

Name \_\_\_\_\_

Class \_\_\_\_\_

Date \_\_\_\_\_

Skills Worksheet

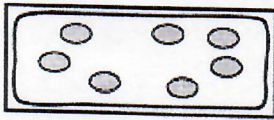
# Homeostasis and Cell Transport

In the space provided, write the letter of the description that best matches the term or phrase.

- |                                    |  |
|------------------------------------|--|
| <u>h</u> 1. passive transport      | <del>a.</del> movement of a substance down the substance's concentration gradient        |
| <u>j</u> 2. concentration gradient | <del>b.</del> causes a cell to shrink because of osmosis                                 |
| <u>i</u> 3. equilibrium            | <del>c.</del> movement of a substance by a vesicle to the outside of a cell              |
| <u>a</u> 4. diffusion              | <del>d.</del> an example of a cell membrane "pump"                                       |
| <u>k</u> 5. osmosis                | <del>e.</del> protein used to transport specific substances across a membrane            |
| <u>b</u> 6. hypertonic solution    | <del>f.</del> transport protein through which ions can pass                              |
| <u>p</u> 7. hypotonic solution     | <del>g.</del> movement of a substance by a vesicle to the inside of a cell               |
| <u>H</u> 8. isotonic solution      | <del>h.</del> does not require energy from the cell                                      |
| <u>f</u> 9. ion channel            | <del>i.</del> concentration of molecules is equal throughout a space                     |
| <u>e</u> 10. carrier protein       | <del>j.</del> difference in the concentration of molecules across a space                |
| <u>m</u> 11. facilitated diffusion | <del>k.</del> diffusion of water through a membrane                                      |
| <u>o</u> 12. active transport      | <del>l.</del> organelle that pumps water out of the cell                                 |
| <u>d</u> 13. sodium-potassium pump | <del>m.</del> passive transport using carrier proteins                                   |
| <u>g</u> 14. endocytosis           | <del>n.</del> concentration of both solutions is equal                                   |
| <u>c</u> 15. exocytosis            | <del>o.</del> movement of a substance against the substance's concentration gradient     |
| <u>q</u> 16. vesicle               | <del>p.</del> causes a cell to swell because of osmosis                                  |
| <u>l</u> 17. contractile vacuole   | <del>q.</del> organelle that fuses with lysosomes in order that contents can be digested |



Elodea is a plant that lives in freshwater. The diagram below represents one Elodea leaf cell in its normal freshwater environment.



Elodea cell in freshwater

Predict how the contents of the Elodea cell would change if the cell was placed in saltwater for several minutes by completing the diagram, "Elodea in saltwater" below. Label the location of the cell membrane.



cell membrane  
(pinches away from cell wall)

<sup>1</sup> The diffusion of water through a selectively permeable membrane is called **osmosis**. <sup>2</sup> Like other forms of diffusion, osmosis involves the movement of a substance—water—down its concentration gradient. <sup>3</sup> Osmosis is a type of passive transport.

<sup>4</sup> If the solutions on either side of the cell membrane have different concentrations of dissolved particles, they will also have different concentrations of free water molecules. <sup>5</sup> That is because some of the dissolved particles, which are ions or polar substances, will bind with some of the water molecules. <sup>6</sup> Osmosis will occur as water molecules diffuse into the solution with the lower concentration of free water molecules.

<sup>7</sup> Water molecules cannot move directly across the cell membrane. <sup>8</sup> That is because they are polar and repelled by the nonpolar interior of the cell membrane. <sup>9</sup> Water crosses the cell membrane by facilitated diffusion. <sup>10</sup> The cell membrane has channel proteins for water. <sup>11</sup> These channel proteins let only water molecules through.

- 1-How are diffusion and osmosis related? **Both involve movement of a substance down its concentration gradient & are passive.**
- 2-What does the word *water* in Sentence 2 tell you about osmosis? **is moved during osmosis. what substance**
- 3-What happens to the concentration of free water molecules when a substance dissolves in the water? **It decreases.**
- 4-Which sentence explains why dissolving substances affects water concentration? Summarize the reason in your own words. **Dissolving decreases water concentration b/c the water molecules become bound to the dissolved particles.**
- 5-Why can't water move freely across a cell membrane? Which sentence gives the explanation for this? **Sentence 8 — they are polar & repelled by the nonpolar interior of the cell membrane**
- 6-What facilitates the diffusion of water across the cell membrane? **special channel proteins in the membrane that only allow water molecules through.**