

## Crossing the Border – Scoring Sheet

Student Name: \_\_\_\_\_

Place a score (1-4) in each row corresponding to the student's college readiness level.

**Exceeding College Ready (4):** Substantially exceeds the performance expectations**College Ready (3):** Shows proficiency in all of the performance expectations**Approaching College Ready (2):** Meets only some of the performance expectations**Initiating College Ready (1):** Does not yet meet the performance expectations

KEY COGNITIVE SKILLS	Student's Self-Assessment	Instructor's Score
<b>Intellectual Curiosity</b> (engages in scholarly inquiry and dialogue)		
<b>Reasoning</b> (considers arguments and conclusions of self and others; constructs well-reasoned arguments)		
<b>Problem Solving</b> (collects evidence and data systematically and directly related to solving a problem)		
<b>Academic Behaviors</b> (self-monitors learning needs and seeks assistance when needed; uses good study habits; strives for accuracy and precision; perseveres to complete and master tasks)		
<b>Work Habits</b> (works independently; works collaboratively)		
FOUNDATIONAL SKILLS	Student's Self-Assessment	Instructor's Score
<b>Writing Across the Curriculum</b> (writes clearly and coherently using standard writing conventions)		
<b>Research Across the Curriculum</b> (synthesizes and organizes information effectively)		
<b>Use of Data</b> (identifies patterns or departures from patterns among data; presents analyzed data and communicates findings in a variety of formats)		
SCIENCE STANDARDS	Student's Self-Assessment	Instructor's Score
<b>Nature of Science: Scientific Ways of Learning and Thinking</b> (exercises cognitive skills in science; performs experiments to engage in scientific inquiry; works safely; demonstrates literacy in current scientific technology; effectively communicates scientific information)		
<b>Foundational Skills: Scientific Applications of Communication</b> (demonstrates appropriate reading practices for science)		
<b>Cross-Disciplinary Themes</b> (performs measurements correctly, creates models, and uses models to make predictions)		
<b>Biology</b> (identifies and describes accurately the structure and function of membranes; understands the major categories of molecules)		

**See reverse for  
comments.**

Score	College Readiness Level
42-48	Exceeding College Ready
35-41	College Ready
18-34	Approaching College Ready
0-17	Initiating College Ready

Total Score: \_\_\_\_\_

Grade: \_\_\_\_\_

See Scoring Guide for grade conversion chart.

## Crossing the Border – Scoring Guide

*Note: The letters and numbers of the skills below refer to their designation in the College and Career Readiness Standards.*

### KEY COGNITIVE SKILLS

#### A. Intellectual Curiosity

##### 1. Engage in scholarly inquiry and dialogue.

*College Ready Description:* Student effectively conducts an experiment examining the molarity of potato tissue.

*Evidence for Scoring:* Student follows an experimental procedure that was carried out carefully and methodically and demonstrates an understanding of experimental design by validating conclusions and comparing hypotheses to results obtained.

#### B. Reasoning

##### 1. Consider arguments and conclusions of self and others.

*College Ready Description:* Student listens attentively to fellow classmates' arguments, weighing what is presented against what they think.

*Evidence for Scoring:* Student is open to changing his or her views when unable to refute classmates' views and logic.

##### 2. Construct well-reasoned arguments to explain phenomena, validate conjectures, or support positions.

*College Ready Description:* Student uses logical responses to support his or her opinions. Student should be able to explain his or her reasoning in a step-by-step manner, citing sound logic at each step.

*Evidence for Scoring:* Rather than jumping from one argument to the next without making clear connections, student states his or her arguments in a logical manner.

##### 3. Gather evidence to support arguments, findings, or lines of reasoning.

*College Ready Description:* Student successfully gathers relevant information on the behavior of hydrophobic and hydrophilic substances and on the molarity of potato tissue.

*Evidence for Scoring:* Student accurately describes and interprets the behavior of oil, food coloring, and detergent and their interactions in water. Student uses these descriptions to distinguish between the two substances.

##### 4. Support or refine claims based on the results of an inquiry.

*College Ready Description:* Student refines his or her original prediction about molarity based on the results of the inquiry.

*Evidence for Scoring:* Student clearly concludes and can explain how or why the results of the experiment reject or support the predicted molarity of potato tissue.

## C. Problem Solving

### 3. Collect evidence and data systematically and directly relate to solving a problem.

*College Ready Description:* Student systematically collects experimental data on the change in mass or volume of potato tissue in solutions of different sucrose concentration.

*Evidence for Scoring:* Student presents a complete dataset with values that reflect careful experimental procedures and uses the data to support or reject his or her hypothesis.

## D. Academic Behaviors

### 1. Self-monitor learning needs and seek assistance when needed.

*College Ready Description:* Student keeps a mindful eye on his or her integration of knowledge as it progresses and is able to ask fellow students and the instructor for help.

*Evidence for Scoring:* Student is comfortable admitting he or she does not know an answer and is willing to re-examine the material to relearn.

### 2. Use study habits necessary to manage academic pursuits and requirements.

*College Ready Description:* Student looks over the material he or she needs to incorporate and tries to come up with a logical approach to complete the task in the allotted time.

*Evidence for Scoring:* Student may use the questions highlighted in step 8 of Getting Started to help guide his or her attention to the most relevant observations during the experiments.

### 3. Strive for accuracy and precision.

*College Ready Description:* Student collects and reports information accurately and, in the case of quantitative data, with appropriate precision.

*Evidence for Scoring:* Student records the masses or volumes of potato cores with precision appropriate to the measurement method.

### 4. Persevere to complete and master tasks.

*College Ready Description:* Student submits a final work product that reflects a thorough understanding of the topic and meets all requirements of the assignment.

*Evidence for Scoring:* Student's narrative reflects a thorough, independent understanding of the experimental results.

## E. Work Habits

### 1. Work independently.

*College Ready Description:* Student can work through the problems by themselves.

*Evidence for Scoring:* Student does not wait until the group work to start thinking about the activity.

**2. Work collaboratively.**

*College Ready Description:* Students actively and equally work together on the problem at hand. Students recognize different people have different skills and knowledge and try to use the best everyone has for the betterment of the group.

*Evidence for Scoring:* One student does not do all the work while the other students just sit passively.

**FOUNDATIONAL SKILLS****B. Writing Across the Curriculum****1. Write clearly and coherently using standard writing conventions.**

*College Ready Description:* Student uses appropriate terminology to communicate information in a concise manner. Student uses proper citation conventions, grammar, mechanics, punctuation, and spelling.

*Evidence for Scoring:* Student correctly defines “intermolecular bond” in his or her own words.

**C. Research Across the Curriculum****5. Synthesize and organize information effectively.**

*College Ready Description:* Student effectively explains the results of the experiment.

*Evidence for Scoring:* Student correctly explains the mass or volume results in terms of the movement of water into or out of the potato tissue.

**D. Use of Data****1. Identify patterns or departures from patterns among data.**

*College Ready Description:* Student identifies relevant patterns in the experimental data.

*Evidence for Scoring:* Student estimates the percent change in volume and the percent change in mass of the potato tissue. Student discusses the variation between the two methods of collection of data.

**3. Present analyzed data and communicate findings in a variety of formats.**

*College Ready Description:* Student effectively presents molecular structure and behavior in drawings. Student effectively presents the experimental data in graphs.

*Evidence for Scoring:* Student's drawings show proteins embedded in the phospholipid bilayer with hydrophilic and hydrophobic regions correctly oriented. Student presents the graphic data correctly, with title, axis labels, and appropriate scales.

**SCIENCE STANDARDS****I. Nature of Science: Scientific Ways of Thinking and Learning****A.4. Cognitive skills in science.**

*College Ready Description:* Student relies on reproducible observations of empirical evidence when constructing, analyzing, and evaluating explanations of natural events and processes.

*Evidence for Scoring:* Student uses repeated observations in an experiment to either support or refute a possible explanation of an event.

### **B.1. Scientific inquiry.**

*College Ready Description:* Student uses experimental procedures to design and conduct scientific investigations in which hypotheses are formulated and tested.

*Evidence for Scoring:* Student presents a complete dataset with values that reflect careful experimental procedures and uses the data to support or reject hypothesis.

### **C.1, 2. Collaborative and safe working practices.**

*College Ready Description:* Student actively participates in the discussions with fellow classmates as well as the instructor. Student understands and applies safe procedures in the laboratory and field, including chemical, electrical, and fire safety and safe handling of live or preserved organisms.

*Evidence for Scoring:* Student asks and answers questions within their group regarding his or her experiment. Student uses all safety equipment and procedures as instructed.

### **D.3. Current scientific technology.**

*College Ready Description:* Student can use a wide variety of scientific equipment and procedures for collecting data in an experiment.

*Evidence for Scoring:* Student can successfully create cylinders of a potato or fruit using a scalpel, weigh each of them on a balance, and place them into a series of solutions.

### **E.1, 2. Effective communication of scientific information.**

*College Ready Description:* Student uses several modes of expression to describe or characterize natural patterns and phenomena; these modes of expression include narrative, numerical, graphical, pictorial, symbolic, and kinesthetic. Student uses essential vocabulary of the discipline being studied.

*Evidence for Scoring:* Student provides a clear explanation of permeability using words and phrases like concentration and solubility. Student can explain the main points of the activity in the laboratory report.

## **III. Foundation Skills: Scientific Applications of Communication**

### **B.2, 3. Scientific reading.**

*College Ready Description:* Student sets up apparatuses, carries out procedures, and collects specified data from a given set of appropriate instructions. Student recognizes scientific and technical vocabulary in the field of study and uses this vocabulary to enhance clarity of communication.

*Evidence for Scoring:* Student appropriately incorporates the proper terminology used to characterize and study the permeability of membranes.

## **V. Cross-Disciplinary Themes**

### **E.1. Measurements and models**

*College Ready Description:* Student uses models to make predictions.

*Evidence for Scoring:* Student models the arrangement of phospholipids and proteins using colored diagrams and pieces.

## VI. Biology

### A.6. Structure and function of cells.

*College Ready Description:* Student knows the structure of membranes and how this relates to permeability.

*Evidence for Scoring:* Student's responses to questions and post-experiment reflections on initial predictions demonstrate a well-reasoned and accurate understanding of how membrane structure relates to permeability.

### B.1. Biochemistry.

*College Ready Description:* Student understands the major categories of biological molecules: lipids, carbohydrates, proteins, and nucleic acids.

*Evidence for Scoring:* Student's responses to questions and post-experiment reflections on initial predictions demonstrate a well-reasoned and accurate understanding of lipids and proteins as biological molecules.

## Crossing the Border – Scoring Instructions

Place a score (1-4) in each row of the scoring sheet corresponding to the student's college readiness level.

**Exceeding College Ready (4):** Substantially exceeds the performance expectations

**College Ready (3):** Shows proficiency in all of the performance expectations

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**Initiating College Ready (1):** Does not yet meet the performance expectations

Suggested Grade Conversion:

This chart reflects equal weight given to each skill. As key cognitive skills, foundational skills, and discipline content knowledge are all important elements of college readiness, we recommend this grading approach. However, you may certainly choose to implement different weights to particular scales and assign a grade at your discretion.

Score	Grade		Score	Grade		Score	Grade		Score	Grade
48	100		39	89		30	80		21	73
47	99.5		38	87		29	79.5		20	72
46	99		37	86		28	79		19	71
45	98		36	85		27	78.5		18	70
44	97		35	84.5		26	78		17	68
43	96		34	84		25	77		16	66
42	95		33	83		24	76		15	64
41	93		32	82		23	75		14	62
40	91		31	81		22	74		13	60