



Lesson Plan: Cell Transport

Grade Level: 6

Subject: Life Science

Duration: 45–60

NGSS MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

Learning Objectives

By the end of this lesson, students will be able to:

- **Explain** the structure and function of the cell membrane as a semi-permeable barrier.
- **Differentiate** between passive transport and active transport in cells.
- **Describe** the processes of diffusion, facilitated diffusion, and osmosis.



PREVIEW

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- **Osmosis:** The diffusion of water through a cell membrane (semi-permeable membrane) from a higher water concentration (dilute solution) to a lower water concentration (more concentrated solution).
- **Active transport:** The transport of materials through proteins in a cell membrane using energy.
- **Concentration gradient:** The difference in the concentration of a substance between two areas, which drives the movement of molecules from high to low concentration.



Materials Needed: (all links are included in this PDF)

- Printed copies of Vocabulary Set 1
(<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-6-cell-transport-2032-1.pdf>)
- Printed copies of Vocabulary Set 2
(<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-6-cell-transport-2032-2.pdf>)
- Printed copies of Practice Worksheet 0
(<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-6-cell-transport-2032-0.pdf>)
- Printed copies of Practice Worksheet 1
(<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-6-cell-transport-2032-1.pdf>)
- Clear plastic bags (sandwich-size, one per student pair)
- Sugar or salt



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- Explain the structure of the cell membrane as a semi-permeable barrier that controls what enters and leaves the cell.
- Introduce passive transport (diffusion, facilitated diffusion, osmosis) and active transport, emphasizing that passive transport requires no energy while active transport requires ATP.
- Demonstrate osmosis by placing a sealed plastic bag filled with sugar water into a container of plain water, explaining how water molecules move from high to low concentration.
- Use the vocabulary materials to reinforce key terms: cell membrane, semi-permeable, diffusion, osmosis, active transport, and concentration gradient.

(<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-6-cell-transport-2032-2.pdf>)



Step 3: Guided Practice (15 minutes)

- Distribute Vocabulary Set 1 and work through the matching activity as a class, discussing each term and its definition. (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-6-cell-transport-2032-1.pdf>)
- Have students work in pairs to complete Vocabulary Set 2, then review answers together, clarifying any misconceptions about solute, solvent, and osmosis. (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-6-cell-transport-2032-2.pdf>)
- Discuss real-world examples: How does oxygen get into cells in freshwater organisms? Why do plant cells swell when watered?

Step 4: Independent Practice (15 minutes)

- Provide students with Practice Worksheet 0 to complete individually, applying their understanding of cell transport concepts. (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-6-cell-transport->



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transport?

Differentiation Strategies

For advanced learners:

- Challenge students to research and present on specific transport proteins and their roles in facilitated diffusion and active transport.



- Have advanced learners compare and contrast cell transport in plant cells versus animal cells, focusing on the role of the cell wall.

For learners needing support:

- Provide a pre-labeled diagram of the cell membrane with arrows showing the direction of molecule movement for passive and active transport.
- Offer one-on-one assistance during worksheet completion, using visual aids and simplified language to explain concentration gradients.

Extension Activities

- Have students design and conduct an experiment using celery stalks in colored water to observe osmosis and capillary action.
- Create a model of the cell membrane using household materials (beads, string, cardboard)



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[grade-6-cell-transport-2052-2.pdf](#)



NEW PATH LEARNING

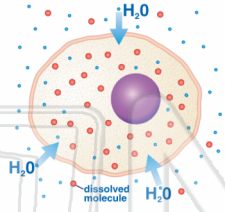


Name _____ Class _____ Date _____

1

The condition shown in this illustration might **cause an animal cell** to _____.

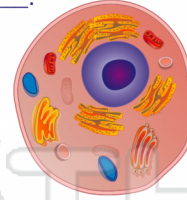
- A burst
- B shrink
- C multiply
- D divide



2

The **outer layer** of an animal cell is called the _____.

- A cell wall
- B cell membrane
- C nucleus
- D nuclear membrane



3

The **cell membrane** contains **pores** that allow materials in and out of the cell.

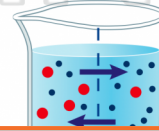
- A true
- B false



4

Diffusion is a substance moving from an area of lower concentration to an area of higher concentration.

- A true
- B false



5



PREVIEW

7

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- C the diffusion of carbon dioxide
- D the diffusion of oxygen

- C the cell to get rid of carbon dioxide
- D oxygen to diffuse across the cell membrane

9

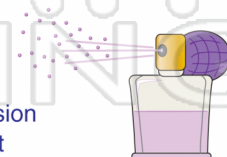
Based on your knowledge of **osmosis**, what would happen to a plant if you watered it with **salt water**?

- A The plant would dehydrate & eventually die.
- B The plant would swell and grow bigger.
- C The plant would use the salt to carry out photosynthesis.
- D The plant would use the salt and release carbon dioxide.

10

Evaporation of perfume in a classroom, demonstrates the process of _____.

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





Name _____ Class _____ Date _____

1 The condition shown in this illustration might **cause an animal cell** to _____.

A burst
B shrink
C multiply
D divide

(A)

2 The **outer layer** of an animal cell is called the _____.

A cell wall
B cell membrane
C nucleus
D nuclear membrane

(B)

3 The **cell membrane** contains **pores** that allow materials in and out of the cell.

A true
B false

(A)

4 **Diffusion** is a substance moving from an area of lower concentration to an area of higher concentration.

A true
B false

(B)



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(A)

C the diffusion of carbon dioxide
D the diffusion of oxygen

C the cell to get rid of carbon dioxide
D oxygen to diffuse across the cell membrane

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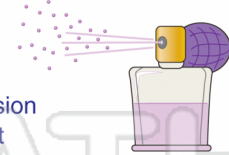
(B)



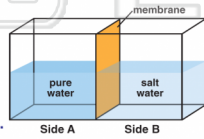
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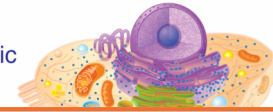


- 3 Predict what would happen to the **water** in a tank separated by an **artificial cell membrane** as shown in this diagram over time.



- A Water would move from Side B to Side A.

- 4 What part of the cell **allows some materials to get through** but not others?
- A nucleus
 - B endoplasmic reticulum



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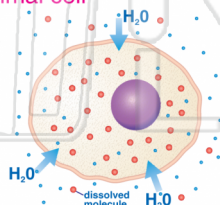
D mixture



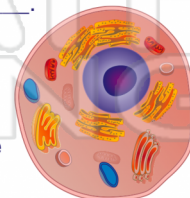
D mixture



- 9 The condition shown in this illustration might **cause an animal cell** to _____.
- A burst
 - B shrink
 - C multiply
 - D divide



- 10 The **outer layer** of an animal cell is called the _____.
- A cell wall
 - B cell membrane
 - C nucleus
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Name _____ Class _____ Date _____

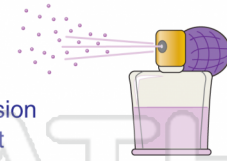
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(A)

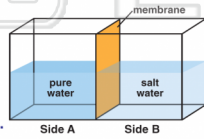
2 **Evaporation of perfume** in a classroom, demonstrates the process of _____.

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- D active transport



(B)

3 Predict what would happen to the **water** in a tank separated by an **artificial cell membrane** as shown in this diagram over time.

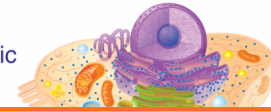


- A Water would move from Side B to Side A.

(B)

4 What part of the cell **allows some materials to get through** but not others?

- A nucleus
- B endoplasmic reticulum



(D)



(B)

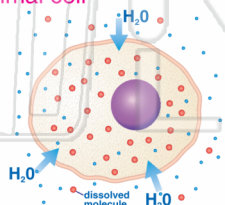
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(A)

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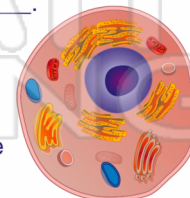
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(A)

10 The **outer layer** of an animal cell is called the _____.

- A cell wall
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(B)



Name _____ Class _____ Date _____

Match each of the following terms to its definition:

Organism

Cell wall

Lipid

Cell membrane

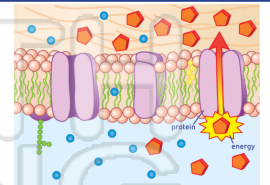
Facilitated diffusion

Diffusion

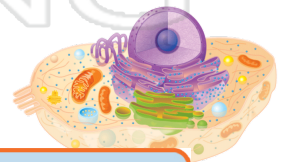
Cell

Active transport

1. _____ - the transport of materials through proteins in a cell membrane using energy



2. _____ - the basic building block of all living organisms



3. control layer of



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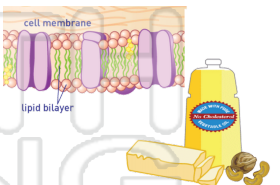
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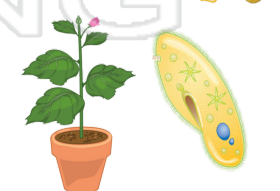
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6. molec

7. _____ - nutrients also known as fats, made from the elements carbon, hydrogen and oxygen, are used for energy; lipids along with proteins are the key components of cell membranes



8. _____ - a living thing that is able to act on its own





Name _____ Class _____ Date _____

Match each of the following terms to its definition:

Organism

Cell wall

Lipid

Cell membrane

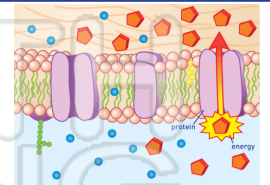
Facilitated diffusion

Diffusion

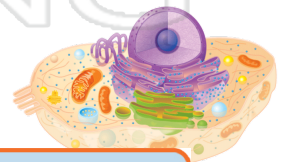
Cell

Active transport

1. Active transport - the transport of materials through proteins in a cell membrane using energy



2. Cell - the basic building block of all living organisms



3. Cell
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4. Cell

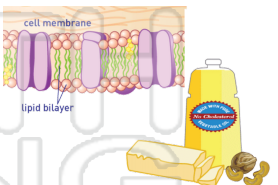
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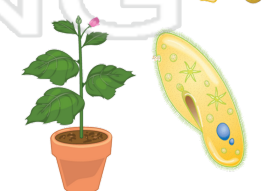
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8. Organism - a living thing that is able to act on its own





Name _____ Class _____ Date _____

Match each of the following terms to its definition:

Solute

Active transport

Osmosis

Passive transport

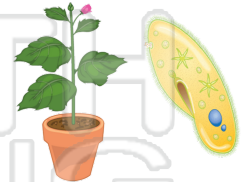
Solvent

Organism

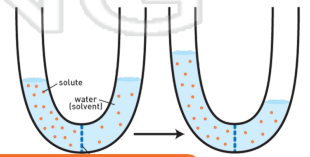
Protein

Semi-permeable

1. _____ - a living thing that is able to act on its own



2. _____ - the diffusion of water through a cell membrane (semi-permeable membrane) from a higher water concentration (dilute solution) to a lower water concentration (more concentrated solution)



3. _____
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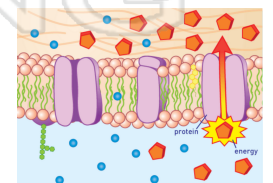
5. _____
pass t

6. _____
solutio
water is the solvent

7. _____ - typically a liquid that dissolves a substance (solute) to form a solution; for example, in a sugar solution, the water is the solvent and the sugar is the solute



8. _____ - the transport of materials through proteins in a cell membrane using energy



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Name _____ Class _____ Date _____

Match each of the following terms to its definition:

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Active transport

Osmosis

Passive transport

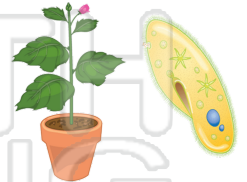
Solvent

Organism

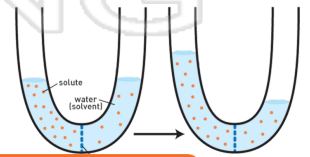
Protein

Semi-permeable

1. Organism - a living thing that is able to act on its own



2. Osmosis - the diffusion of water through a cell membrane (semi-permeable membrane) from a higher water concentration (dilute solution) to a lower water concentration (more concentrated solution)



3. Pass
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4. Pro
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5. Ser
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6. Sol
examp
solvent

7. Solvent - typically a liquid that dissolves a substance (solute) to form a solution; for example, in a sugar solution, the water is the solvent and the sugar is the solute



8. Active transport - the transport of materials through proteins in a cell membrane using energy

