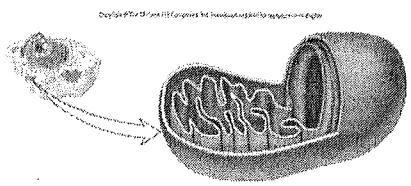
# Section 1 Workbook (unit 3) ANSWERS Name: Key (Copy)

## B1. Analyze the functional inter-relationships of cell structures.

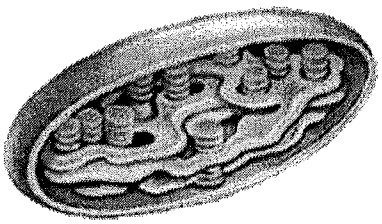
1) **Describe the function and structure of these organelles.**

| Cell Organelle | Function | Structure |
|---|---|---|
| cell membrane | Defines cell boundary, regulates what goes in & out of cell | -phospholipid bilayer with protein, cholesterol, & carbs |
| cell wall | Support & structure to cell – protects | - cellulose |
| chloroplast | Photosynthesis | - grana & stroma, double membrane |
| cytoskeleton | Organelle movement, anchor organelle, support | - protein fibres |
| cytoplasm | Contains organelles | - semi fluid medium |
| Golgi bodies | Processing, packaging & distribution of proteins & lipids | - stack of flattened sacs |
| lysosomes | Intracellular digestion | - large membrane bound sacs |
| mitochondria incl cristae and matrix | Cellular respiration | - double membrane with cristae & matrix |
| nucleus | Stores genetic info., synthesize DNA & RNA, controls cell activities | - double membrane, chromatin |
| nuclear pore | Allow certain molecules in and out of nucleus | - hole in nuclear membrane |
| nucleolus | Makes rRNA | - concentrated area of chromatin, RNA, and proteins |
| chromatin | Stores genetic information & controls cell activities | - loosely wound DNA around histone proteins |
| nuclear envelope | Separates nucleus from cytoplasm | - double membrane with pores |
| chromosomes | Tightly wound DNA for cell division | - tightly wound DNA around histone proteins |
| ribosomes | Protein synthesis | - small & large subunits, rRNA & proteins |
| polysomes | Make large proteins faster | - group of ribosomes |
| SmootER | Makes lipids | - membranous, no ribosomes |
| roughER | Makes proteins | - membranous, has ribosomes |
| vacuoles | Long- term storage | - large membrane bound sacs |
| vesicles | Short- term storage | - small membrane bound sacs |

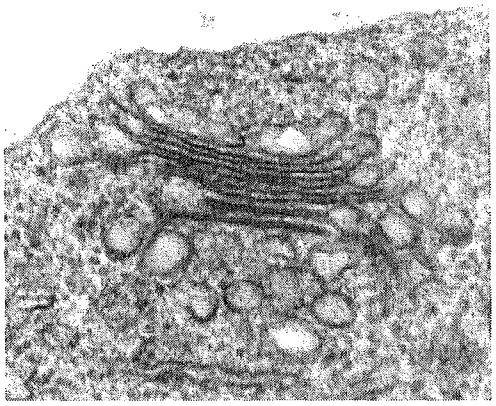
2) **Label each organelle that is depicted in the chart.**



mitochondrion

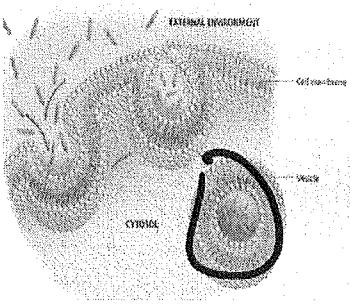


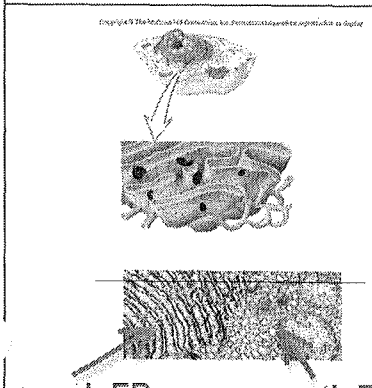
chloroplast



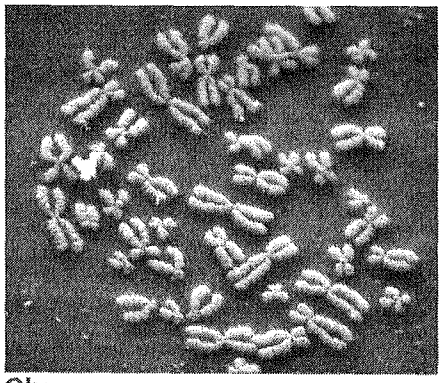
Golgi body

vesicle

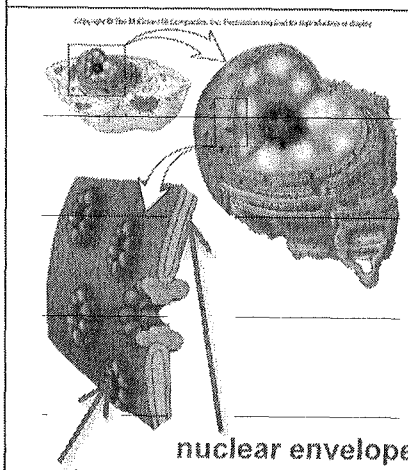


rough ER smooth ER

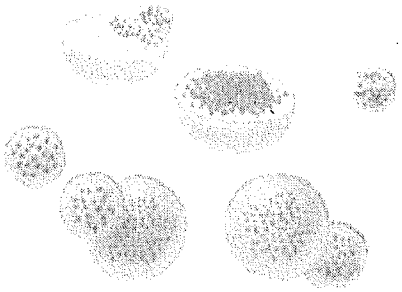


Chromosomes

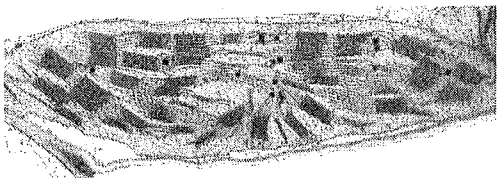


nuclear envelope

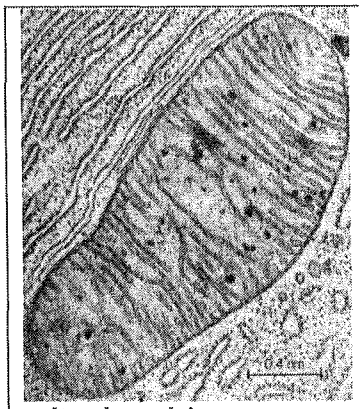
nuclear pore



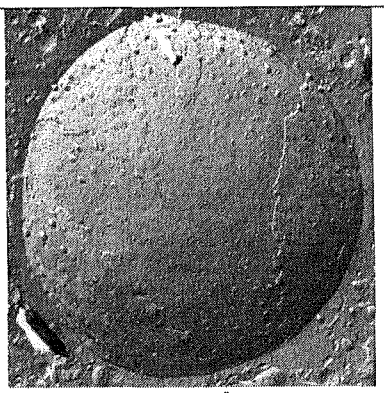
Lysosome



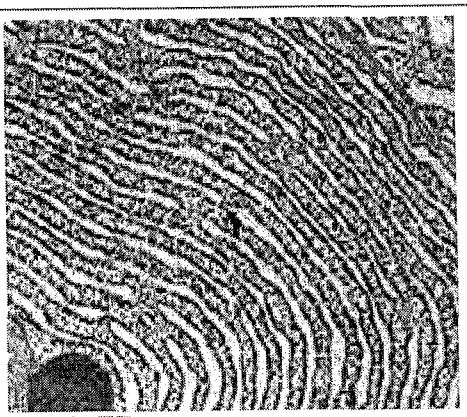
Chloroplast



mitochondrion



nucleus

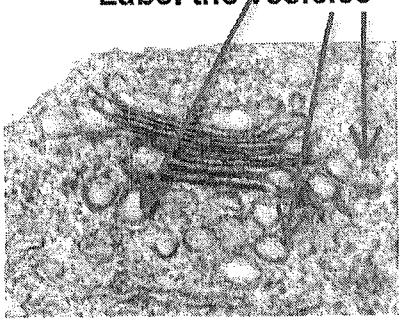


rough ER

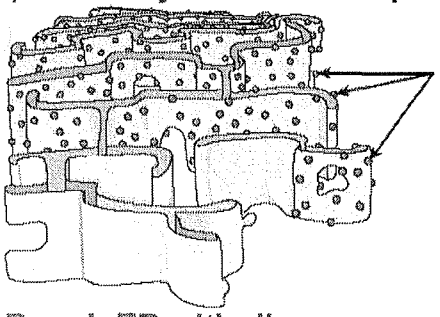
3) **Label the cristae and the matrix:**

Cristae Matrix

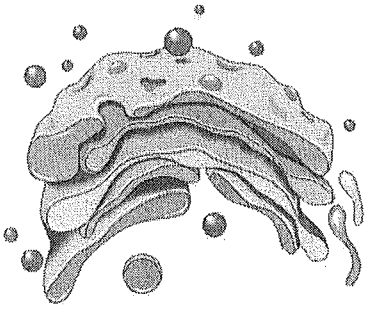
**Label the vesicles**



4) **Identify and label the parts of the following organelles.**



Rough ER with ribosomes



Golgi body surrounded by vesicles

5) **State the balanced chemical equation for cellular respiration and explain the significance of the mitochondria in this process.**

$C_6H_{12}O_6 + 6O_2 \Rightarrow 6CO_2 + 6H_2O + ATP$

- Cellular respiration occurs in the cristae of the mitochondrion

6) **Describe how the following pairs of organelles function to compartmentalize the cell and move materials through it. Where are proteins made and how are they processed, transported and exported?**

a. Rough and Smooth ER

- The rough and smooth ER are membranous channel that are continuous with the nuclear envelope, which separates the contents of these organelles from the cytoplasm.
- The rough ER produces proteins due to the ribosomes attached to it.
- The smooth ER produces lipids.
- The rER follows right after the nucleus and the sER comes right after the rER.

b. Golgi bodies and vesicles and lysosomes

- The Golgi modifies, packages, and processes proteins – it is a group of flattened sacs in the cytoplasm.
- Vesicles isolate substances inside their membrane and transports substances from the ER to the Golgi to the cell membrane for exocytosis.
- Lysosomes isolate substances inside for intracellular digestion ex) old organelle or bacteria – made by the Golgi

7) **Label plasma membrane, mitochondrion, centriole, rough ER, cytoplasm, smooth ER, Golgi body, microfilaments, microtubules, ribosomes, nucleus, nuclear envelope, nuclear pore, nucleolus, chromatin, lysosome**