

2009 MCAS Alternate Assessment  
**WORK DESCRIPTION for Competency Portfolio in  
 High School Science and Technology/Engineering  
 BIOLOGY**

[THE ATTACHED STUDENT WORK SAMPLES WERE TAKEN FROM A PORTFOLIO THAT SCORED *NEEDS IMPROVEMENT*]

<input type="checkbox"/> Chemistry of Life	<input type="checkbox"/> 1.1	<input type="checkbox"/> 1.2	<input type="checkbox"/> 1.3					
<input checked="" type="checkbox"/> Cell Biology	<input checked="" type="checkbox"/> 2.1	<input type="checkbox"/> 2.2	<input type="checkbox"/> 2.3	<input type="checkbox"/> 2.4	<input type="checkbox"/> 2.5	<input type="checkbox"/> 2.6	<input type="checkbox"/> 2.7	<input type="checkbox"/> 2.8
<input type="checkbox"/> Genetics	<input type="checkbox"/> 3.1	<input type="checkbox"/> 3.2	<input type="checkbox"/> 3.3	<input type="checkbox"/> 3.4	<input type="checkbox"/> 3.5	<input type="checkbox"/> 3.6		
<input type="checkbox"/> Anatomy and Physiology	<input type="checkbox"/> 4.1	<input type="checkbox"/> 4.2	<input type="checkbox"/> 4.3	<input type="checkbox"/> 4.4	<input type="checkbox"/> 4.5	<input type="checkbox"/> 4.6	<input type="checkbox"/> 4.7	<input type="checkbox"/> 4.8
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<input type="checkbox"/> Ecology	<input type="checkbox"/> 6.1	<input type="checkbox"/> 6.2	<input type="checkbox"/> 6.3	<input type="checkbox"/> 6.4				

**Assignment:**

The student was asked to complete a lab comparing plant and animal cells. The student was asked to identify the purpose of the lab, to write the procedures for each section of the lab, and to identify (draw and label) organelles in animal and plant cells through observation under a microscope. The student was asked to compare and contrast the plant and animal cells using a Venn Diagram, work with a group of peers to design a plant or animal cell, and identify the organelles of the cell.

Name: Student

Block: E

Accuracy 81%  
Independence 90%

## Comparing Plant and Animal Cells

2.1 Relate cell parts/organelles (plasma membrane, nuclear envelope, nucleus, nucleolus, cytoplasm, mitochondrion, endoplasmic reticulum, Golgi apparatus, lysosome, ribosome, vacuole, cell wall, chloroplast, cytoskeleton, centriole, cilium, flagellum, pseudopod) to their functions. Explain the role of cell membranes as a highly selective barrier (diffusion, osmosis, facilitated diffusion, and active transport).

### Problem:

What similar and different organelles do plant and animal cells contain?

**General Procedure:** In this lab, you will view cells from your cheek (animal cells) and cells from elodea, which is a water plant. Careful observation should reveal similarities and differences between the cells.

### Materials:

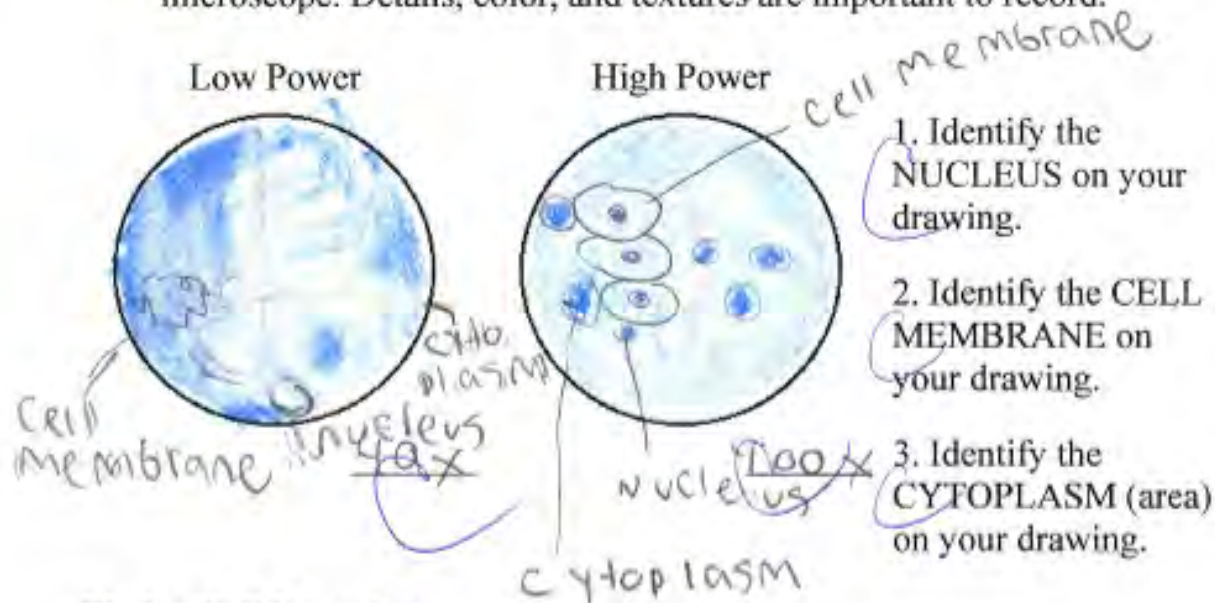
Microscope	Iodine Stain	Window Sticker Glue
Microscope slide	Toothpicks	Clear transparency
Coverslip	Elodea	
Methylene Blue Stain	Color Pencils	

### Cheek Cell Procedure:

1. Gently scrape a toothpick over the inside of your cheek.
2. Scrape toothpick containing cheek cells onto slide.
3. Swirl in a drop of methylene blue to stain the cells.
4. Place coverslip on slide.
5. Place slide under microscope.

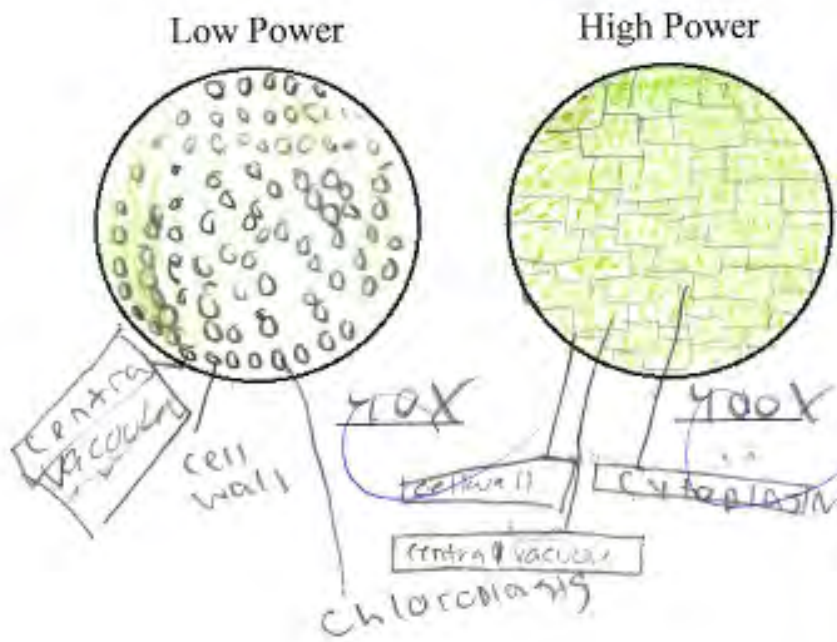
6. You are looking for light colored blobs with dark spots in them. Perfect circles with black outlines are air bubbles. Don't sketch those.

7. Sketch the cheek cell under the high and low power
8. Your sketch is your *data*, it must reflect what you are seeing under the microscope. Details, color, and textures are important to record.



### Elodea Cell Procedure

1. Cut a small piece of elodea leaf and prepare a wet mount.
2. Place on slide
3. Swirl in a drop of iodine stain
4. Place a coverslip on slide
5. Place slide under microscope
6. Sketch Elodea cell under low + high power.
7. When you are looking for cells, you should find a lot more than you found with the cheek cells, and it will resemble a green brick wall. The nucleus of these cells will not be as visible but you should see many chloroplasts within each cell. Plant cells also have a rigid cell wall, outside the cell membrane. The cell wall should also be visible.
8. Your sketch is your *data*, it must reflect what you are seeing under the microscope. Details, color, and textures are important to record.



1. Identify the **CHLOROPLASTS** on your drawing.

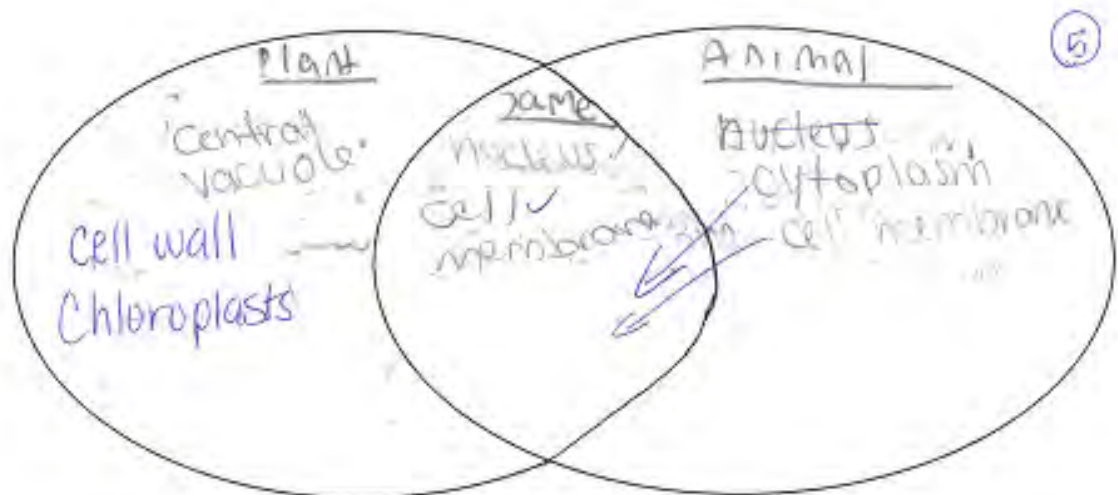
2. Identify the **CELL WALL** on your drawing.

3. Identify the **CYTOPLASM** (area) on your drawing.

4. Identify the **CENTRAL VACUOLE** on your drawing.

### Analysis - Venn Diagram

Create a Venn Diagram of plant and animal cells. Remember, things that they have in common go into the overlapping area, things that are different go in the non-overlapping area.



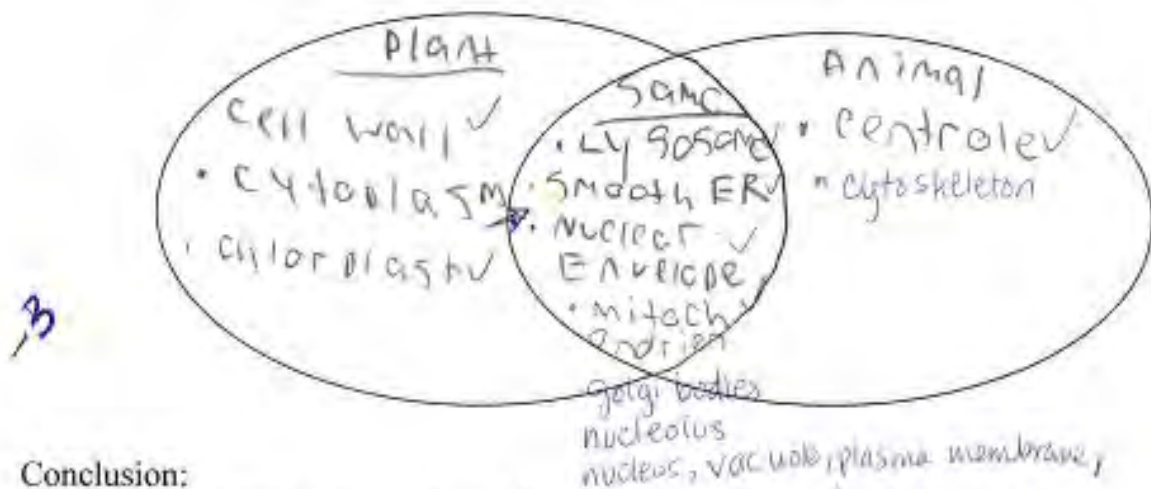
### Creating Models of a Plant and Animal Cell

1. The class will be divided into two groups.
2. One group will design a plant cell using window paint.
3. The other group will design an animal cell using window paint.
4. Use the appropriate list of organelles to create your cell.
5. Divide the list of organelles among your group members.
6. Research the function and actual structure of the organelles.
7. Follow the window paint instruction
8. Each student will be expected to present their cell and the functions of the organelles. 93%

<b>Plant Organelles</b>	<b>Animal Organelles</b>
Plasma membrane	Plasma membrane
Nuclear envelope	Nuclear envelope
Nucleus	Nucleus
Nucleolus	Nucleolus
Cytoplasm	Cytoplasm
Mitochondrion	Mitochondrion
Endoplasmic reticulum	Endoplasmic reticulum
Golgi apparatus	Golgi apparatus
Lysosome	Lysosome
Ribosome	Ribosome
Vacuole	Vacuole
Cell wall	centriole
Chloroplast	cytoskeleton

### Further Analysis

Complete another Venn Diagram using your additional information from the models.



### Conclusion:

plants cells have three more things as animal. plants have cell wall, cytoplasm, chloroplast. They are both but the same they have LYSOSOME, SMOOTH ER, NUCLEUS envelope and mitochondria. Animals only have centrioles, & cytoskeleton.

**Student**

You should have used the list on the other sheet to make your final comparisons. Nice work overall.

*Staspenin*

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**Assignment:**

The student was asked to conduct a lab with a partner. The student was asked to observe living and once-living materials under a microscope, locate and study six different cell parts, and compare cell parts found in plant and animal cells. The student identified in which of the six kingdoms the cell was classified. The student prepared the lab, drew and labeled the cell parts viewed under the microscope, and provided an analysis of the different cells and a conclusion to the lab.

Name: Student

Period: E 11/21/06

### Cell Biology Lab: Organelles

Accuracy 87%  
Independence 90%

Purpose: To observe a variety of living and once living materials under the microscope.  
To study and locate six specific cell parts.  
Compare the cell parts found in plant and animal cells.

Materials:

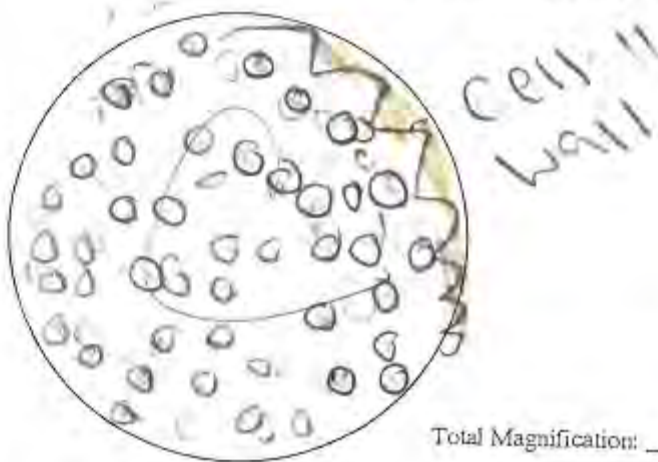
- |            |                   |                             |                |
|------------|-------------------|-----------------------------|----------------|
| microscope | microscope slides | coverslip                   | water          |
| cork       | razor blade       | iodine stain                | toothpicks     |
| dropper    | 50 ml beaker      | reed                        | methylene blue |
| onion      | celery            | frog blood (prepared slide) |                |

Procedure:

#### Part I: Cork Cell- The Cell Wall

Kingdom: Plant

1. Use a razor blade to slice off a very thin section of cork.
2. Prepare a wet mount slide of your cork slice.
3. Examine the cork under low power and high power of your microscope.
4. Use the space below to draw several cork cells. Clearly draw and label the Cell Wall



Total Magnification: High 40x 400

Analysis:

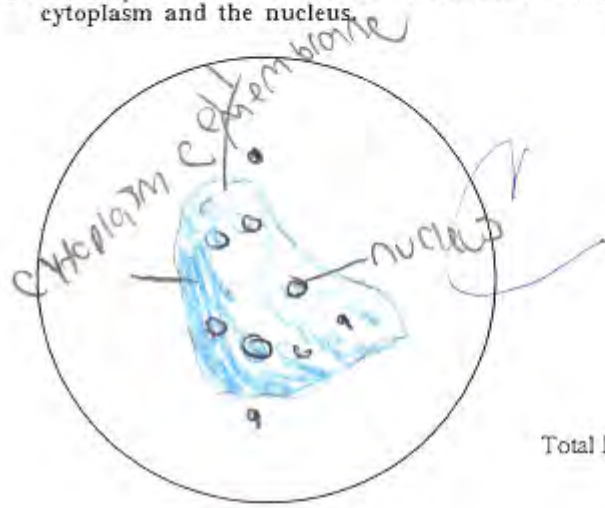
1. Is the cork you used alive? no
2. What are the small units that you are observing called? nucleus and cells
3. Do these unit appear filled or empty? empty
4. What organelle is all that remains of the cork? cell wall

5. Is the cork a plant or animal? plant how do you know this? cell wall  
 6. Is the cork an autotroph or heterotroph? autotroph

Part II: Cheek Cells: Cell Membrane, Cytoplasm, and Nucleus.

Kingdom: animalia

1. Place a drop of methylene blue stain on a microscope slide.
2. Gently scrape the inside of your cheek with the end of a toothpick.
3. Dip the toothpick into the stain on the slide and mix once or twice.
4. Add a coverslip and examine under low and high power of your microscope.
5. Use the space below to draw several cheek cells. Clearly draw and label the cell membrane, cytoplasm and the nucleus.



Total Magnification = high  
40x  
400

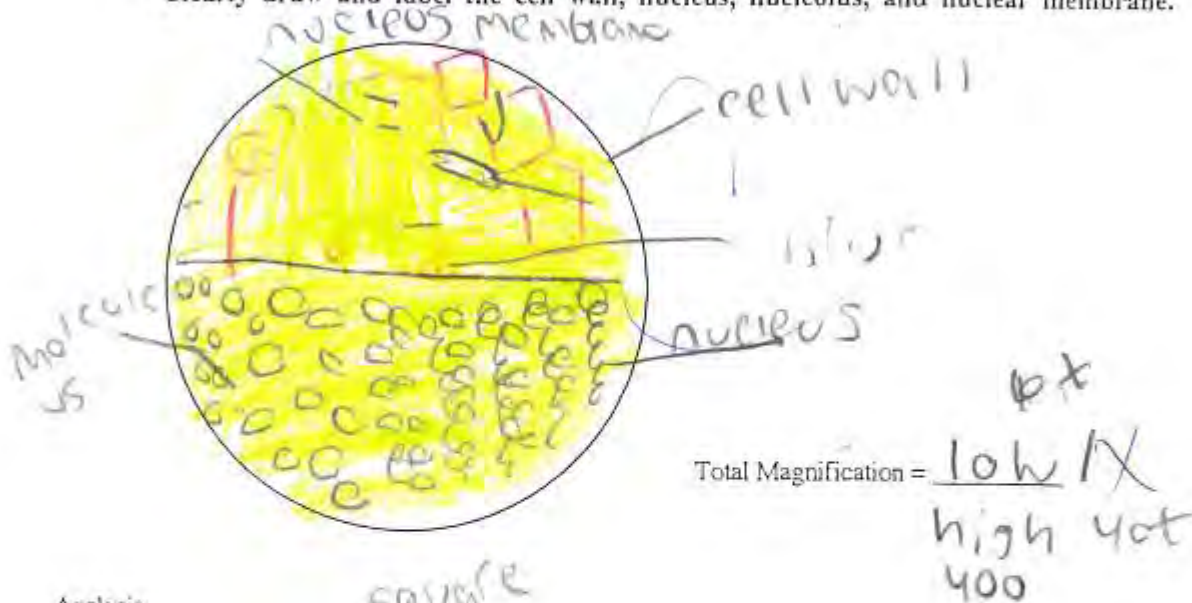
Analysis:

1. Describe the shape of a cheek cell. round, smooth, tiny blue
2. Are cheek cells produced by plants or animals? animal How do you know this?  
because we humans are animals no cell wall or chloroplasts
3. Describe the location of the cell membrane. it is near the wall around the cell
4. What is the function of the cell membrane? the cell membrane allows cells and organelles to interact with their fluid environment
5. What would happen to the cell if it did not have a membrane? it will probably die from membranes the cells would not be able to interact with the environment
6. Describe the location of the cell's cytoplasm? throughout the cell in the middle in the prokaryotic cells.
7. Is the cheek cell autotrophic or heterotrophic? heterotrophic
8. What is the function of a cell's cytoplasm? they control the hold of organelles activities of the organelles
9. Why is stain added to a cheek cell? so you can see it clearly under the microscope.

Part III : Onion Cell: Cell Nucleus and Nucleolus

Kingdom: Plant

1. Use your fingernail or the dissecting needle to peel off a thin layer of the onion.
2. Prepare a wet mount with the iodine solution \* *Be careful when using iodine, it will burn your skin!*
3. Observe the cell under low and high power, the onion cells are arranged like bricks. Inside the cell you can see a round structure, the nucleus. In the nucleus is a small dark dot, this is the nucleolus.  
Clearly draw and label the cell wall, nucleus, nucleolus, and nuclear membrane.



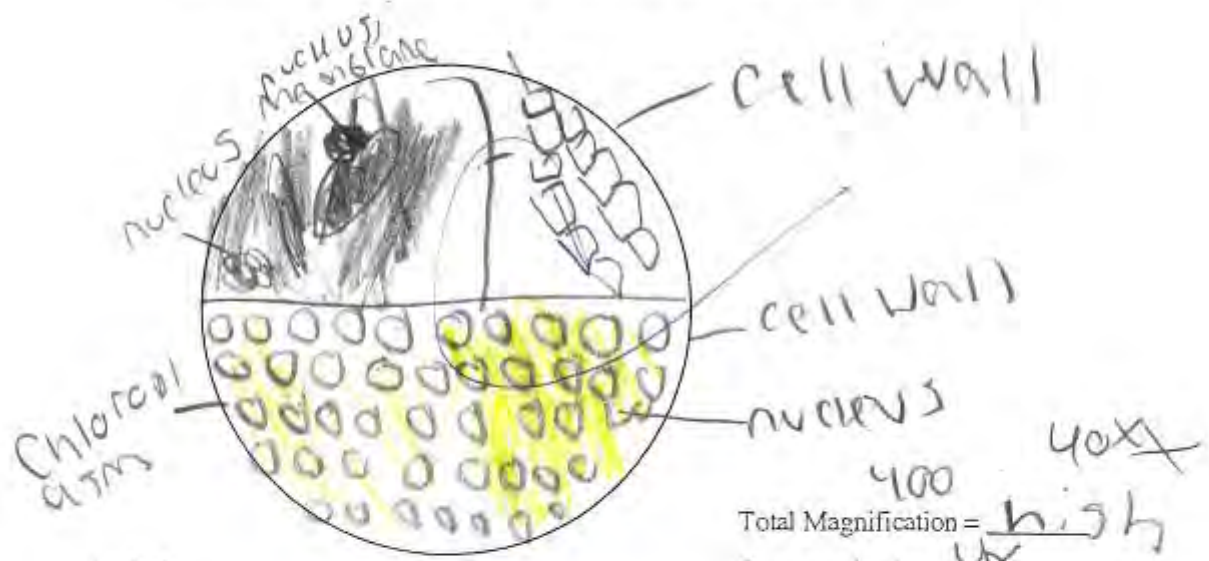
Analysis:

1. Describe the shape of an onion cell? square small circle tiny black
2. Are onion cells produced by plants or animals? plant
3. Is a cell wall present? yes
4. What is the function of the cell's nucleolus? it makes an information  
organ called ribosome
5. What structure separates the contents of the nucleus from the cytoplasm? Nuclear  
envelope membrane
6. Is an onion cell autotrophic or heterotrophic? heterotrophic autotrophic
7. Is an onion multicellular or unicellular? Multicellular
8. Is an onion mobile or non-mobile? non mobile

Part IV : Celery: Chloroplasts

Kingdom: plant

1. Prepare a wet mount of a very thin piece of celery.
2. Observe under low and high power.
3. The small green organelles inside the cell are chloroplasts.
4. Clearly draw label the cell wall and chloroplasts.



Analysis:

1. Describe the shape of a celery cell. circle tiny green square
2. Is a cell wall present yes
3. Describe the color and shape of the chloroplasts. circle tiny green
4. What are the functions of the chloroplasts? an energy organelle
5. Is celery mobile or non-mobile? mobile
6. Is celery autotrophic or heterotrophic? heterotrophic  
autotrophic



Massachusetts Department of  
**ELEMENTARY & SECONDARY  
EDUCATION**

Grade 5 and 8 Spanish

# Pruebas del MCAS de la primavera de 2009

## Informe para padres o tutores

### Carta del director

Estimados padres o tutores:

Este informe muestra los resultados que obtuvo su hijo(a) en las pruebas del MCAS de la primavera de 2009 y explica lo que significan.

Las pruebas del Sistema de evaluación global de Massachusetts (MCAS) son una parte clave de los esfuerzos que realiza el estado en apoyo de la educación de cada niño. Las pruebas se han creado para medir las habilidades y los conocimientos de los alumnos basándose en las normas estatales de contenido académico. También se usan para mostrar el progreso que están realizando las escuelas y los distritos para ayudar a los alumnos a aprender.

Los resultados del MCAS, junto con las notas y el trabajo escolar diario de su hijo(a), se pueden utilizar para evaluar cómo su hijo(a) está prosperando en la escuela. Si tiene preguntas acerca del rendimiento de su hijo(a) en estas pruebas, le recomiendo reunirse con su(s) maestro(s) para discutir con ellos los resultados e identificar las formas en que usted puede cooperar con la escuela para apoyar la educación de su hijo(a). Su participación en la educación de su hijo(a) es de gran importancia para que él o ella tenga éxito en sus estudios.

Atentamente,

Mitchell D. Chester, Ed.D.  
Director de Educación Primaria y Secundaria

### ¿Qué puede hacer usted para ayudar a su hijo(a)?

El apoyo que usted le pueda dar a su hijo(a) es importante ahora y para su educación en el futuro. He aquí algunos consejos para ayudar a su hijo(a) a prepararse para las próximas pruebas del MCAS.

- Hable con el maestro o los maestros de su hijo(a) con regularidad para ver lo que usted puede hacer en casa para apoyar el trabajo que su hijo(a) realiza en la escuela, como, por ejemplo, asegurarse de que haga la tarea.
- Converse con su hijo(a) sobre las asignaturas en las que necesita mejorar. Más tarde, hablen sobre si él o ella cree que ha mejorado. Si la respuesta es no, determine la razón.
- Pida a su hijo(a) que le explique lo que está estudiando. Estas conversaciones le ayudan a seguir su progreso y contribuyen a que su hijo(a) recuerde lo que ha aprendido.
- Ayude a su hijo(a) a practicar las preguntas del MCAS. Revisen juntos las pruebas para que todos se familiaricen con las expectativas.
- Asegúrese de que su hijo(a) descanse lo suficiente, coma bien y llegue a la escuela a tiempo todos los días. Envíe a su hijo(a) a la escuela preparado(a) para aprender.

### ¿Cómo se utilizan los resultados de las pruebas del MCAS?

Los resultados del MCAS se utilizan para los propósitos siguientes:

- Para determinar si las escuelas están ayudando a sus alumnos a satisfacer las normas estatales.
- Para ayudar a los educadores a planear mejoras al programa de estudios y a la instrucción.
- Para determinar si su hijo(a) satisface los requisitos de evaluación estatales para obtener un diploma de secundaria.

### ¿Qué es el MCAS?

El programa MCAS cumple con las disposiciones de la Ley de Reforma Educativa de 1993, la cual especifica que el programa de pruebas debe:

- evaluar a todos los alumnos de las escuelas públicas de Massachusetts, incluso los alumnos con discapacidades y los que tienen conocimientos limitados de inglés;
- medir el rendimiento de acuerdo con las normas de aprendizaje establecidas en el Marco teórico del currículo de Massachusetts; y
- rendir informes sobre el rendimiento individual de los alumnos, las escuelas y los distritos.

El programa MCAS, además, hace responsables a las escuelas y los distritos del progreso anual que realicen para lograr el objetivo de que todos los alumnos sean competentes en lectura y matemáticas antes de 2014, según lo ha establecido la Ley federal Que Ningún Niño Se quede Atrás.

### ¿Quién tiene que participar en las pruebas del MCAS?

Todos los alumnos de 3<sup>er</sup> a 8<sup>o</sup> grado y del 10<sup>o</sup> grado de las escuelas públicas, incluso los alumnos con discapacidades y los que tienen conocimientos limitados de inglés (LEP), tienen que participar en las pruebas del MCAS. Los alumnos de 9<sup>o</sup> grado tienen la opción de realizar una de las cuatro pruebas de Ciencias y Tecnología/Ingeniería de la escuela secundaria.

Los alumnos con discapacidades que no pueden hacer la prueba estándar del MCAS, con facilidades o sin ellas, participan en la Evaluación sustitutiva del MCAS. Las escuelas tienen la opción de evaluar a los alumnos con LEP mediante la prueba de ELA en su primer año de inscripción en las escuelas públicas de Estados Unidos, pero los resultados se usan solamente para efectos informativos.

### ¿Qué asignaturas se examinaron en la primavera de 2009?

Lenguaje inglés (ELA)	3 <sup>er</sup> a 8 <sup>o</sup> y 10 <sup>o</sup> grados
Matemáticas	3 <sup>er</sup> a 8 <sup>o</sup> y 10 <sup>o</sup> grados
Ciencias y Tecnología/Ingeniería (STE)	5 <sup>o</sup> y 8 <sup>o</sup> grados
Biología	Prueba de STE de la secundaria
Química	Prueba de STE de la secundaria
Introducción a la Física	Prueba de STE de la secundaria
Tecnología/ Ingeniería	Prueba de STE de la secundaria

### ¿Qué tipos de preguntas hay en las pruebas del MCAS?

Las pruebas del MCAS usan varios tipos de preguntas para medir el aprendizaje del alumno.

- Preguntas de selección múltiple. Los alumnos escogen la respuesta correcta entre cuatro alternativas y reciben 1 punto por una respuesta correcta y 0 puntos por una respuesta incorrecta.
- Preguntas de desarrollo. Dependiendo de la asignatura que se examina, los alumnos escriben uno o más párrafos o elaboran un cuadro, una tabla, un diagrama, una ilustración o un gráfico. Cada respuesta recibe entre 0 y 4 puntos.
- Preguntas de respuesta corta (únicamente en Matemáticas). Los alumnos dan una respuesta breve, generalmente un número o una declaración corta. Los alumnos reciben 1 punto por una respuesta correcta y 0 puntos por una respuesta incorrecta.

Empezando por la promoción de 2010, los alumnos deben obtener una puntuación no menor de 240 (*Competente*) en las pruebas ordinarias o extraordinarias de ELA y Matemáticas de 10<sup>o</sup> grado, o deben obtener una puntuación entre 220 y 238 en las pruebas ordinarias o extraordinarias y satisfacer los requisitos de un Plan de rendimiento educativo (EPP). Además, deben obtener una puntuación no menor de 220 en una de las pruebas de STE de secundaria. Los alumnos también deben cumplir con los requisitos locales para tener derecho a recibir el diploma de la escuela secundaria.

- Para determinar si su hijo(a) reúne los requisitos para la Beca de John y Abigail Adams basándose en los resultados de sus pruebas de ELA y Matemáticas de 10<sup>o</sup> grado.

Analysis:

1. Describe the shape of frog blood cells. small red circles
2. Is a frog autotrophic or heterotrophic? heterotrophic
3. Is a frog uni-cellular or multi-cellular? multi-cellular
4. Is a frog mobile or non-mobile? mobile
5. Complete the table: indicating with a check which type of cell has what organelle.

	nucleus	cell wall	cytoplasm	nuclear membrane	nucleolus	chloroplasts	cell membrane
animal cell	✓		✓	✓	✓		✓
plant cell	✓	✓	✓	✓	✓	✓	✓

→ 1

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Assignment:

The student was asked to research a genetic disease and asked to write a research paper using his/her findings, guided by specific research questions. The student then presented the information to the class using a visual to address the questions answered by his/her research. The student cited the sources used in the research project.

## Assignment

### **Genetic Disease Research Project**

#### *Introduction*

There are thousands of genetic disorders that affect humans, some of which can have profound effects on a person's quality of life. Genetic disorders are passed from parents to offspring in the genetic code, and in some cases, a person may be a carrier for a disease and pass it to their children without knowing. Because genetic disorders are usually caused by errors or mutations in the genetic code, it is extremely difficult to cure the condition. Usually only the symptoms can be treated. You will explore a genetic disease and present a short presentation to the class about the disease you researched.

*Step 1:* From a list provided by your teacher, choose which disease you will research. Make sure your choice is approved before proceeding.

*Step 2:* Research your disorder. You will be allowed time in class to conduct some research. Use the following questions to guide you in your research:

1. How does a person inherit it?
2. What are the possible genotypes of the parents? If the disease is a chromosomal abnormality, describe the abnormality.
3. How prevalent is the disease in the population (include statistics)?
4. What are the chances of the person with the disease passing the disease to offspring (include possible scenarios)?
5. How is the disease diagnosed?
6. What are the physical symptoms of the disease?
7. What is the life expectancy of someone with the disease?
8. How can the disease be treated?
9. What is everyday life like? What is the quality of life?
10. What limitations does the person have?
11. What are some organizations that can help a family cope with a child's disorder (provide web links)?
12. How possible is it that a cure will be found?

*Step 3:* Write your research paper. You will **not** be provided with time in class. Your paper should address questions 1-12 and any other information you find to be relevant and pertinent.

*Step 4:* Presentation. The purpose is to inform the class about the disease. You may want to use poster board. It should include as much information as possible to address questions 1-12.

#### *Grading:*

Your paper should address questions 1-12 for full credit (50% overall). You should edit your paper so there are no major grammar errors that would distract your readers (10%). At the end of your paper, cite the sources that you used (5%). Your presentation should be neat, well organized, and address as many of the questions as needed (35%).

AS1: Mendelian  
100% Independence

## CYSTIC FIBROSIS

1/11/07

Cystic Fibrosis is a genetic disorder. A child will be born with Cystic Fibrosis, if two Cystic Fibrosis genes are inherited one from the mother and another from the father. A person who has only one Cystic Fibrosis gene is considered a "carrier" of Cystic Fibrosis. A carrier, while considered healthy, has an increased chance on having a child with Cystic Fibrosis. This is called an autosomal recessive inheritance. There are usually 56 total or 23 pairs of chromosomes in each cell in our body. The seven pairs of chromosomes contain a gene called Cystic Fibrosis Transmembrane Regulator (CFTR) gene. Mutations in this gene are the cause of Cystic Fibrosis. Cystic Fibrosis affects males and females.

The risk of having a mutation in the gene for Cystic Fibrosis is relative to your ethnic background. The illness is most common in Caucasians, affecting approximately one in every 3,000 newborn babies. Cystic Fibrosis is less common among African-Americans and rarer in Asian-Americans. About 30,000 people in the United States have Cystic Fibrosis, and another 6 million are carriers of the Cystic Fibrosis gene. Cystic Fibrosis affects over 7,500 people in the United Kingdom. In order to develop Cystic Fibrosis, a person must have inherited two Cystic Fibrosis genes, one from each parent. People who have inherited only one Cystic Fibrosis gene are called Cystic Fibrosis carriers and can pass the Cystic Fibrosis gene to their children, but they do not have the disease themselves. Testing is usually recommended for anyone who has a family member who has the disease or if the partner is a known carrier of Cystic Fibrosis. Also testing is

recommended if they themselves have been affected by the disease. Many men with Cystic Fibrosis have low, or zero, sperm counts and may have difficulty having children. There is no way to prevent Cystic Fibrosis. People with a family history of Cystic Fibrosis can seek genetic counseling to determine their chances of passing this disease on to their children. A blood test can detect most, but not all, of the genetic mutations that cause Cystic Fibrosis. A doctor may suspect Cystic Fibrosis based on a child's symptoms and medical history, a family history of Cystic Fibrosis, and the results of a physical examination.

At birth, a baby's gut may become blocked by extra thick meconium (the black tar-like bowel contents that all babies pass soon after birth) which may require surgery. This blockage may confirm a diagnosis of Cystic Fibrosis. Just over half of the people with Cystic Fibrosis are diagnosed as babies. This is because they are not growing or putting on weight as they should due to the digestive system not breaking down the fat content in food. In newborns, which are too tiny to produce enough sweat for a sweat test, a blood test can be done to confirm the diagnosis. Many states now routinely screen newborns for Cystic Fibrosis. Some symptoms that occur while dealing with Cystic Fibrosis are excessive mucus, shortness of breath, wheezing, difficulty breathing, coughing up blood, and sometimes a collapsed lung. There is no way to predict how long people with Cystic Fibrosis will live. Factors such as when the illness was diagnosed and how severe the condition is, determines on how long a person may live. In 2005 the survival age was 36.5. This was an increase from 32 years in the year 2000. New research and medicines are being discovered each year and more people with Cystic Fibrosis are living longer lives. There currently is no cure for Cystic Fibrosis. The best treatment for Cystic Fibrosis varies from person to person. There is a lot of research happening in order to find a cure for Cystic Fibrosis through

gene therapy. Since Cystic Fibrosis affects the lungs of most patients, a large portion of the medical treatment is to clear mucus from the airways by using different techniques such as chest physical therapy, exercise, medication and antibiotics. There are also several medications that treat lung infections and can help patients feel better.

Every day may not be the same for all people with Cystic Fibrosis. People with Cystic Fibrosis have to take a pancreatic enzyme supplement with every meal and most snacks. Even babies have to take these enzymes. Patients must take multi-vitamins, do some form of airway clearing at least once a day, and sometimes up to four or more times a day. They must take other liquid medications. Children with Cystic Fibrosis are allowed to attend school and should be able to take part in school activities such as sports and other extracurricular activities. Children with Cystic Fibrosis may cough a lot as well as have to take many trips to the bathroom. They also have to watch what they eat and maintain good nutrition. Parents should watch how much sugar they use. As children with Cystic Fibrosis age they run the risk of developing diabetes. Cystic Fibrosis patients should also try to avoid spreading germs and, of course, never start smoking. Doctors and scientists are still working on finding a cure for Cystic Fibrosis. They are not sure when a cure will be found. However researchers are working hard to find new therapies and medicines to help many children to live long and full lives. Many people with Cystic Fibrosis are now living into adulthood. The Cystic Fibrosis Foundations is working on support research and hopefully finding a cure for the many families who are affected by Cystic Fibrosis.

Here are some websites that are organizations for helping families cope with Cystic Fibrosis:

[info@cff.org](mailto:info@cff.org), <http://www.cysticfibrosis.com> and [www.childrenshospital.org](http://www.childrenshospital.org)