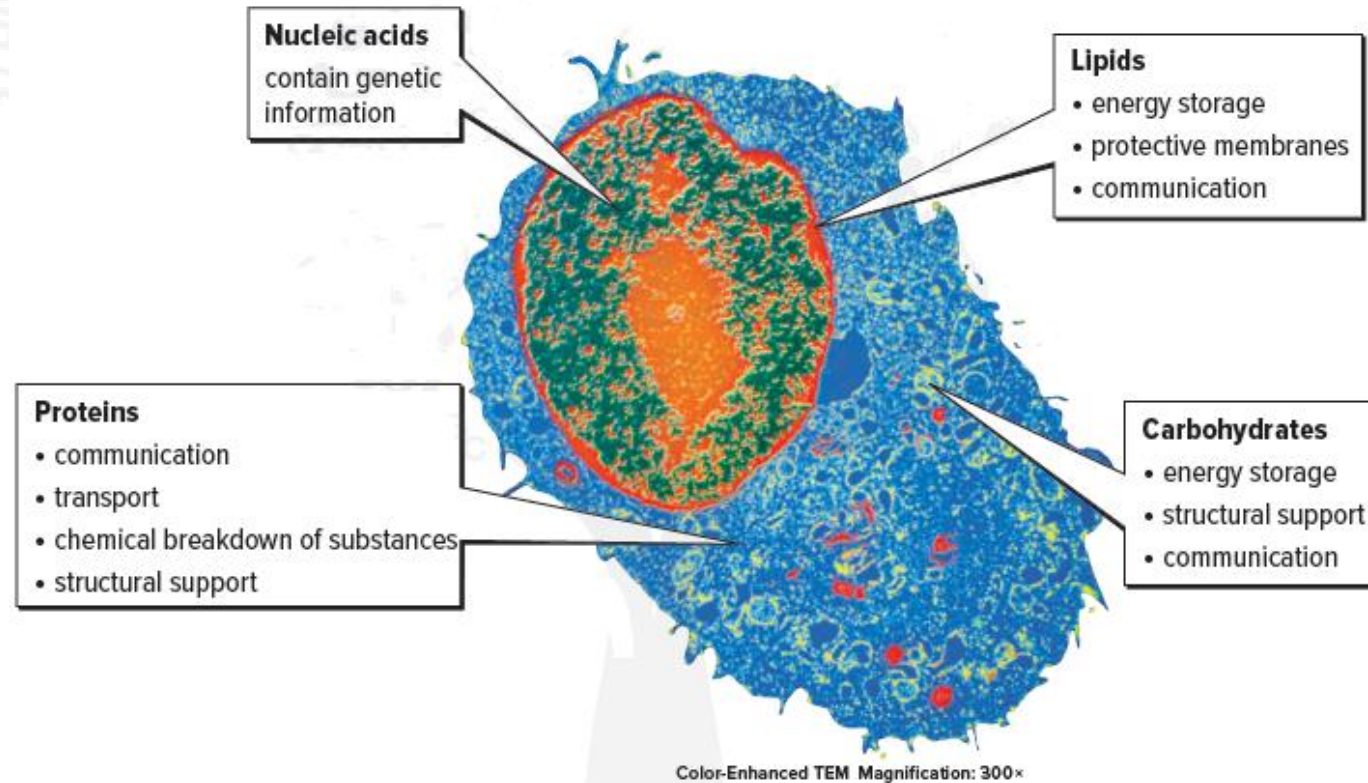
Protein



- Made of amino acids
- Necessary for all cell functions:
- Transport, break down food, provide structure, used to communicate between cells

Genetic information is stored in which macromolecule?

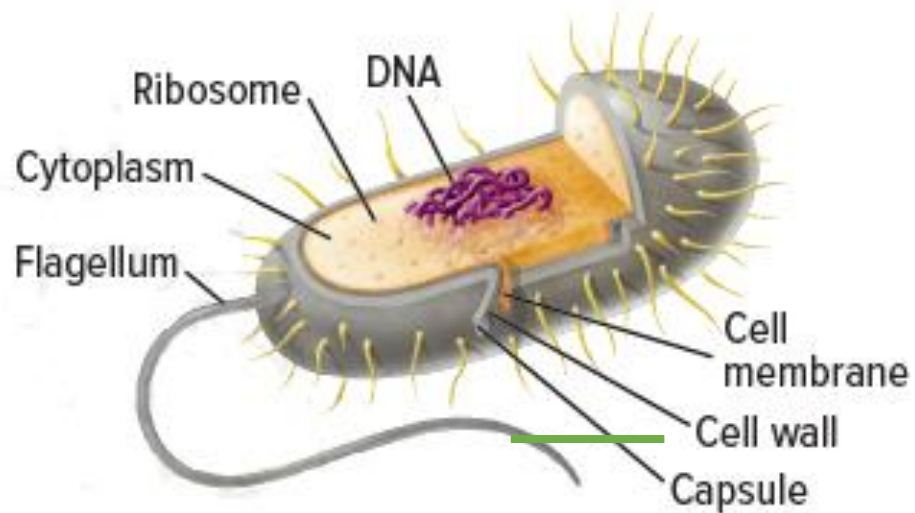
- A. DNA
- B. glucose
- C. lipid
- D. starch



Cholesterol is which type of macromolecule?

- A. carbohydrate
- B. lipid
- C. nucleic acid
- D. protein

**Figure 3** Each type of macromolecule has a special function in a cell.



Which feature does a typical prokaryotic cell have that is missing from some eukaryotic cells, like the one above?

- A cytoplasm
- B DNA
- C cell membrane
- D cell wall

**Figure 8** In prokaryotic cells, the genetic material floats freely in the cytoplasm.

- ✓ In prokaryotic cells the genetic material (DNA) does not have a membrane (no nucleus).
- ✓ It has ribosomes but no other organelles.
- ✓ Most prokaryotic organisms are unicellular.

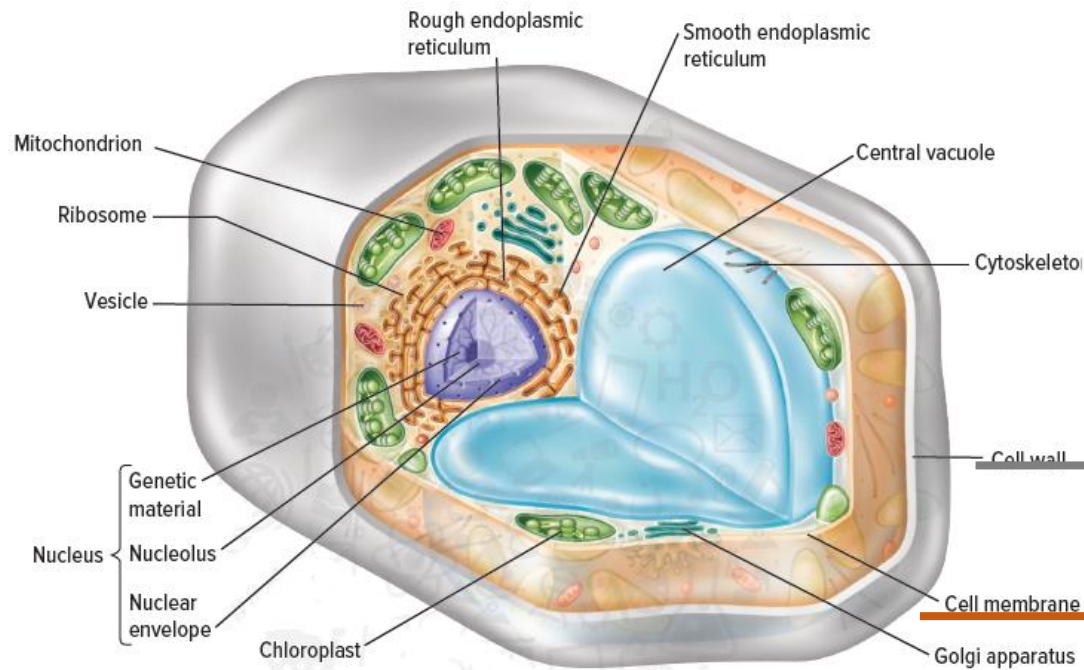


Figure 5 The cell wall maintains the shape of a plant cell.

The arrow below is pointing to which cell part?

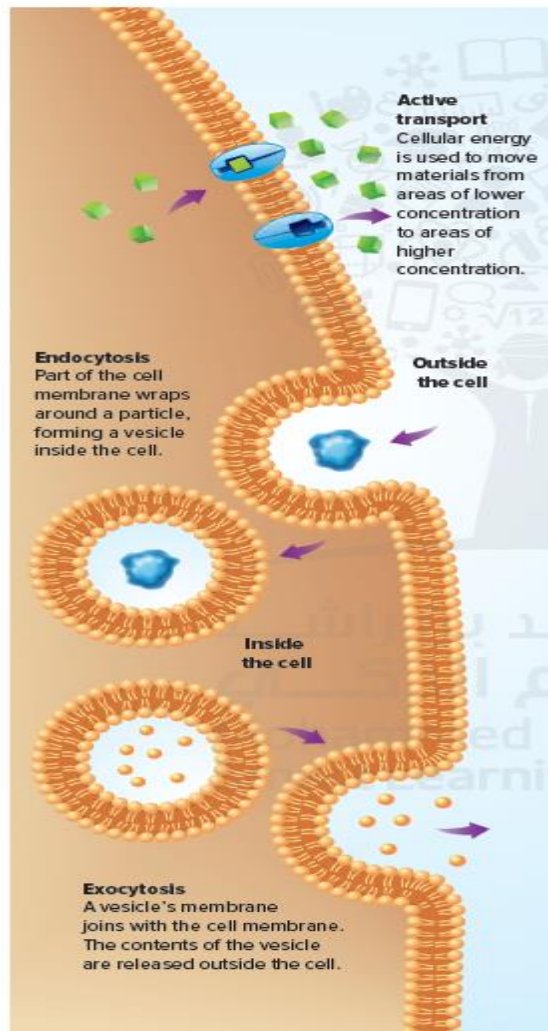


- A. chloroplast
- B. mitochondrion
- C. cell membrane
- D. cell wall

- ✓ The cell membrane is a flexible covering that protects the cell from the environment outside the cell.
- ✓ The cell membrane is made of proteins and lipids.
- ✓ The cell wall is a stiff structure outside the cell membrane.
- ✓ It protects from viruses and other harmful organisms.
- ✓ It gives structure and support to plant cells.



**Figure 14** Active transport is most often used to bring needed nutrients into a cell. Endocytosis and exocytosis move materials that are too large to pass through the cell membrane by other methods.



- ✓ Active transport – uses the cells energy.
- ✓ Endocytosis is when the cell takes in material by wrapping around it.
- ✓ Exocytosis is when the cell releases material out of the cell.

Which process eliminates substances from cells in vesicles?

- A. endocytosis
- B. exocytosis
- C. osmosis
- D. photosynthesis

Which transport process requires the use of a cell's energy?

- A. diffusion
- B. osmosis
- C. active transport
- D. facilitated diffusion

## Cell size and Transport:

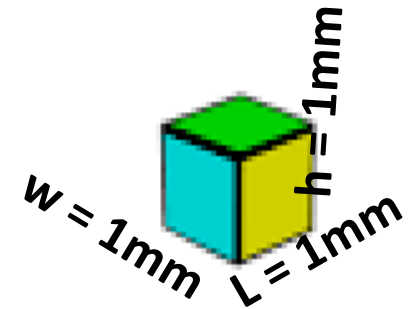
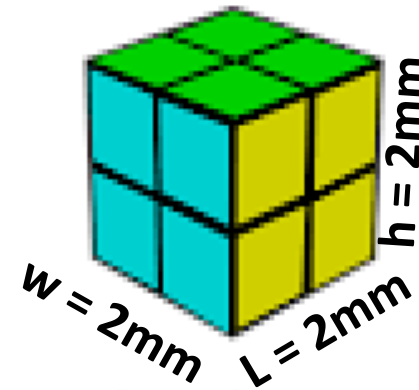
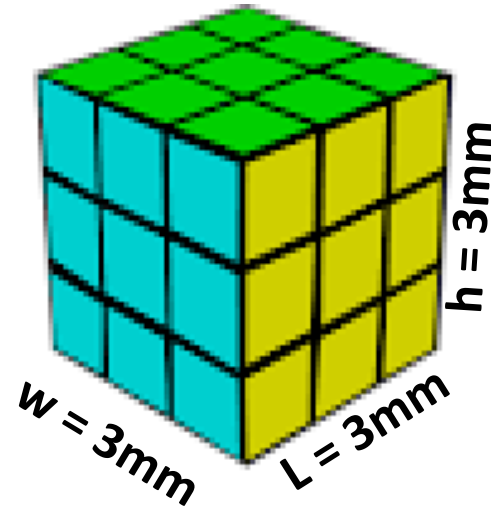
The cell's membrane must be big so it can absorb nutrients and release waste materials.

The area of the membrane should be bigger than the volume of the cell.

Step 1: work out the area

Step 2: work out the volume

Step 3: divide area by volume



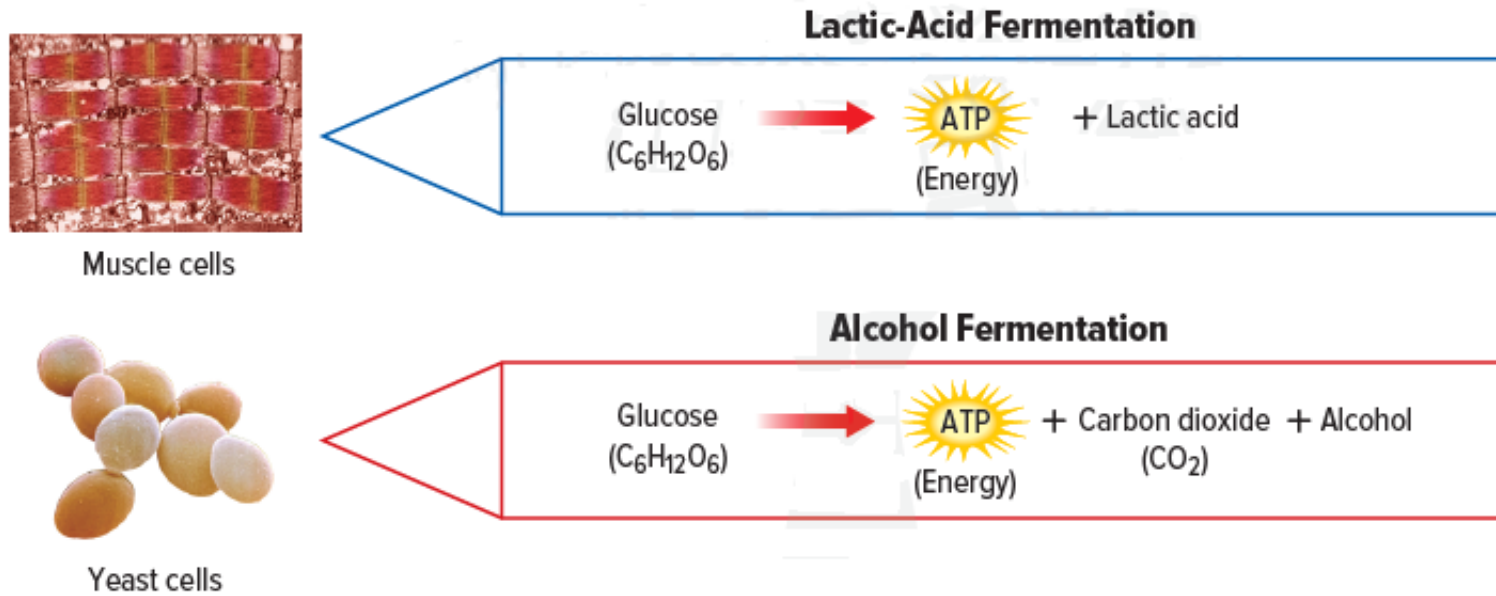
Area = length x width x 6

Volume = length x width x height

Ratio = area ÷ volume

Which explains why the ratio of cell surface area to volume affects the cell size? Cells with a high surface-to-volume ratio

- A consume energy efficiently.
- B produce waste products slowly.
- C suffer from diseases frequently.
- D transport substances effectively.



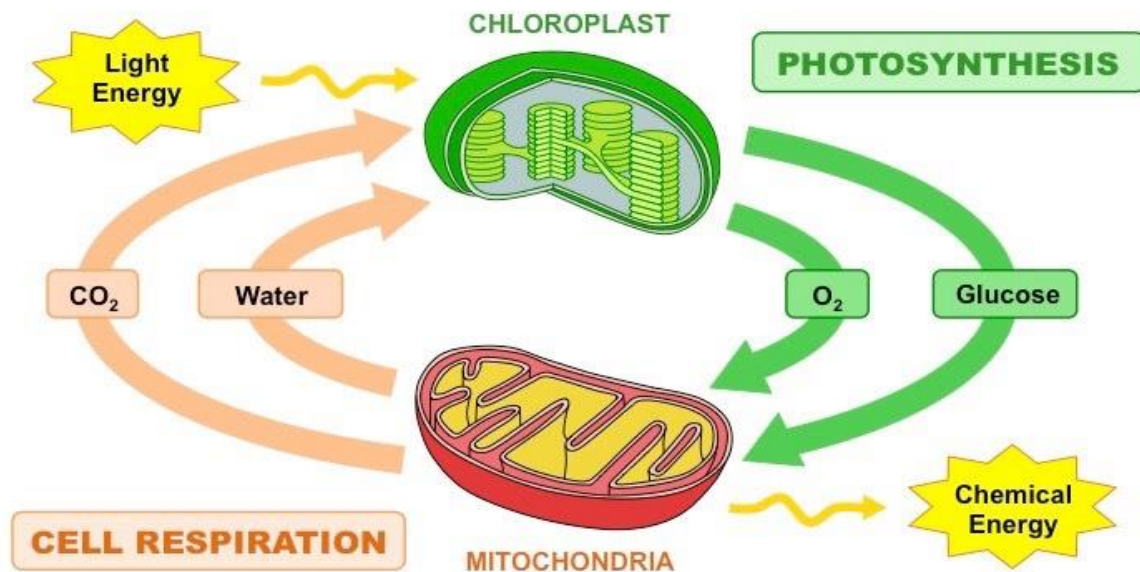
Which is true of fermentation?

- A. does not generate energy
- B. does not require oxygen
- C. occurs in mitochondria
- D. produces lots of ATP

**Figure 17** Your muscle cells produce lactic acid as a waste during fermentation. Yeast cells produce carbon dioxide and alcohol as wastes during fermentation.

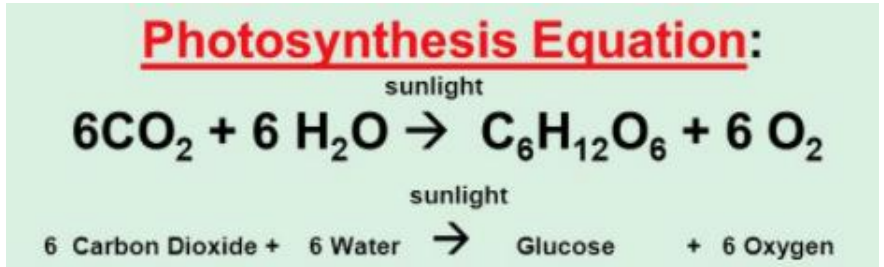
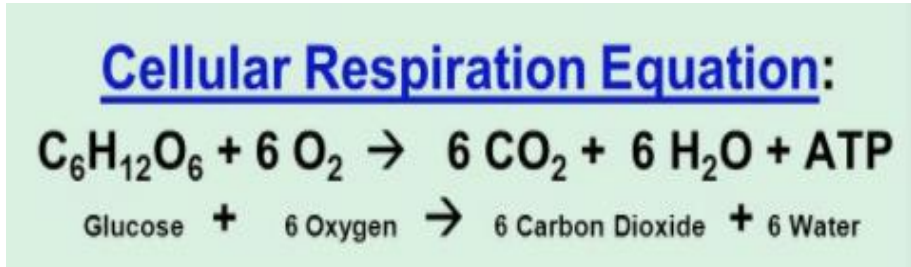
- Fermentation happens when glucose is used to make energy without oxygen.
- Lactic acid is made by your muscles.
- Carbon dioxide is made by yeast.

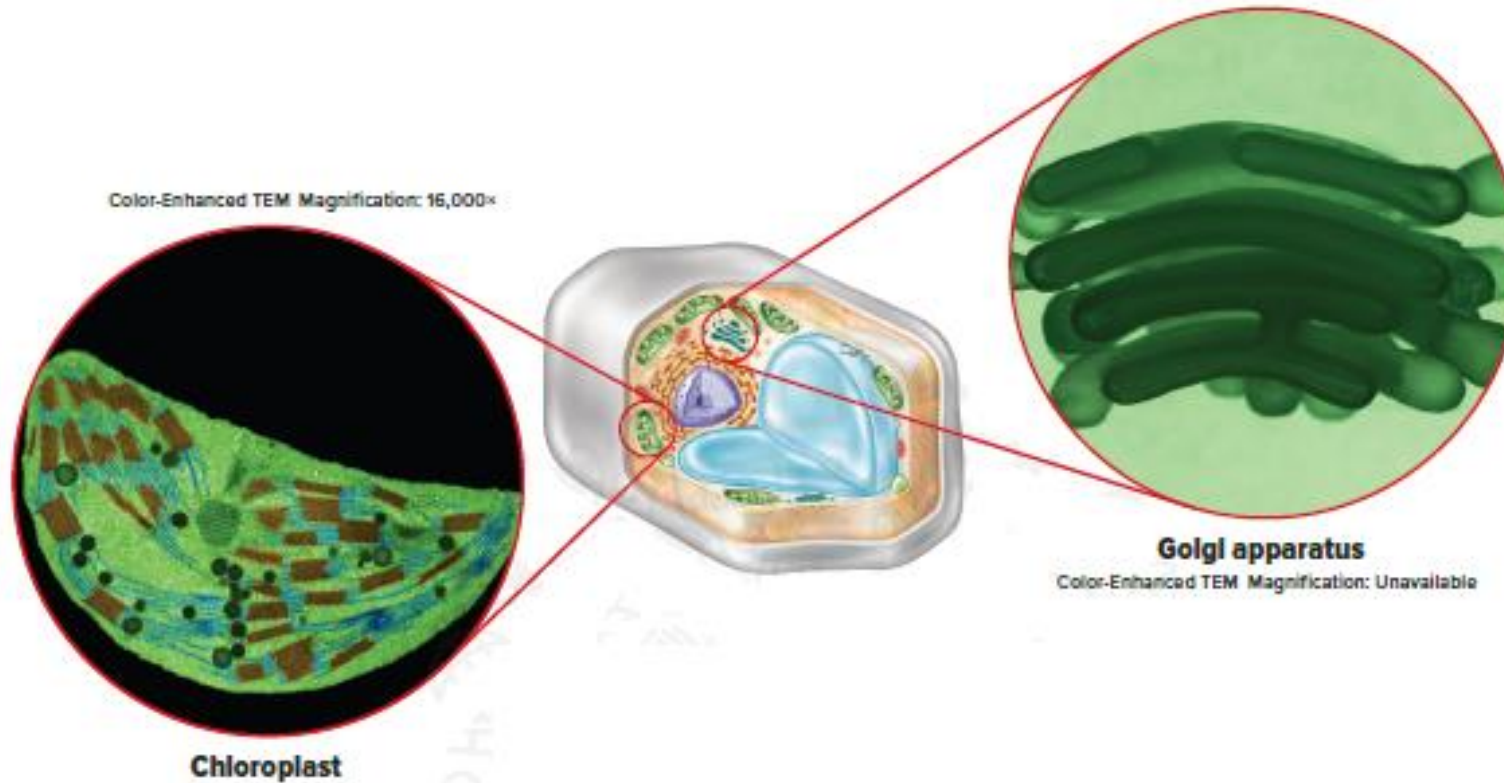
- Cells take in oxygen and glucose (sugar) and make ATP energy, water and carbon dioxide in the mitochondria (cellular respiration).
- Plants takes in energy (from the sun), water and carbon dioxide and make oxygen and glucose (sugar) in the chloroplasts. (photosynthesis)



Which process do plant cells use to capture and store energy from sunlight?

- A endocytosis
- B fermentation
- C glycolysis
- D photosynthesis





Which process do plant cells use to capture and store energy from sunlight?

- A endocytosis
- B fermentation
- C glycolysis
- D photosynthesis

**Figure 11** Plant cells have chloroplasts that use light energy and make food. The Golgi apparatus packages materials into vesicles.

- Chloroplasts are organelles in the plant cell that take in light from the sun, water and carbon dioxide and make glucose (sugar) during photosynthesis.