How Does Food Become Energy for My Body?

7th Grade Biology Unit Materials

Jay Bingaman & Karen Ostrowski

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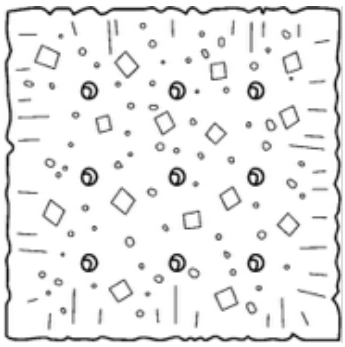
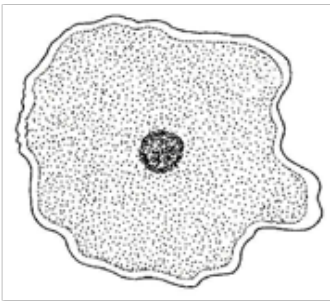




How Will I Be Graded?

Assessment is an important tool for providing you with feedback to help them improve. Your progress will be reported using grade reports in Edline. This means that most assignments will be evaluated on a 4-point rubric with the following values:

How to Read Your Scores on Assignments

Rubric Value:	What it Means:	Should you redo this assignment?
Mastery	I can do this well enough to teach others.	No. You have finished this assessment.
Proficient	I am able to do this.	You can if you are not satisfied.
Developing	I am in the process of learning to do this.	You must redo this assignment.
Beginning	I have not started learning to do this.	You must redo this assignment.

Can I Redo an Assignment?

With the exception of Exit Slips, all assignments can be redone. You are encouraged to work on an assignment until you have a score that is satisfactory to both you and your teacher. Mrs. Ostrowski and Mr. Bingaman are satisfied with ratings of "proficient" or better. You may set higher standards for yourself. If an assignment does not meet these standards they should be redone until you have learned to complete them satisfactorily.

For a complete explanation of how to redo an assignment or retake a test please visit us at:

www.south7thscience.com

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 1: How Does Food Become Energy For My Body?

Pre-Test: Human Map

Purpose

The purpose of this pre-test to assess your background knowledge, misconceptions, questions, and knowledge gaps about how food becomes energy for your body.

Procedure- 2 Days

1. Obtain a sheet of butcher paper. Note that you are only allowed 1 sheet per group. So if you become unsatisfied with your drawing you only have the reverse side of the paper to use.
2. Select a group member who fits on the butcher paper from head to toe.
3. Outline the body of the person in **pencil.**
4. **In pencil**, neatly draw in all the parts of the body related to the following: eating, moving, and breathing.
5. Label all the parts of this human body map neatly.
6. Color and outline all the parts and words with marker.
7. At the end of each class period, roll your butcher paper neatly and secure it with a latex free rubber band or tape. Make sure your names are on the outside of the roll. Place it in the designated spot for your class period.

Name _____ Period _____ Date _____

Lesson 1: How Do I Use a Microscope?

BBB: Microscope Insurance

Purpose

Watch the video located at any one of the following addresses:

http://goo.gl/hOU0eA

https://vimeo.com/87300162

http://www.youtube.com/watch?v=lkhkC8qk--8

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Questions

1. (Matching) Match these microscope parts to their function.

_____ Allows more or less light in the microscope. _____ A lens on the nose that may come in different magnifications. _____ The place you put the slide. _____ The part of the microscope you look through. _____ Holds the slide in place.	A. Stage B. Objectives C. Ocular Lens D. Diaphragm E. Stage clips

2. (Short answer) How do you focus a microscope on high power? (*Hint: check the bottom of the screen.)

Step 1:

Step 2:

(Continue on back)

3. (Multiple- choice) If you turn the coarse adjustment while using the high objective, you might **(Circle all that apply.)**

a. get the specimen on the objective lens.
b. move the diaphragm and change the amount of light.
c. accidently switch the objective lens.
d. smash the cover slip or slide.

4. (Multiple- choice) When you make a wet mount slide, you drop the cover slip on the slide

a. with at least 8-9 drops of water between the cover slip and the slide.
b. with the two pieces of glass parallel to each other.
c. with the cover slip at a 45° angle to the slide.
d. with the specimen above the cover slip.

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 1: How Do I Make a Wet Mount

Activity 1.1

Purpose

The purpose of this lesson is to learn to properly wet mount a subject, focus it correctly on the microscope and record your results by drawing the image carefully.

Word Wall Words

Wet Mount: _____

Magnification: _____

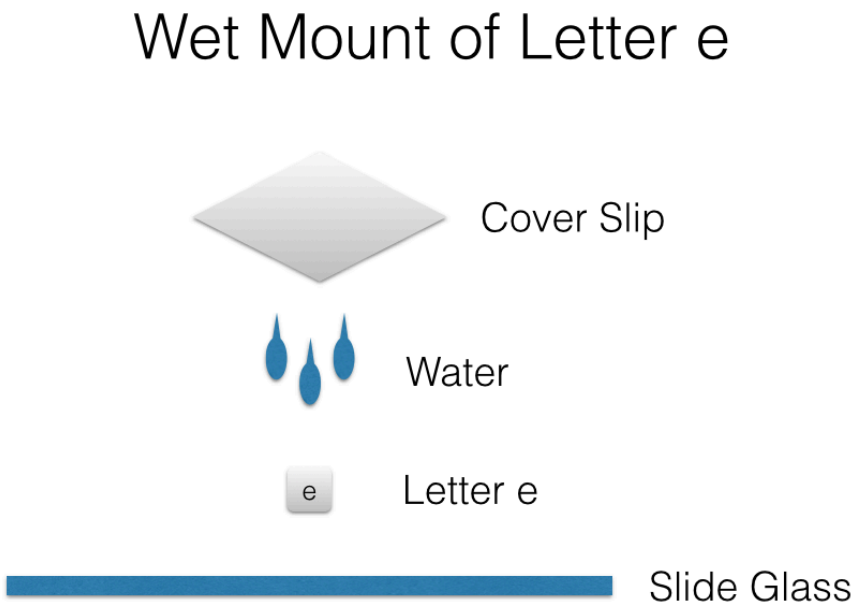
✚ Safety

In order to protect the equipment and get the best lab results, follow the microscope safety instructions given in the "Microscope Insurance" video.

Procedure

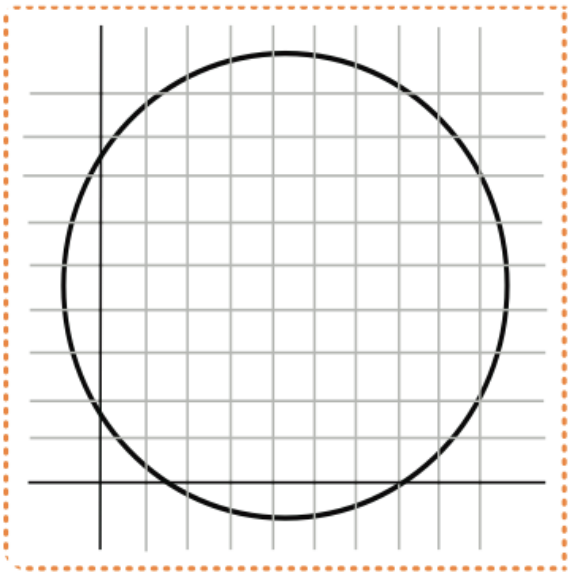
First, prepare a wet mount slide of a lower case letter "e", cut from a newspaper.

- Locate a single, lower case, letter "e" from the text of a newspaper article and cut it out.
- Place it in the center of a flat glass slide.
- Add 2-3 drops of water to the slide, placing them directly on top of the letter.
- Hold the cover slip at a 45˚ angle above the letter and drop it onto the slide.



Next, place the slide on the microscope and focus it on the lowest magnification.

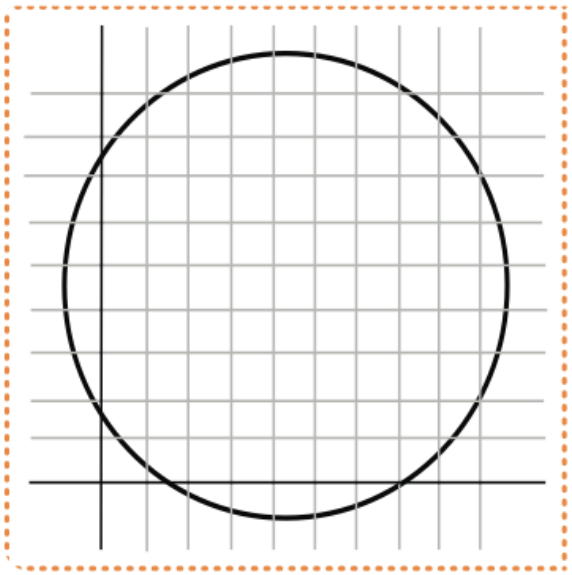
- Place the slide on the stage of the microscope and secure it with the stage clips.
- Set the objective lens to its lowest setting (4x) and look through the ocular lens (10x).
- Move the slide until the "e" is in the center of the field of view and use the course adjustment knob to bring the image into focus.
- Use the fine adjustment to bring the image into as clear a focus as possible.
- Carefully draw exactly what you see in the circle on the next page:



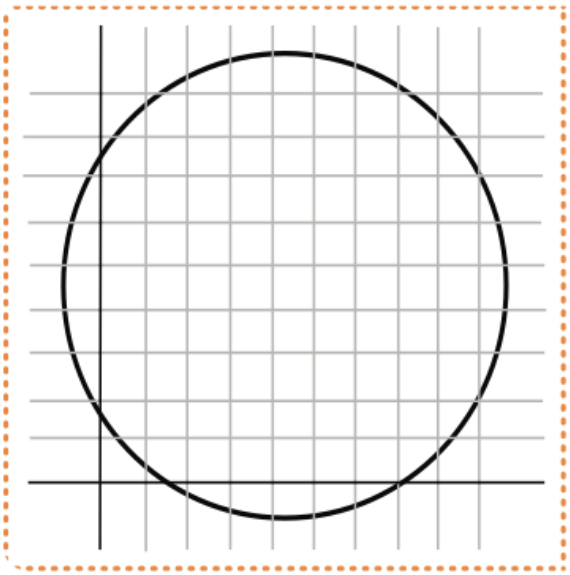
Magnification: _____

Finally, place adjust the microscope to the higher magnifications and record the observations.

- While the subject is in focus, change the objective lenses to 10x (medium) and then 40x (high).
- Use only the fine adjustment knob to adjust the focus on 40x (high).
- Record what your observations by carefully drawing what you see.



Magnification: _____



Magnification: _____

Follow-up Questions

1. What do you notice about the orientation of the "e" when you compare it to how it looks in the microscope and how it looks on the slide?

   _____

   _____

   _____

2. Move the "e" just a little bit towards you. What direction does the "e" go in the microscope field?

   _____

3. Recenter the "e". Move the "e" just a little bit to your right. What direction does the "e" go in the microscope field?

   _____

4. Describe the relationship between the direction you move the slide and the direction the specimen moves in the microscope's visual field.

   _____

   _____

   _____

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 1: How Do We Use Microscopes to Learn About the Human Body?

Article Review

Read **one** the following article:

Every Clue Counts – Forensics Inconceivable Without Microscopy
http://goo.gl/ECpfT0
http://www.leica-microsystems.com/science-lab/forensics/every-clue-counts-forensics-inconceivable-without-microscopy/

Anton van Leeuwenhoek: A History of the Compound Microscope
http://goo.gl/l1Uxi8
http://www.history-of-the-microscope.org/anton-van-leeuwenhoek-microscope-history.php

The Origins Of The Word 'Cell'
http://goo.gl/QkYWeC
http://www.npr.org/templates/story/story.php?storyId=129934828

Response Questions

Summarize the article in three sentences. Use your own words.

_____

_____

_____

_____

_____

_____

How is this information useful to its readers?

_____

_____

_____

_____

What is the coolest thing you learned from this article?

How does this article relate to our current unit of study?

What is the most important word in the article?

What are three words that were challenging or new to you? What do they mean?

What is one thing you found confusing, or still have a question about after reading this article?

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 1: What Am I Made Of?

Activity 1.2

Purpose

The purpose of this lesson is to observe samples from our skin and cheeks to determine the structure of the human body.

Word Wall Words

Methylene Blue:_____

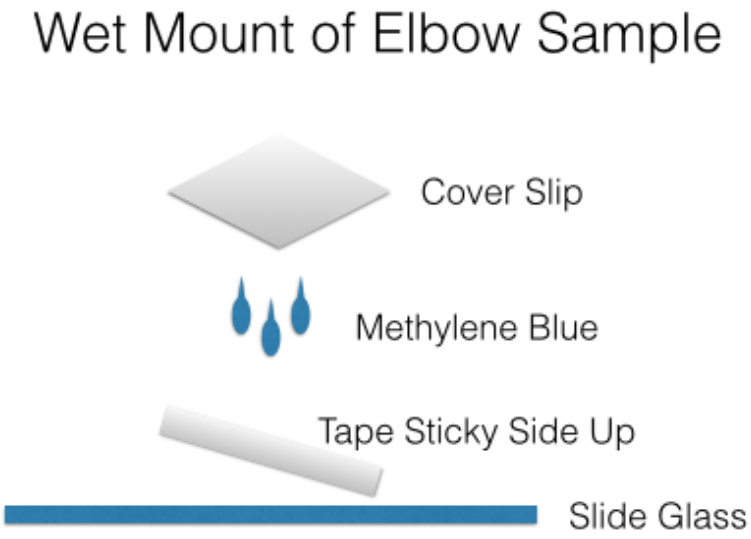
✚ Safety

In order to protect the equipment and get the best lab results, follow the microscope safety instructions given in the "Microscope Insurance" video.

Procedure

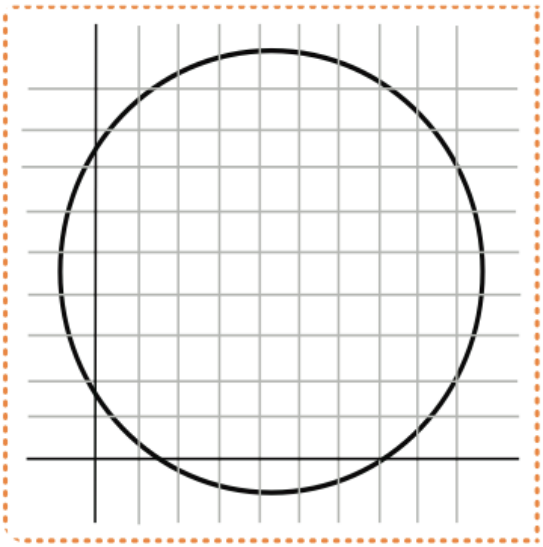
First, prepare a wet mount slide of a sample collected from the skin of your elbow.

- Wash your elbow and dry it completely
- Take a piece of clear tape and stick it firmly to your elbow. Remove the tape again.
- Place it in the center of a flat glass slide sticky side up.
- Add 2-3 drops of methylene blue to the slide, placing them directly on top of the tape.
- Hold the cover slip at a 45˚ angle above the letter and drop it onto the slide.



Next, place the slide on the microscope and focus it on the lowest magnification.

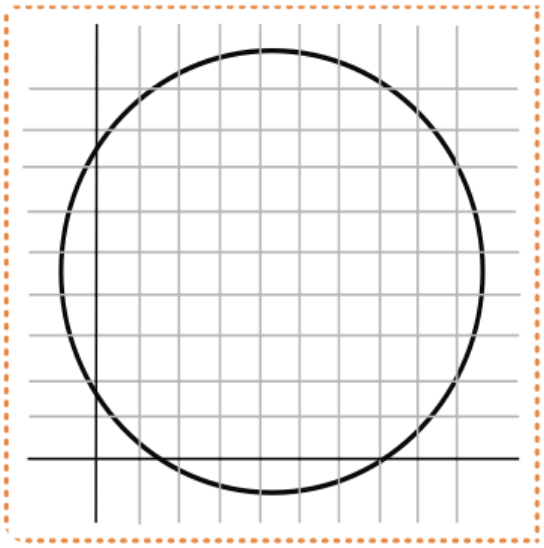
- Place the slide on the stage of the microscope and secure it with the stage clips.
- Set the objective lens to its lowest setting (4x) and look through the ocular lens (10x).
- Move the slide until the sample is in the center of the field of view and use the course adjustment knob to bring the image into focus.
- Use the fine adjustment to bring the image into as clear a focus as possible.
- Carefully draw exactly what you see in the circle on the next page:



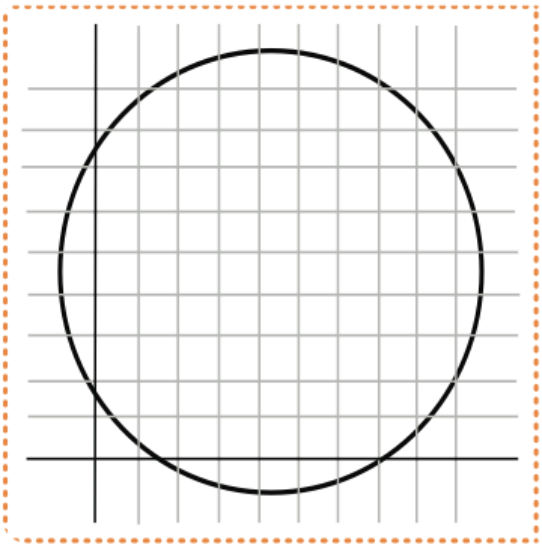
Magnification: _____

Finally, place adjust the microscope to the higher magnifications and record the observations.

- While the subject is in focus, change the objective lenses to 10x (medium) and then 40x (high).
- Use only the fine adjustment knob to adjust the focus.
- Record what your observations by carefully drawing what you see.



Magnification: _____



Magnification: _____

Modeling Score:

Base on the rubric I think that I am at:

_____ **Mastery**: Time and care was taken in producing the model. There is attention to detail. The model strongly reflects observations from the lab.

_____ **Proficient:** There is some attention to detail. The model reflects observations from the lab.

_____ **Developing:** There is barely any attention to detail. The model hardly reflects observations from the lab.

_____ **Beginning:** There is no attention to detail. The model does not reflect observations from the lab.

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 1: What Am I Made Of?

Activity 1.3

Purpose

The purpose of this lesson is to observe samples from our skin and cheeks to determine the structure of the human body.

Word Wall Words

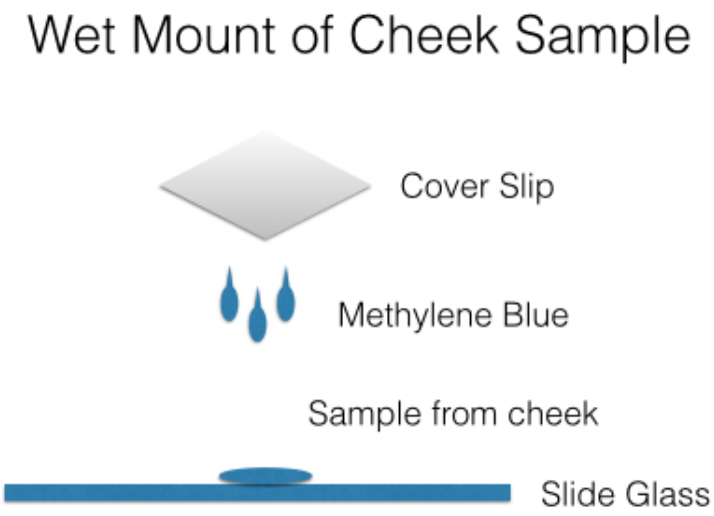
Cell:_____

✚ Safety

In order to protect the equipment and get the best lab results, follow the microscope safety instructions given in the "Microscope Insurance" video.

Next, prepare a wet mount slide of a sample collected from the skin of your elbow.

- Take a toothpick. Rub it gently along the inside of your cheek.
- Smear it in the center of a flat glass slide.
- Add 2-3 drops of methylene blue to the slide, placing them directly on top of the tape.
- Hold the cover slip at a 45˚ angle above the letter and drop it onto the slide.



Next, place the slide on the microscope and focus it on the lowest magnification.

- Place the slide on the stage of the microscope and secure it with the stage clips.
- Set the objective lens to its lowest setting (4x) and look through the ocular lens (10x).
- Move the slide until the sample is in the center of the field of view and use the course adjustment knob to bring the image into focus.
- Use the fine adjustment to bring the image into as clear a focus as possible.
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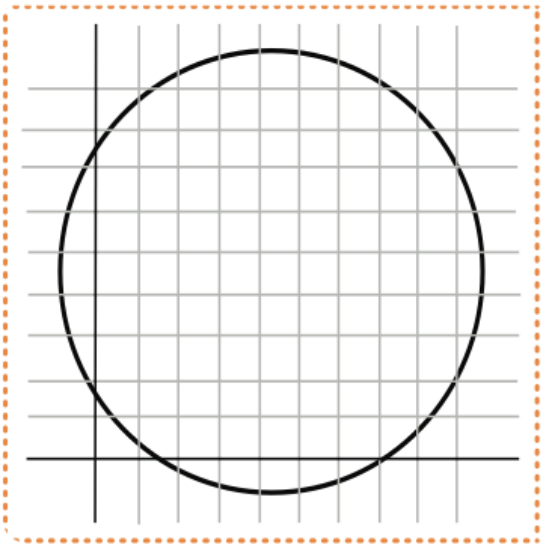

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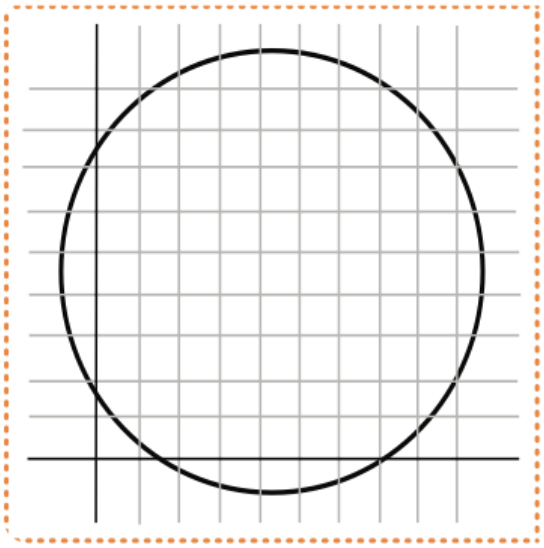
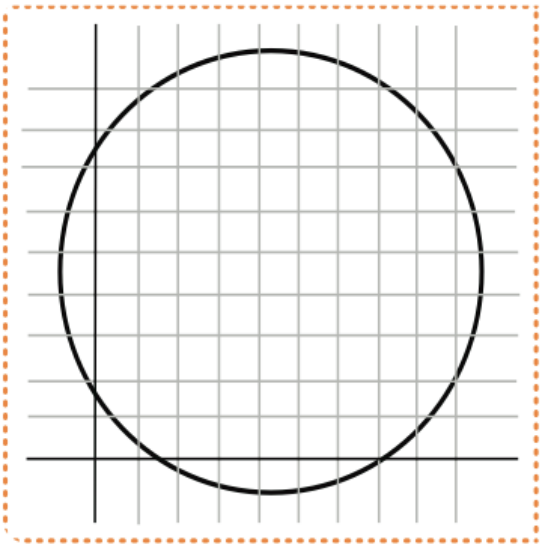
- While the subject is in focus, change the objective lenses to 10x (medium) and then 40x (high).
- Use only the fine adjustment knob to adjust the focus.
- Record what your observations by carefully drawing what you see.



Magnification: _____



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Modeling Score:

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_____ **Proficient:** There is some attention to detail. The model reflects observations from the lab.

_____ **Developing:** There is barely any attention to detail. The model hardly reflects observations from the lab.

_____ **Beginning:** There is no attention to detail. The model does not reflect observations from the lab.

Name _____ Period _____ Date _____

Lesson 2: What is a Living Thing?

BBB: Signs of Life

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Purpose

Watch the video located at any one of the following addresses:

http://goo.gl/A2YZG

http://vimeo.com/62789030

http://www.youtube.com/watch?v=-f1Sq9Md4b8

Questions

1. (Short answer) What are the 6 characteristics of a living thing?

1.	3.	5.
2.	4.	6.

2. (Multiple-Choice) In the story, the first sample that Commander Ostrowski (Wong) and Captain Bingaman encounter is evaluated for being alive. What are their findings?
   a. It is alive, because it is a plant.
   b. It is alive because it has all 6 traits of life.
   c. It is dead because they do not get there in time.
   d. It is nonliving because it is made of plastic.

3. (Multiple-Choice) In the story, the second sample that Commander Ostrowski (Wong) and Captain Bingaman encounter is evaluated for being alive. What are their findings?
   a. It is alive, because it can walk.
   b. It is alive because it has all 6 traits of life.
   c. It is dead because they shoot it with the phaser.
   d. It is nonliving because it is not made of cells and does not respond to stimuli.

(Continue on back)

4. (Multiple-Choice) If a person's body temperature drops below 95 °F from exposure to extreme cold, their body may fall into a state of hypothermia. In serious cases of hypothermia, a person's organs begin to shut down because their body's core temperature is too low.

Which of the following characteristics of a living thing cannot be maintained if a person has hypothermia?

a. Responding to stimuli.
b. Homeostasis.
c. Metabolism
d. Made of cells

5. (Multiple-Choice) View this YouTube video: http://goo.gl/B8rY. This video is a great example of:

a. Responding to stimuli.
b. Homeostasis.
c. Metabolism
d. Made of cells

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 2: What is in my Yogurt?

Activity 2.1

Purpose

The purpose of this lesson is to look carefully at yogurt to determine if it also contains living cells.

Word Wall Words

Yogurt:_____

Bacteria:_____

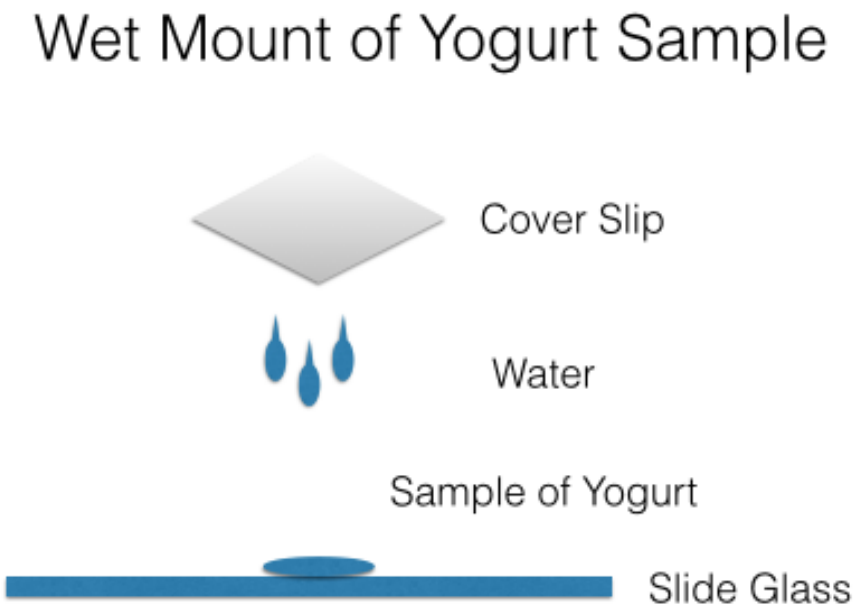
✚ Safety

In order to protect the equipment and get the best lab results, follow the microscope safety instructions given in the "Microscope Insurance" video.

Procedure

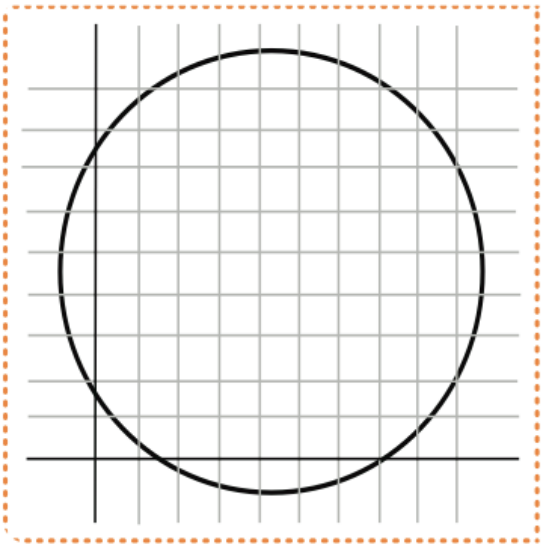
First, prepare a wet mount slide of yogurt culture.

- Dip a toothpick into the yogurt.
- Smear it on the center of a flat glass slide.
- Add 2-3 drops of water to the slide, placing them directly on top of the letter.
- Hold the cover slip at a 45˚ angle above the letter and drop it onto the slide.



Next, place the slide on the microscope and focus it on the lowest magnification.

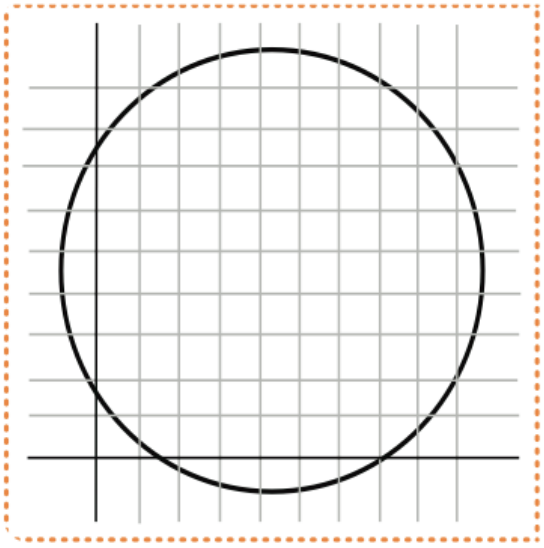
- Place the slide on the stage of the microscope and secure it with the stage clips.
- Set the objective lens to its lowest setting (4x) and look through the ocular lens (10x).
- Move the slide until the sample is in the center of the field of view and use the course adjustment knob to bring the image into focus.
- Use the fine adjustment to bring the image into as clear a focus as possible.
- Carefully draw exactly what you see in the circle on the next page:



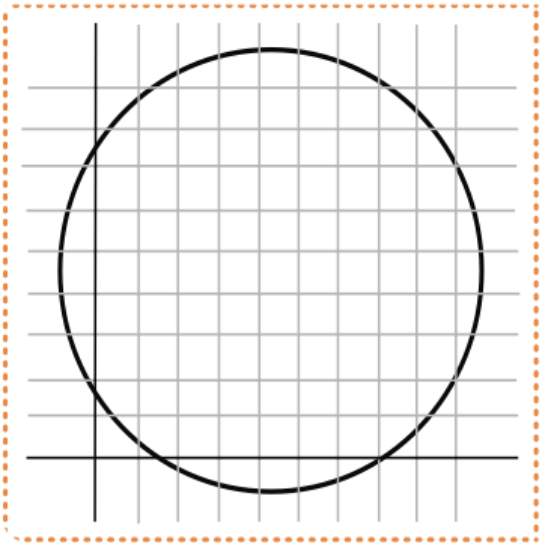
Magnification: _____

Finally, place adjust the microscope to the higher magnifications and record the observations.

- While the subject is in focus, change the objective lenses to 10x (medium) and then 40x (high).
- Use only the fine adjustment knob to adjust the focus.
- Record what your observations by carefully drawing what you see.



Magnification: _____



Magnification: _____

Modeling Score:

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_____ **Developing:** There is barely any attention to detail. The model hardly reflects observations from the lab.

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Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 2: When Germs Are Good Guys

Article Review

Read the following article:

When Germs are Good Guys
http://goo.gl/FGbNNY

http://south7thscience.weebly.com/uploads/2/5/0/6/25064401/when_germs_are_the_good_guys_article_only.pdf

Response Questions

Summarize the article in three sentences. Use your own words.

_____

_____

_____

_____

_____

_____

_____

How is this information useful to its readers?

_____

_____

_____

_____

_____

_____

What is the coolest thing you learned from this article?

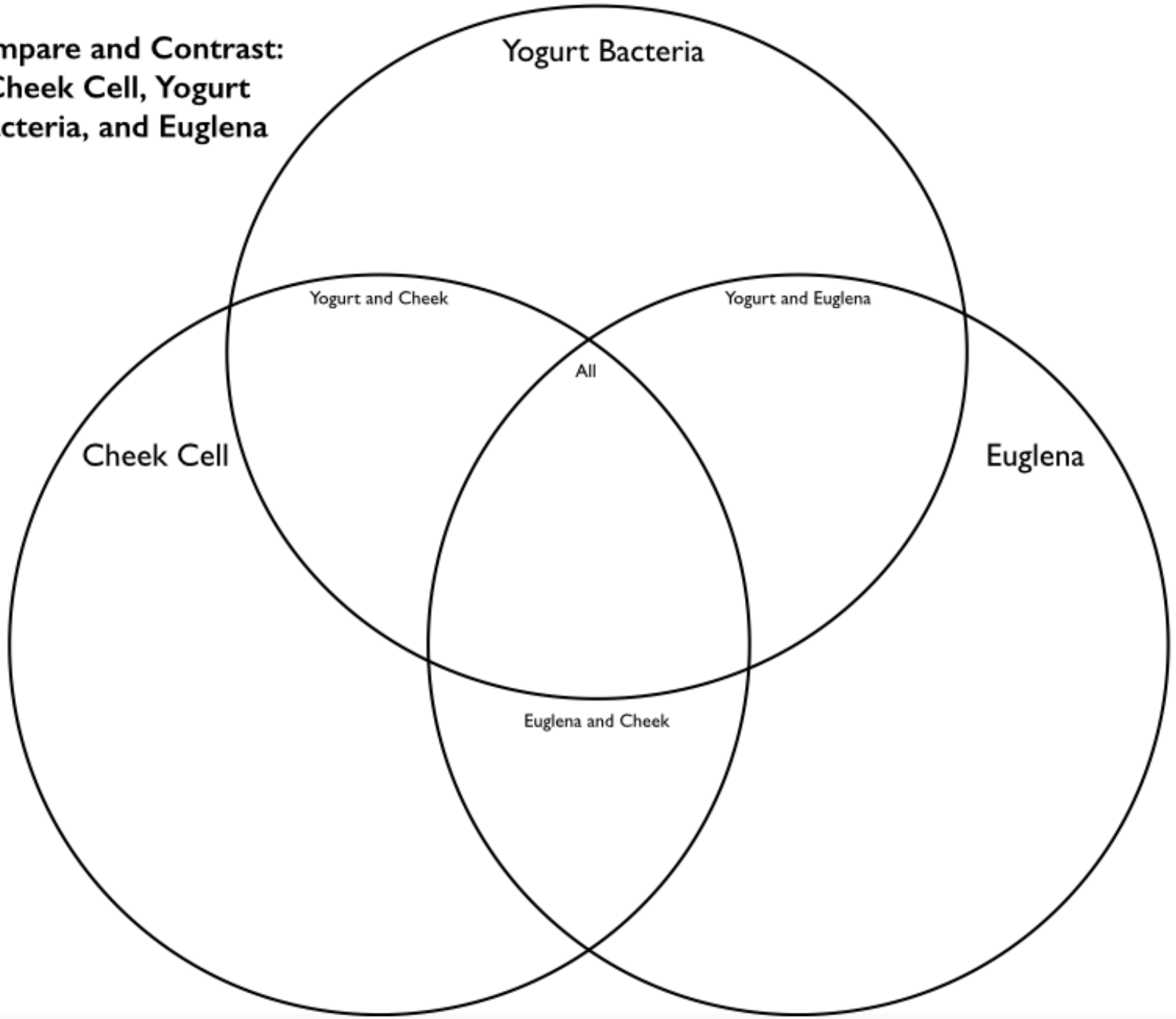
How does this article relate to our current unit of study?

What is the most important word in the article?

What are three words that were challenging or new to you? What do they mean?

What is one thing you found confusing, or still have a question about after reading this article?

Compare and Contrast: Cheek Cell, Yogurt Bacteria, and Euglena



Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 3: Is a Pen a System?

Activity 3.1

Purpose

The purpose of this activity is to take apart a pen and analyze how the parts that make up the pen work together to perform a pen's function.

Word Wall Words

System:_____

_____

Subsystem:_____

_____

✚ Safety

Do not attempt to remove the ballpoint from the ink cartridge, this will ruin the pen and may damage clothing and furniture.

Procedure

1. Disassemble the pen completely, taking it apart into as many pieces as possible without permanently damaging the pen.

2. List each part on the first data table. You may need to invent a meaningful name for each piece if you do not know one.

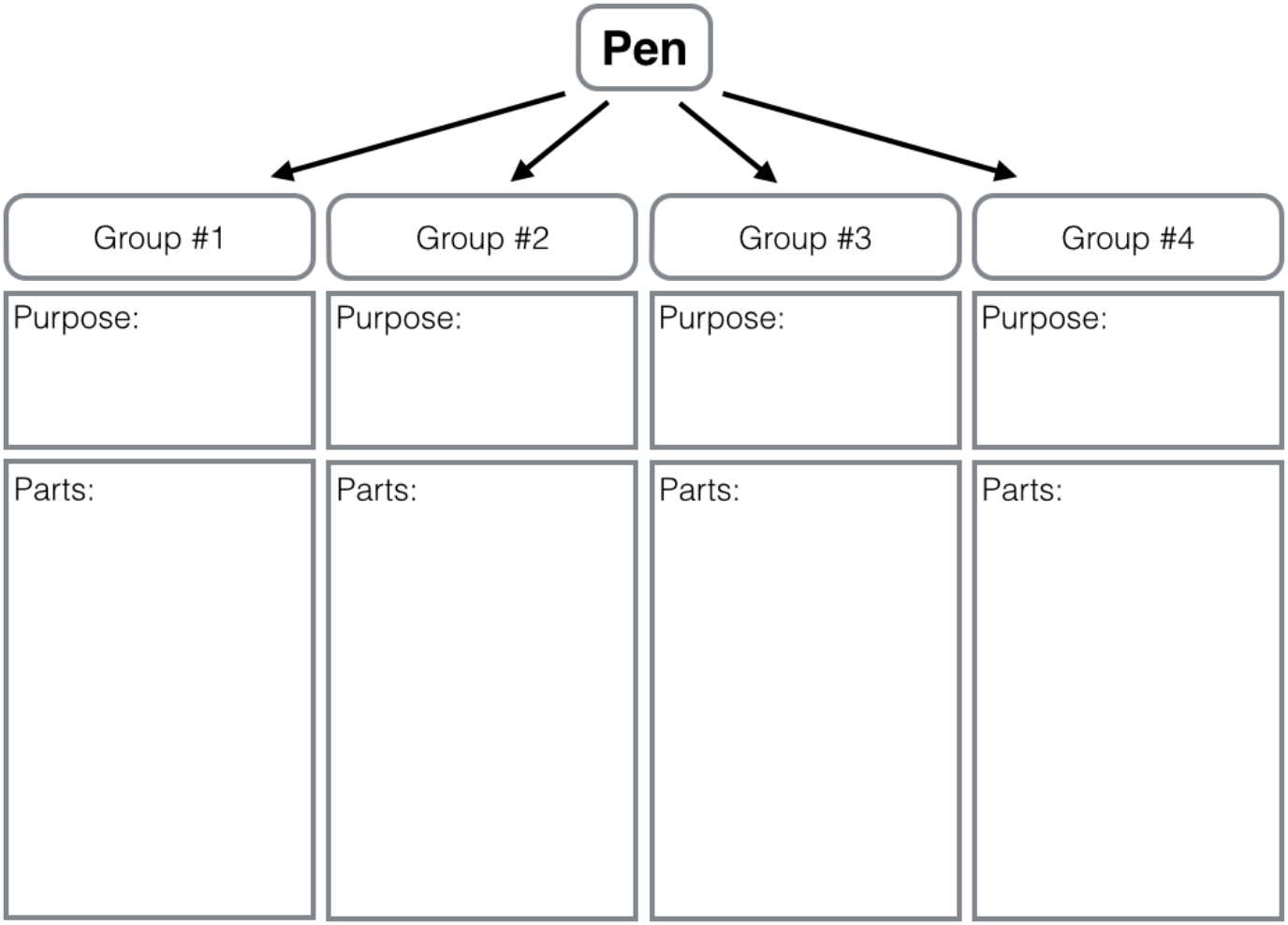
3. Describe in the box next to it what the specific function of that part is.

4. In the second data table group the parts together into 3 or 4 groups. Group the parts by looking for ones with similar functions.

Data Table

Part	Function

Analysis



Name _____ Period _____ Date _____

Lesson 3: What is a System?

BBB: Systems

Purpose

Watch the video located at any one of the following addresses:

http://goo.gl/KcOEQ

http://vimeo.com/63268914

http://www.youtube.com/watch?v=DrdMmtgpcG8

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Word Wall:

System: _____

Questions

1. Which of the following is not a part of the definition of a system agreed upon in class?

a. Is made of parts.
b. Is organized.
c. Makes up a living thing.
d. Working together
e. Performs a task

2. (Multiple-Choice) Which characteristic of a system is causing Mr. Bingaman to have difficulty completing his task?

a. The parts of a system have to be organized in the correct order in order to perform the task.
b. A system has a specific input and output in order to function.
c. All of the parts of the system are required to work together to perform the task.
d. Systems can be divided into subsystems. These subsystems can themselves be looked at as a system.

3. What is the example of a system used in this video? _____

4. What is another example if a system you can think of on your own? _____

(Continue on back)

4. The system in the video is made of several subsystems. Look at the inputs and outputs shown in the table below and complete the table by filling in the component that matches that input and output.

Component	Input	Output
	Information from the game disc and the controllers.	Video and sound signals to the AVI cord.
	AC electricity from the outlet.	DC electricity for the console.
	Video and sound signals from the game console.	Video and sound signals to the TV.
	Movements from the players playing the game.	Information for the game console to decide what happens to the player.
	Electrical signal from the game console.	A beacon that allows the controller to know where the TV is.

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 4: How Do You Eat a Cracker?

Activity 4.1

Purpose

In this activity we will take a close look at how we use our teeth and tongue to chew and swallow a saltine cracker.

Word Wall Words

Enzyme:_____

Amylase:_____

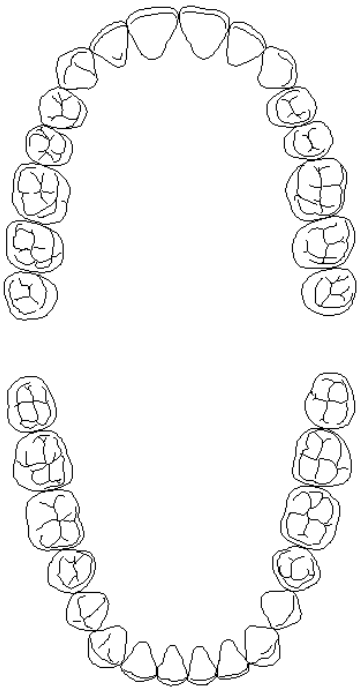
✚ Safety

Do not eat the cracker if you have any dietary restrictions or allergies that would prevent it. If you have an allergy to wheat or gluten, please rely on your lab partners to help you acquire data.

Procedure (Mechanical Digestion)

Being very careful to pay attention to how you are using your **teeth** and **tongue**, bite a small corner off of the cracker, chew it up and swallow it. Set the rest of the cracker aside and answer the following questions:

Which teeth did you use to bite off the piece of cracker? Color these teeth **red** on the diagram to the right:



Which teeth did you use to grind up the piece of cracker? Color these teeth **blue** on the diagram to the right:

How are these teeth shaped differently for these roles?

_____

_____

_____

What role did the tongue have while chewing and after you were done chewing?

_____

_____

_____

Procedure (Chemical Digestion)

For the second portion of this lab, you will need to eat the remaining portion of the cracker by chewing it continuously for 2 minutes without swallowing. When the teacher tells you, place the cracker in your mouth. The teacher will start a stopwatch as you start chewing. As you chew this cracker you should record a description of the taste and texture of the cracker during the entire time you are chewing.

Data Table

In the table below, record your observations about the **taste** and **texture** of the cracker as you are chewing it:

Time	Observations
First Starting to Chew	
After Chewing for One Minute	
After Chewing for Two Minutes	

Did the taste of the cracker change during the experiment? If so, how?

_____

_____

Did the texture of the cracker change during the experiment? If so, what does this imply about whether the cracker was dissolved or not?

_____

_____

Considering that taste and solubility are properties, what can you infer about what is going on in your mouth?

_____

_____

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 4: How Do I Digest Fats?

Activity 4.5

Purpose

The purpose of this lab is to simulate the digestion of fats in the small intestines.

Word Wall Words

Gall Bladder:_____

Bile:_____

Lipase:_____

Emulsion:_____

✚ Safety

Keep your thumb tightly on the test tube as you are shaking it. Avoid getting the dish soap in your eye. Most importantly, allow your lab partner to handle the materials if you have any allergies to olive oil or vegetable oil.

Procedure

Before you begin, rinse both test tubes out completely. Fill the two test tubes with the contents listed below. Be sure that after adding the water the test tube is almost completely full. Record observations n the table below.

Data Table

Contents	Observations Before Shaking
Test Tube #1 • **5 Drops of Oil** • **Water**	
Test Tube #2 • **5 Drops of Oil** • **10 Drops Dish Soap** • **Water**	

Procedure Continued

After carefully recording your observations shake each test tube for a total of 4 minutes. Allow the test tubes to settle for one additional minute. Carefully record your observations below.

Contents	Observations After Shaking for 4 Minutes
Test Tube #1 • **5 Drops of Oil** • **Water**	
Test Tube #2 • **5 Drops of Oil** • **10 Drops Dish Soap** • **Water**	

Analysis

How would you describe the solubility of oil in water?

_____

_____

How did dish soap affect the way oil and water mixed?

_____

_____

Why would fatty foods be difficult to digest if the body does not have a way to mix it with water?

_____

_____

_____

_____

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 4: How Are Food Molecules Absorbed by the Small Intestines?

Activity 4.4

Purpose

The purpose of this activity is to show how the structure of the small intestines aids in the absorption of food molecules.

Word Wall Words

Villi:_____

Small Intestines:_____

Procedure:

1. Pick up the 3 sizes of paper strips from bins A, B, and C.
2. Measure the dimensions of the strips with a ruler in cm. and calculate the area of strips A, B, and C. Remember that the order is shortest (A) to longest (C). Show your work and use proper units in the table.
3. Mass strips A, B, and C. Record this in the table with proper units.
4. Fold strips B and C with accordion pleats tight enough to match the length of strip A.
5. Fill a your 100 ml beaker with 80 ml of water.
6. Completely submerge strip A into the water. Pull it out with tweezers and allow it to drip. It is important that most of the excess water drips off. Do not squeeze the paper to release water.
7. Mass the wet strip A. Record the mass in your data table. Calculate the mass of water absorbed and record it in your data table.
8. Repeat steps 5-7 for for B and C.
9. Create a scatter plot by plotting your independent variable on the x-axis and your dependent variable on the y-axis.

Data Table 1

	Length	Width	Surface Area
Strip A			
Strip B			
Strip C			

Data Table 2

	Mass When Dry	Mass When Wet	Mass of Water Absorbed (Difference)
Strip A			
Strip B			
Strip C			

Graph

Create a line graph to relate the **surface area** of the paper to the **water it can absorb.**

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 4: What Problems Exist With The Digestive System?

Article Review

Read **one** of the following articles. Circle the article you have chosen:

Archeology: The Milk Revolution
http://goo.gl/4I9UAc
http://www.nature.com/news/archaeology-the-milk-revolution-1.13471#/lactasemap

Feeding Babies Foods With Peanuts Appears To Prevent Allergies
http://goo.gl/e3DUtA
http://www.npr.org/sections/thesalt/2015/02/23/388450621/feeding-babies-foods-with-peanuts-appears-to-prevent-allergies

Celiac Disease
http://goo.gl/KU8R6Z (Be sure to read all 6 pages)
http://kidshealth.org/teen/diseases_conditions/digestive/celiac.html#

Response Questions

Summarize the article in three sentences. Use your own words.

_____

_____

_____

_____

_____

_____

_____

How is this information useful to its readers?

_____

_____

_____

_____

What is the coolest thing you learned from this article?

How does this article relate to our current unit of study?

What is the most important word in the article?

What are three words that were challenging or new to you? What do they mean?

What is one thing you found confusing, or still have a question about after reading this article?

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 5: How Does Water Get Into A Cell?

Activity 5.2

Purpose

In this lab you will observe onion cells exposed to salt water and distilled water to see how water can move into and out of a cell.

Word Wall Words

Diffusion:_____

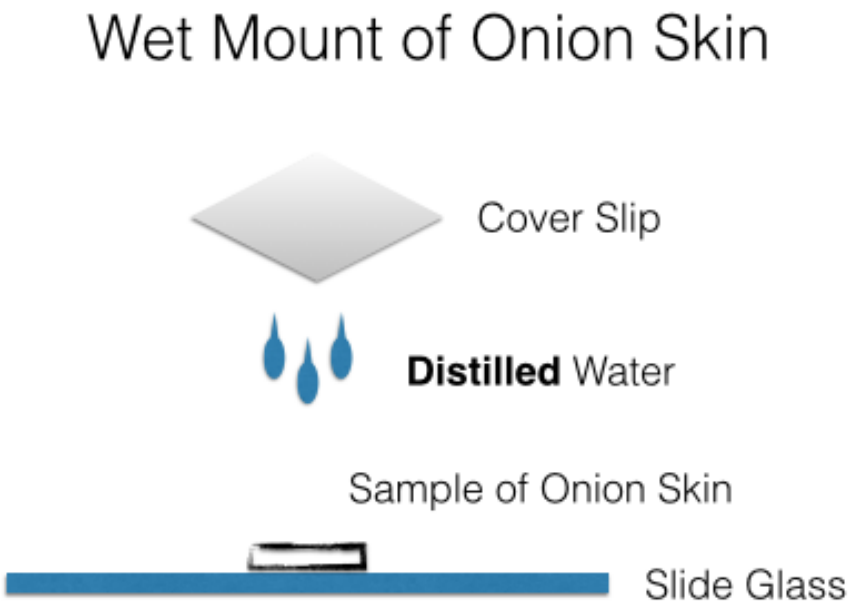
✚ Safety

In order to protect the equipment and get the best lab results, follow the microscope safety instructions given in the "Microscope Insurance" video.

Procedure

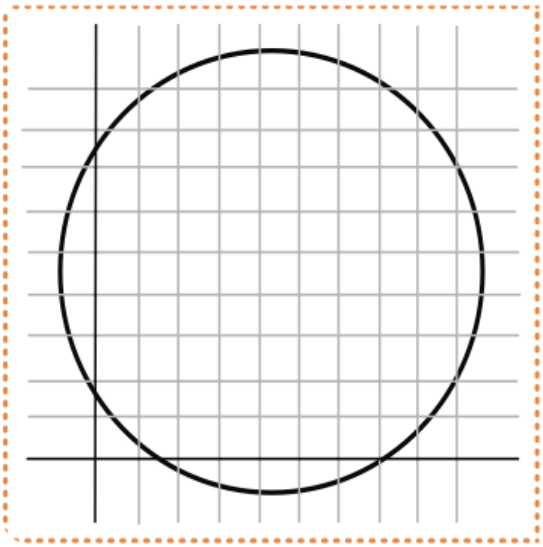
First, prepare a wet mount slide of a sample of onion skin.

- Take a small piece of red onion and carefully peel the red skin off of it..
- Place the skin in the center of a flat glass slide sticky side up.
- Add 2-3 drops of **distilled** water to the slide, placing them directly on top of the tape.
- Hold the cover slip at a 45˚ angle above the letter and drop it onto the slide.



Next, place the slide on the microscope and focus it on the lowest magnification.

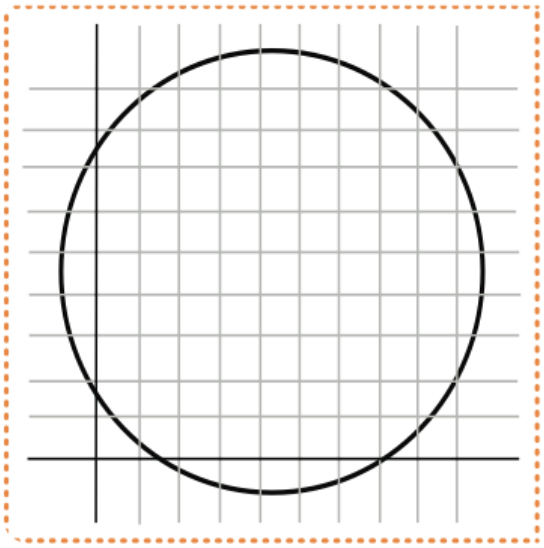
- Place the slide on the stage of the microscope and secure it with the stage clips.
- Set the objective lens to its lowest setting (4x) and look through the ocular lens (10x).
- Move the slide until the e is in the center of the field of view and use the course adjustment knob to bring the image into focus.
- Use the fine adjustment to bring the image into as clear a focus as possible.
- Carefully draw exactly what you see in the circle on the next page:



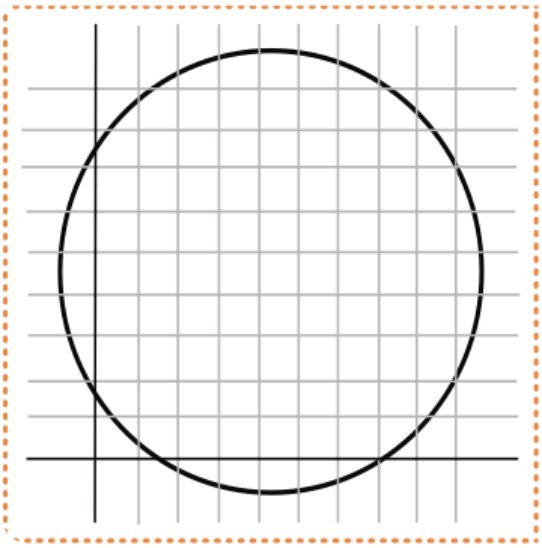
Magnification: _____

Finally, place adjust the microscope to the higher magnifications and record the observations.

- While the subject is in focus, change the objective lenses to 10x and then 40x.
- Use only the fine adjustment knob to adjust the focus.
- Record what your observations by carefully drawing what you see.



Magnification: _____



Magnification: _____

Modeling Score:

Base on the rubric I think that I am at:

_____ **Mastery**: Time and care was taken in producing the model. There is attention to detail. The model strongly reflects observations from the lab.

_____ **Proficient:** There is some attention to detail. The model reflects observations from the lab.

_____ **Developing:** There is barely any attention to detail. The model hardly reflects observations from the lab.

_____ **Beginning:** There is no attention to detail. The model does not reflect observations from the lab.

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 5: How Does Water Get Into A Cell?

Activity 5.3

Purpose

In this lab you will observe onion cells exposed to salt water and distilled water to see how water can move into and out of a cell.

Word Wall Words

Osmosis:_____

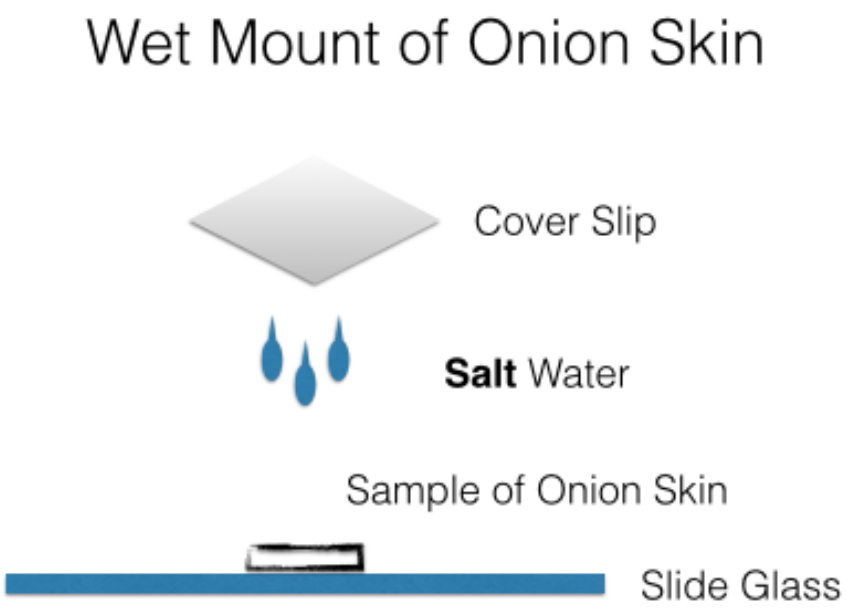
✚ Safety

In order to protect the equipment and get the best lab results, follow the microscope safety instructions given in the "Microscope Insurance" video.

Procedure

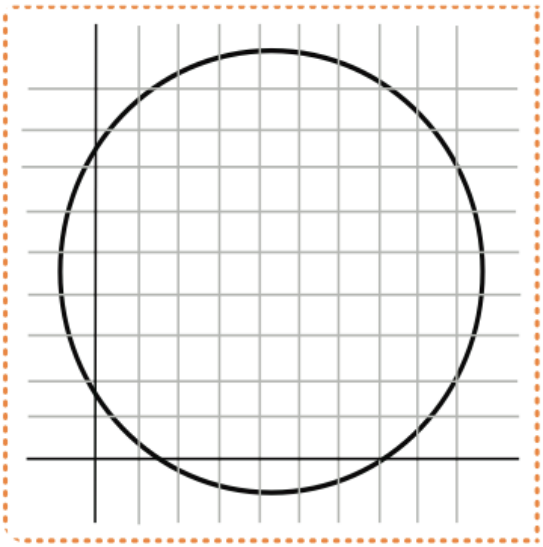
First, prepare a wet mount slide of a sample of onion skin.

- Take a small piece of red onion and carefully peel the red skin off of it..
- Place the skin in the center of a flat glass slide sticky side up.
- Add 2-3 drops of **salt** water to the slide, placing them directly on top of the tape.
- Hold the cover slip at a 45˚ angle above the letter and drop it onto the slide.



Next, place the slide on the microscope and focus it on the lowest magnification.

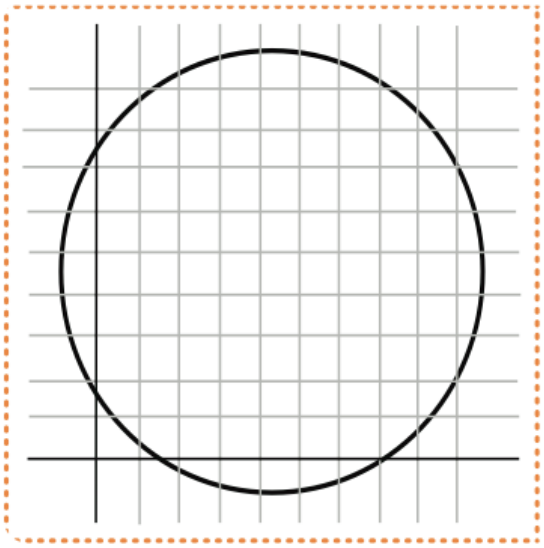
- Place the slide on the stage of the microscope and secure it with the stage clips.
- Set the objective lens to its lowest setting (4x) and look through the ocular lens (10x).
- Move the slide until the e is in the center of the field of view and use the course adjustment knob to bring the image into focus.
- Use the fine adjustment to bring the image into as clear a focus as possible.
- Carefully draw exactly what you see in the circle on the next page:



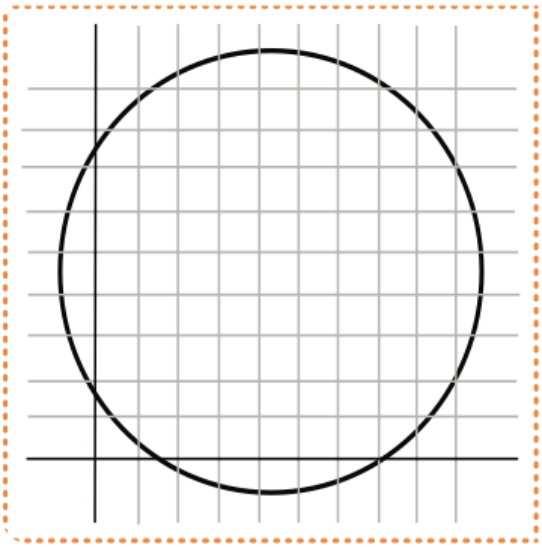
Magnification: _____

Finally, place adjust the microscope to the higher magnifications and record the observations.

- While the subject is in focus, change the objective lenses to 10x and then 40x.
- Use only the fine adjustment knob to adjust the focus.
- Record what your observations by carefully drawing what you see.



Magnification: _____



Magnification: _____

Modeling Score:

Base on the rubric I think that I am at:

_____ **Mastery**: Time and care was taken in producing the model. There is attention to detail. The model strongly reflects observations from the lab.

_____ **Proficient:** There is some attention to detail. The model reflects observations from the lab.

_____ **Developing:** There is barely any attention to detail. The model hardly reflects observations from the lab.

_____ **Beginning:** There is no attention to detail. The model does not reflect observations from the lab.

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 5: How Does Food Enter a Cell?

Article Review

Read one of the following articles:

For Drinking Water in Drought, California Looks Warily to Sea
http://goo.gl/OZiE0q
http://www.nytimes.com/2015/04/12/science/drinking-seawater-looks-ever-more-palatable-to-californians.html?_r=1

Fascinating Pickle Facts
https://goo.gl/aR9Q34
https://www.exploratorium.edu/cooking/pickles/history.html

Ancient "Salt Cured" Man Found in Iranian Mine
http://goo.gl/qUbf3F
http://news.nationalgeographic.com/news/2007/07/070703-salt-man.html

Response Questions

Summarize the article in three sentences. Use your own words.

_____

_____

_____

_____

_____

_____

How is this information useful to its readers?

_____

_____

_____

_____

What is the coolest thing you learned from this article?

_____

_____

_____

_____

How does this article relate to our current unit of study?

_____

_____

_____

_____

What is the most important word in the article?

_____

What are three words that were challenging or new to you? What do they mean?

_____

_____

_____

_____

_____

_____

What is one thing you found confusing, or still have a question about after reading this article?

_____

_____

_____

_____

_____

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 5: How Does Food Move In and Out a Cell?

Activity 5.3

Purpose

You have already seen water diffuse in and out of an onion cell through osmosis. In this investigation you will find out if glucose and starch can too.

Word Wall Words

Permeable:_____

Impermeable:_____

Semi-Permeable:_____

✚ Safety

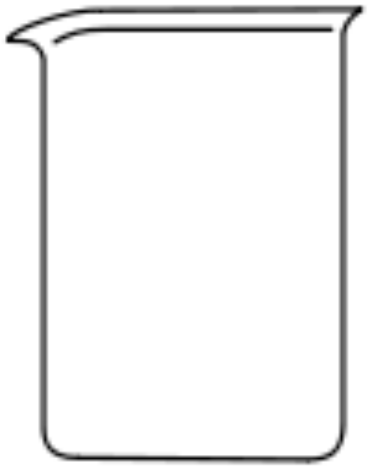
Wear goggles when using Benedict's solution, iodine, and working with the hot water bath. Handle the iodine carefully because it will stain hands and clothes.

Procedure

1.) Pick up a piece of dialysis tubing. Tie off one end **tightly** with dental floss. Through the open end, fill it will ½ starch and ½ glucose. Tie off the open end of the tube **tightly** with dental floss.
2.) Rinse off the cell model with lots of water to get rid of excess starch and glucose.
3.) Write your group's name and class period on a cup with marker. Fill the cup enough to submerge the cell model. Place the cell model in the cup of water and put the cup in the back of the room.

Diagram

Below, draw a diagram that shows the particles after you prepared the cell model on Day 1. Make a key for the following particles and draw them in the appropriate place: **water**, **starch**, and **glucose**.



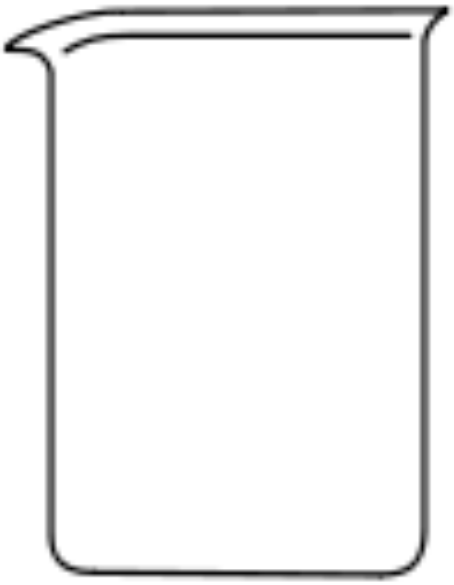
Testing Indicators:

Benedicts solutions tests for _____. If _____ is present the solution turns _____.

Iodine tests for _____. If _____ is present the solution turns _____.

The liquid in the cup tested (positive / negative) for starch and (positive / negative) for glucose.

Diagram
Below, draw a diagram that shows the particles after it sat for 24 hours based on your testing results. Make a key for the following particles and draw them in the appropriate place: **water**, **starch**, and **glucose**.



Process: In a **short paragraph**, explain what happened to the starch and glucose particles in this experiment and why it happened. **Hint: You will need two word wall words to answer this.*

_____

_____

_____

_____

_____

Name _____ Period _____ Date _____

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Lesson 6: What Do Cells Do With Sugar?

Activity 6.1

Purpose

In this lab we will give some yeast cells some sugar and see what effects it has on them.

Word Wall Words

Fermentation:_____

Carbon Dioxide:_____

Procedure

Label two sandwich bags carefully with what will be inside, and your group and period number.
Prepare the two sandwich bags with the following contents:

- One with 30ml of water and a pinch of yeast.
- One with 30ml of water, one packet of sugar and a pinch of yeast.

Remove as much air as possible from the bags and zip them tightly closed.
Leave them in the designated location overnight and then make your observations.

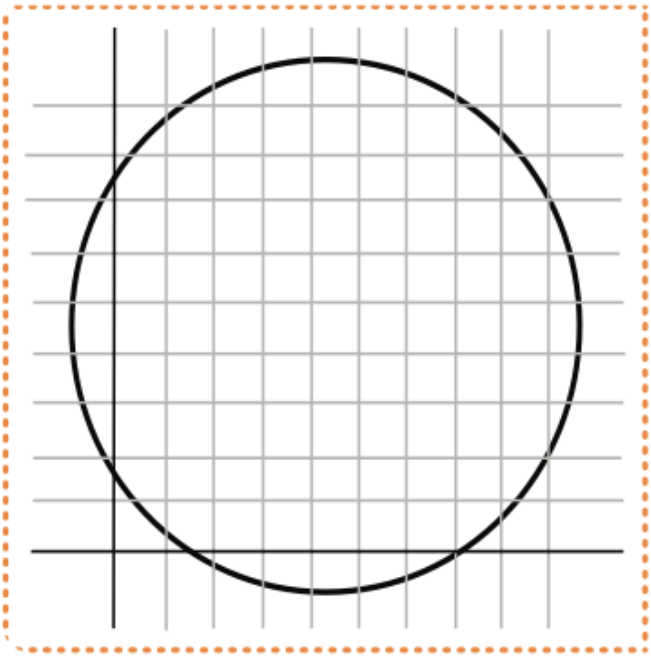
Data Table

Bag	Observations
Yeast and Water	
Yeast, Sugar and Water	

Results Under the Microscope

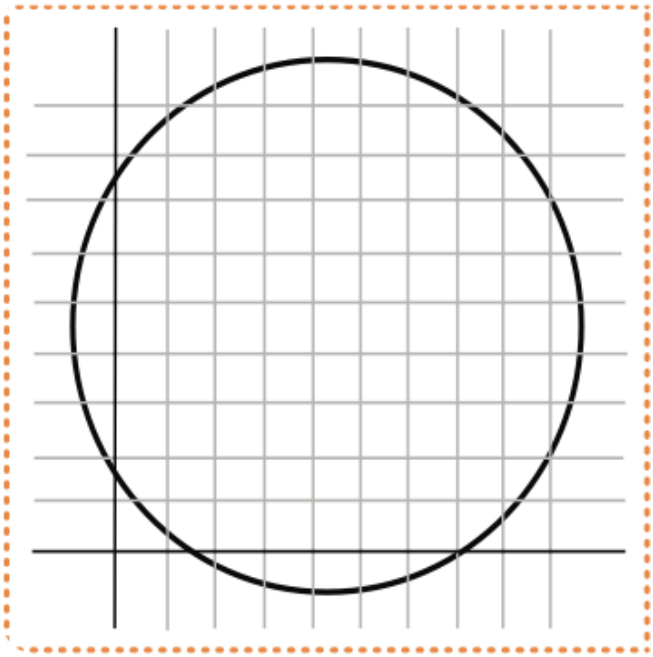
Make a slide of the water from each bag. Choose the magnification that you think best shows the differences between the two slides. Label the magnification and draw each.

Yeast and Water:



Magnification: _____

Yeast, Sugar and Water:



Magnification: _____

Based on what you have observed, what do you think the yeast cells are doing with the sugar?

_____

_____

_____

_____

_____

_____

Name _____ Period _____ Date _____

Lesson 6: What Happens to Nutrients in a Cell?

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

BBB: Flaming Cashews

Purpose

Watch the video located at any one of the following addresses:

http://goo.gl/2qHYw

https://vimeo.com/65666296

http://www.youtube.com/watch?v=XMUpG3OZxiI

Questions

As you watch the video, fill in the data in the data table. Please be sure to include accurate units.

Temperature of the Water (°C)

Trial #	Starting Temperature	1 minute	2 minutes	3 minutes	4 minutes
Trial 1					
Trial 2					
Trial 3					

2. Make a line graph of the 3 trials below. Label the x and y axis. Include units and a key.

Temperature of Water vs. Time

3. Why does the temperature of the water increase?

a. The **thermal** energy of the cashew nut converts to **chemical** energy in the water.
b. The **chemical** energy of the cashew nut converts to **thermal** energy in the water.
c. The **thermal** energy of the cashew nut converts to **kinetic** energy in the water.
d. The **kinetic** energy of the cashew nut converts to **thermal** energy in the water.

4. We learned in chemistry that burning is a chemical reaction. What is the cashew nut reacting with during the experiment?

a. The thermal energy.
b. The water in the beaker.
c. The oxygen in the air.
d. The carbon dioxide in the air.

5. We learned in chemistry that burning is a chemical reaction. What are **two** things released during the chemical reaction demonstrated in the lab? (Circle 2 answers)

a. The thermal energy.
b. The water in the beaker.
c. The oxygen in the air.
d. The carbon dioxide in the air.

6. Answer the question to prepare for class tomorrow. Think about the cashew nut as food you might digest and allow to diffuse into your cells. Use this lab to explain the following:

- Why do you inhale .04% carbon dioxide, but exhale 4.5% carbon dioxide?

- Why do you inhale 21% oxygen, but exhale 17% oxygen?

- How does food become energy for your body?

Name _____ Period _____ Date _____

Lesson 6: How Does Food and Oxygen Get to a Cell?

Brain Building Broadcast: The Circulatory System

Purpose

Watch the video located at any one of the following addresses:

https://goo.gl/VBGFzh

http://vimeo.com/157915961

https://youtu.be/xMN7yLApLD0

Your Progress:

- Mastery
- Proficient
- Developing
- Beginning

Watch the video carefully and be sure that you understand the lesson. Re-watch any part of the video that is unclear to you. Pause the video, to write the definitions of the word wall words. After watching the video carefully, answer the following questions:

Word Wall:

Circulatory System: _____

_____

Blood Vessels: _____

_____

Arteries: _____

_____

Veins: _____

_____

Capillaries: _____

_____

Alveoli: _____

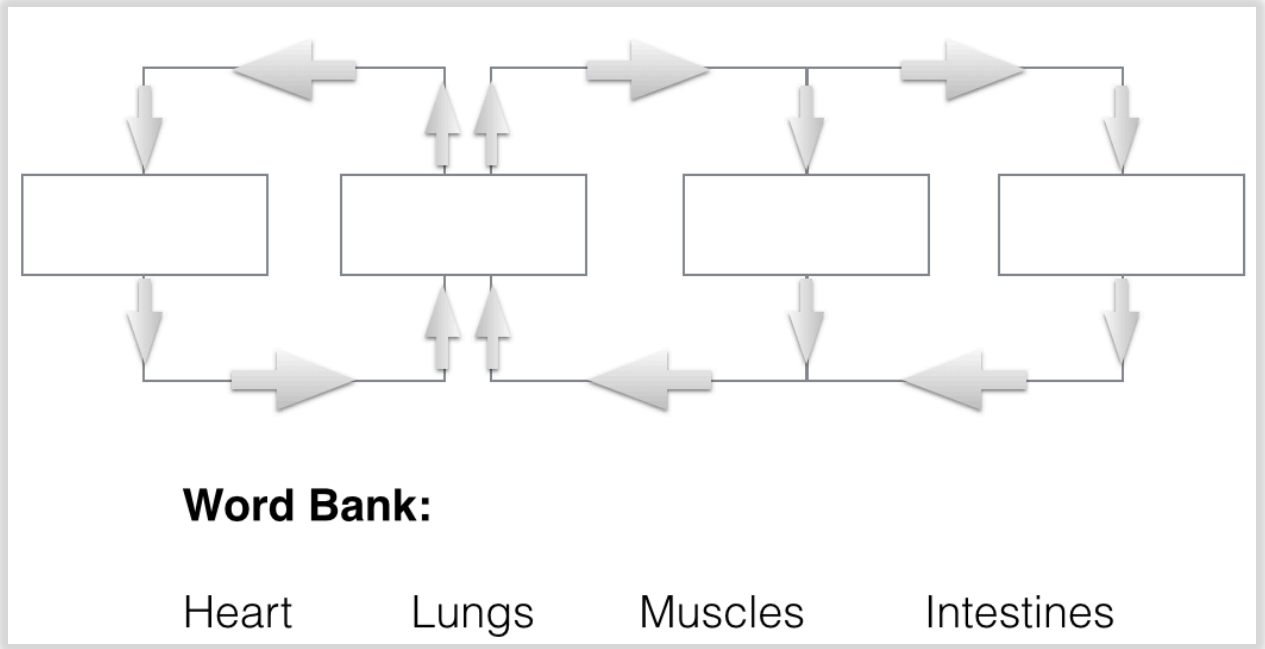
_____

Questions

Mr. Bingaman made several comparisons in the video. Match the ideas on the left to the concepts they represent on the right.

_____ Beach	A. Arteries and Veins
_____ Candy Factory	B. Cells
_____ Expressways	C. Lungs
_____ Main Roads	D. Small Intestines
_____ Side Streets	E. Blood Vessels
_____ Houses	F. Capillaries

Use the word bank to label the diagram below to show the correct path the blood takes through the circulatory system:



Why do the passages that carry the blood start out large, as arteries but then get smaller and smaller?

a. To keep the blood pressure from being too high.
b. To deliver blood to every individual cell.
c. Because the arteries are too big.
d. To make the blood hold more oxygen.

Which best describes the path that blood travels?

a. A circular path from the heart to the lungs, to the muscles and back.
b. Blood goes straight out from the heart in all directions then turns around and goes back.
c. A figure eight path, form the heart, to the lungs, back to the heart, then to the muscles and back.
d. Air travels from the lungs to the heart where it is mixed with the blood and is pumped out to the body.