Lesson 3 Moving Cellular Material

Predict *three things that will be discussed in Lesson 3. Read the headings, and look at the photos and illustrations. Write your predictions in your Science Journal.*

Main Idea

Passive Transport

I found this on page 61.

I found this on page 61.

Diffusion

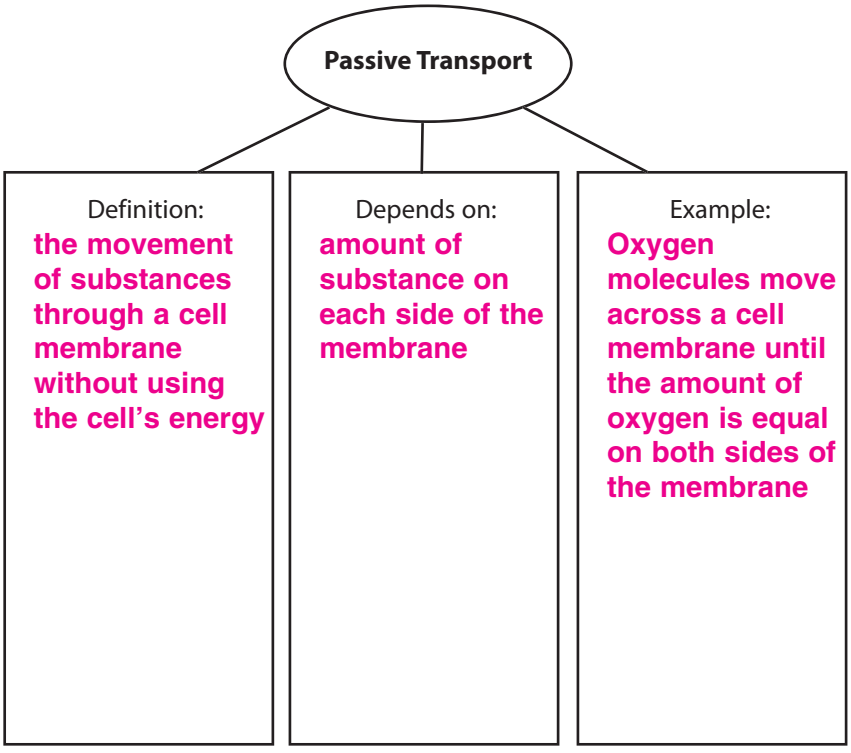
I found this on page 62.

Details

List *2 functions of membranes.*

1. boundaries between cells and between organelles
2. control movement of substances into and out of cells

Organize *information about* passive transport.



Assess *information about* diffusion. *Read the statements below. If the statement is true, write* true *on the line. If it is false, rewrite the underlined portion of the statement so that it is true.*

Diffusion is the movement of substances from an area of lower concentration to an area of higher concentration.

False; higher concentration, lower concentration

Diffusion continues until the concentration of a substance is higher inside a cell than outside a cell.

False; the same on both sides of a cell's membrane

Main Idea

Osmosis—The Diffusion of Water

I found this on page 62 .

I found this on page 63 .

Active Transport

I found this on page 64 .

Details

Complete *the sentence about* osmosis.

Osmosis is a type of passive transport that involves movement of water molecules only through the cell membrane.

Explain *the process of* facilitated diffusion.

Facilitated Diffusion

A molecule is too large to pass through a cell membrane.

Cell uses two types of transport proteins.

- carrier proteins → pass large molecules through membrane by carrying them through
- channel proteins → pass large molecules through membrane by forming a pore through the membrane through which the molecule can pass

Organize *information about* active transport.

Active Transport

- Definition: the movement of substances through a cell membrane only by using the cell's energy
- can move substances from areas of lower concentration to higher concentration
- used to bring in nutrients and take out waste

Main Idea

I found this on page 64 .

Details

Compare and contrast facilitated diffusion *and* active transport *by writing* yes *or* no *in each empty box of the chart.*

Description	Facilitated Diffusion	Active Transport
Uses carrier proteins	yes	yes
Transports materials across cell membrane	yes	yes
Requires cellular energy	no	yes
Able to move materials from an area with lower concentration to an area with higher concentration	no	yes

I found this on page 64 .

Identify *each process as either* endocytosis *or* exocytosis.

Process	Description
endocytosis	Materials entering cell
exocytosis	Materials being expelled from cell

Cell Size and Transport

I found this on page 65 .

Explain *how cell size and transport are related. Underline the term that correctly completes each sentence.*

As a cell grows, both its volume and surface area (increase/decrease). Volume increases (faster/slower) than surface area. Eventually, the cell's membrane would be (too large/too small) to move enough materials into and out of the cell.

Analyze It Cells are very small. Yet, as living things, they have the ability to grow. What keeps cells from growing to much larger sizes than they do?

Accept all reasonable responses. Sample answer: For transport of materials, a cell's surface area must be much larger than its volume. As a cell grows, its volume increases more quickly than its surface area. If a cell were to keep growing, its membrane would not be able to transport enough materials for the cell to survive.