Name: _____ **Date:** _____

Section: _____

Osmosis Simulator Activity

Investigating Osmosis: Water Movement Across Membranes

Phase 1: ENGAGE (3 minutes)

Getting Started: Open peebedu.com and navigate to Osmosis Simulation

Observe the red blood cell in the center.

Essential Question: How does changing the solution concentration affect cells? _____

Initial Prediction:

If you put a cell in pure water, it will:

Phase 2: EXPLORE (12 minutes)

Investigation: Test Different Solutions

Use the slider to change solute concentration.

Part A: Extreme Conditions

Pure Water (0% solute):

- Cell appearance: _____
- Water moves: INTO / OUT OF cell
- Cell gets: BIGGER / SMALLER

High Salt (100% solute):

- Cell appearance: _____
- Water moves: INTO / OUT OF cell
- Cell gets: BIGGER / SMALLER

Part B: Finding Balance

Move slider slowly from 0 to 100:

- At what range does the cell look normal? _____%
- Water movement at this point: BALANCED / ONE-WAY

Part C: Pattern Recognition

The Rule of Water Movement: Water always moves from:

Visual Patterns: Match the cell appearance to the solution type:

- Shriveled cell = _____ solution

- Swollen/burst cell = _____ solution

Phase 3: EXPLAIN (7 minutes)

Understanding Osmosis

Why Water Moves:

Water moves to balance concentrations.

- More solute outside → Water moves _____
- Equal solute → Water moves _____

Cell Responses:

Hypotonic (low solute outside):

- Water rushes IN
- Cell swells
- May burst (lysis)

Hypertonic (high solute outside):

- Water rushes OUT
- Cell shrinks
- Membrane pulls away (crenation)

Isotonic (equal solute):

- Water moves equally both ways
- Cell stays normal
- Dynamic equilibrium

Why This Matters:

Cells must regulate water or they will:

Phase 4: ELABORATE (2 minutes)

Real-World Applications

IV Fluids: Hospital IVs must be isotonic. Why? _____

Preserving Food: Salt preserves meat by creating a _____ environment. Why does covering food with salt help preserve it? What happens to bacteria when exposed to high salt concentrations? _____

Plant Wilting: Over-fertilizing creates hypertonic soil. Result: _____

Phase 5: EVALUATE (1 minute)

Quick Check

A cell in seawater will:

Water moves toward areas of:

Reflection: Why can't you drink seawater when thirsty? _____