**WHO KNOWS WHO GROWS...**

**“MUFFIN STUFFIN”?”**

<table>
<thead>
<tr>
<th>Recommended Grade Levels</th>
<th>Average Time to Complete</th>
<th>Thank you to the following educators for developing specific components of this lesson plan.</th>
</tr>
</thead>
</table>
| Elementary               | Anticipatory Set & Facilitation: 90 minutes Conclusion/Assessment Options: 45 minutes | ▪ Joanna Krogstad; F.C.S. Educator; Manhattan High School  
▪ Printing of the book, **Who Knows Who Grows...“Muffin Stuffin”?**, was funded by The Montana Wheat and Barley Committee  
▪ Montana Department of Agriculture, Ag in the Classroom Project, [www.Agr.mt.gov](http://www.Agr.mt.gov) |

**NATIONAL STANDARDS**

<table>
<thead>
<tr>
<th>Common Core K-5 English/Language Arts Standards:</th>
<th>LESSON PLAN OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchor for Reading 1: Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.</td>
<td>▪ Students will be introduced to agricultural commodities which are grown in Montana and other states.</td>
</tr>
<tr>
<td>Anchor for Reading 2: Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.</td>
<td>▪ Students will prepare muffins made from primarily Montana agricultural products.</td>
</tr>
<tr>
<td>Anchor for Reading 10: Read and comprehend complex literary and informational texts independently and proficiently.</td>
<td>▪ Students will become familiarized with basic measurement equivalents used in culinary arts. (extension activity)</td>
</tr>
</tbody>
</table>

**National Family and Consumer Sciences Standards:**

1.2.4 Demonstrate teamwork skills in school, community and workplace settings.
8.1.1 Explain the roles, duties, and functions of individuals engaged in food production and services careers.

**TEACHER NOTES...**

This lesson is designed to be taught by either Early Childhood Education or Culinary Arts secondary students.

Things to consider...

1. Prior to the lesson the high school students spent one class period in the library gathering ten items of interest about each of the ingredients in the recipe. The goal is for them to share their information with the elementary students as they rotated between tables during the lab portion of this lesson.
2. Check to make sure there are no elementary students with allergies.
3. Ask elementary teacher to provide a list of student names for name tags.
4. There are many items for older students to prepare prior to teaching lesson.
5. Make one batch of muffins prior to teaching the lesson and have it ready to serve.
6. Students should rehearse the lesson several times prior to teaching it to the elementary students.
7. Copies of **Who Knows Who Grows...“Muffin Stuffin”?** books for each student can be preordered.
8. Montana Ag in the Classroom pencils for each student can also be preordered.
9. Please allow plenty of time for shipping.
## MATERIALS

<table>
<thead>
<tr>
<th>MATERIALS PROVIDED WITHIN THIS LESSON PLAN</th>
<th>RESOURCES AVAILABLE IN A SEPARATE DOWNLOAD AT …</th>
<th>MATERIALS THAT MAY NEED TO BE ACQUIRED SEPARATELY</th>
</tr>
</thead>
<tbody>
<tr>
<td>KWL Chart</td>
<td>Farmer Style (Gangnam Style Parody) <a href="https://youtu.be/LX153eYcVrY">https://youtu.be/LX153eYcVrY</a></td>
<td>sugar</td>
</tr>
<tr>
<td>Muffin Name Tag Templates</td>
<td>Approximate time: minutes 3:47</td>
<td>oatmeal</td>
</tr>
<tr>
<td>What I Know Cards</td>
<td></td>
<td>eggs</td>
</tr>
<tr>
<td>What I Wonder Cards</td>
<td></td>
<td>oil vanilla</td>
</tr>
<tr>
<td>What I Learned Cards</td>
<td></td>
<td>baking soda</td>
</tr>
<tr>
<td>Lab Identification Posters</td>
<td></td>
<td>raisins</td>
</tr>
<tr>
<td>Lab Table Tents</td>
<td></td>
<td>muffin tin</td>
</tr>
<tr>
<td>Muffin Stuffin Recipe Handout</td>
<td></td>
<td>cooking spray or paper baking cups</td>
</tr>
<tr>
<td>Muffin Stuffin &amp; Measuring! Measurement Equivalent Cards</td>
<td></td>
<td>measuring cups</td>
</tr>
<tr>
<td></td>
<td></td>
<td>measuring spoons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>aprons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mixing bowls</td>
</tr>
<tr>
<td></td>
<td></td>
<td>large spoons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>napkins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>plastic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>poster paper or white board</td>
</tr>
<tr>
<td></td>
<td></td>
<td>timer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hard Copies of Who Knows Who Grows…&quot;Muffin Stuffin“? may be ordered from… Lorri Brenneman MT Depart. of Ag Phone: (406)437-1906 E-mail: <a href="mailto:LBrenneman@mt.gov">LBrenneman@mt.gov</a></td>
</tr>
</tbody>
</table>

## PURPOSE

The purpose of this lesson is to introduce elementary students to Montana agricultural resources and allow them to create a food from these resources. They will be exposed to measurement equivalents as they pertain to the culinary classroom. Students will use a KWL chart to assist them in understanding what they know, what they wonder about, and finally what they learned from the lesson.

## PROCESS

### ANTICIPATORY SET

**KWL**

**Approximate time:** 10 minutes

*note: If this activity is too advanced for K/1 students they students could draw pictures on their cards rather than write*

1. Re-Create the **KWL chart** on the white board or poster paper. (pg.5)

2. Distribute one **What I Know** note card and a writing utensil to each student. (pg. 8)

3. Show students, Who Knows Who Grows…"Muffin Stuffin“? book cover and give a brief description of what the book is about. The Flipsnack URL provided in the materials section can also be used to project the story on a projector if no books are available.

4. Ask students to write one thing they know about farming practices in Montana on their **What I Know** note card. Add each student’s card to the **What I Know** column of the KWL chart.

5. Read the answers out loud and tell the students more time will be spent on the chart as the lesson is completed.
**VOCABULARY REINFORCEMENT ACTIVITY**

**Approximate time:** 10 minutes  
Vocabulary Reinforcement Activity:

1. Divide the class into two teams with an equal amount of students on each team.  
2. Provide each student with a Vocabulary Activity Words sheet. (pg. 6)  
3. Team 1 selects one person to stand with their back to the white board.  
4. Team 2 selects one person to write a vocabulary word on the board behind the member from team 1.  
5. Team 1 gives the definition followed by clues and hints to the member of their team at the board to help verify the word.  
6. Once the student gets the word right, it is the other teams turn to repeat this process.

*This process is repeated by each team until all of the words have been used.*

**RECOMMENDED FACILITATION**

1. Each student will receive a second note card, What I Wonder. (pg. 9)  
2. Tell students that the second note card, What I Wonder, is to write down questions or ideas that come to mind while the story is being read.  
3. Begin reading the Who Knows Who Grows...“Muffin Stuffin”? stopping periodically to allow students to write down questions or ideas. The FlipSnack digital version can also be used as referenced in the ‘Resources to Download Separately’ section of this lesson.  
4. When you have completed the book, ask the students to post their What I Wonder cards on the What I Wonder column of the KWL Chart.
5. Give each student the final note card, What I Learned, (pg. 10) and ask them to write one thing they learned from Who Knows Who Grows...“Muffin Stuffin”? and have them post those answers on the What I Learned column of the KWL Chart.  
6. Tell students that we will go over the KWL chart to wrap up our time together.

**CONCLUSION**

1. Compile all materials necessary to create muffins prior to class.  
2. Enough muffins should be prebaked and packaged so that each student receives a muffin upon completion of the lesson.  
3. Place Lab Identification Posters (pgs. 12-17) or Table Tents (pgs.18-23) on each station, (there are six stations total, one for each main ingredient)  
4. Distribute recipe ingredients, measuring spoons, and measuring cups to each assigned station.  
5. Assign 1-2 peer helpers to each station and one peer helper to rotate with each group of students from station to station.  
6. Break students into small groups of 2-4 students per group.  
7. Students need to wash hands prior to beginning the lab.  
8. Each group will need two bowls, one for dry ingredients and one for wet ingredients, a copy of the Muffin Stuffin Recipe, (pg.7) and a mixing spoon.  
9. Groups will rotate between all six stations to receive the needed ingredients. A timer will be set and only two minutes will be allowed per station.  
10. When students have rotated between all six stations they will pour their muffin mix into muffin tins lined with muffin cups.  
11. While muffins cook gather students and view the following video...

- Farmer Style (Gangnam Style Parody), [https://youtu.be/LX153eYcVrY](https://youtu.be/LX153eYcVrY) , **Approximate time:** 3:47 minutes
**ASSESSMENT**

**KWL Review**

**Approximate time:** 10 minutes

- Discuss the **What I Learned** column of the KWL Chart and see if any of the questions have been answered while reading the text. Lead a class discussion from the chart and clear up any unanswered questions.
- As students leave the classroom give the teacher enough muffins and napkins for each student to enjoy.

<table>
<thead>
<tr>
<th>EXTENSION ACTIVITY</th>
</tr>
</thead>
</table>

**Muffin Stuffin & Measuring**

- Playing a game is more fun than memorizing a long list of measurements. Muffin Stuffin & Measuring helps you learn important recipe measurement equivalents.
- The deck contains 20 pairs and a Muffin Stuffin & Measuring! card. Pairs are the recipe measurement equivalents. For example:
  
  3 tsp. = 1 Tbsp. or 16 Tbsp. = 1 cup, etc...
- The object of the game is to find and discard equivalent pairs. Muffin Stuffin Measuring! is played like “Old Maid”. Two to six may play.

**Preparation:**

- Copy pages 26-29 on cardstock. Print page 30 on the back of each set of cards. Run enough copies for each group to have a complete set. Note: Each set could be printed on different color card stock to make it easy to identify cards within a specific set.
- Copy enough **Measurement and Equivalent** cards, (pg. 24) for each student.

**How to Play:**

1. Shuffle and deal all cards.
2. Players look at their cards. They discard equivalent pairs from their hand to center of the table, face up. These pairs are out of the game.
3. The dealer now draws a card from the player on the right. If he can make a pair with a card from his hand, he discards the pair. If not, he keeps the card.
4. The next player draws and the game continues in this manner until all pairs are matched.
5. If an incorrect pair is discarded at any time, the player must return that pair to his hand and miss his next turn.
6. The first player to discard all his cards is the winner.
7. Player left holding the Muffin Stuffin & Measuring! card is the loser.

*Note To Teacher: This game may be simplified by eliminating some pairs from the deck.*
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>List things that you already are aware of regarding farming or agriculture.</td>
<td>In this column write things that you have questions or wonder about from the reading and list them here.</td>
<td>In this column, list new facts or concepts that you learned from the reading.</td>
<td></td>
</tr>
</tbody>
</table>
### Vocabulary Activity Words

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>The science or occupation of cultivating the soil, producing crops, and raising livestock</td>
</tr>
<tr>
<td>Crush</td>
<td>To break into fine pieces by pressing, pounding, or grinding</td>
</tr>
<tr>
<td>Diffused</td>
<td>Poured or spread out: not concentrated</td>
</tr>
<tr>
<td>Elevator</td>
<td>A building for elevating, storing, unloading, and sometimes grinding grain</td>
</tr>
<tr>
<td>Evaporate</td>
<td>To remove some of the water from (as by heating)</td>
</tr>
<tr>
<td>Extract</td>
<td>To get out by pressing, distilling, or by a chemical process</td>
</tr>
<tr>
<td>Farmer</td>
<td>A person who cultivates land or crops or raises animals</td>
</tr>
<tr>
<td>Harvest</td>
<td>The gathering of a crop, or the quantity of a crop gathered in a single season</td>
</tr>
<tr>
<td>Impurities</td>
<td>Matter mixed in with something else, usually not wanted in the mixture</td>
</tr>
<tr>
<td>Ingredients</td>
<td>One of the substances that make up a mixture</td>
</tr>
<tr>
<td>Matter</td>
<td>The substance of which a physical object is composed</td>
</tr>
<tr>
<td>Particles</td>
<td>A very small quantity or piece</td>
</tr>
<tr>
<td>Partnership</td>
<td>One associated in action with another</td>
</tr>
<tr>
<td>Processing</td>
<td>The act of changing or preparing by special treatment</td>
</tr>
<tr>
<td>Processing Plant</td>
<td>Building or location where processing occurs</td>
</tr>
<tr>
<td>Processor</td>
<td>A person or machine that processes</td>
</tr>
<tr>
<td>Screens</td>
<td>A network of wire set in a frame and used for separating different-sized parts</td>
</tr>
<tr>
<td>Steamed</td>
<td>To expose to the action of steam (as for softening or cooking)</td>
</tr>
<tr>
<td>Sugar Crystals</td>
<td>Fine particles of sugar which have been processed and evaporated</td>
</tr>
</tbody>
</table>
1. Preheat your oven to 400°.

2. Grease your muffin tins or line the muffin tins with paper baking cups.

3. In your dry ingredients bowl, mix:
   - 1 ¾ c. whole wheat flour
   - 1 c. brown sugar
   - ½ c. oatmeal

4. In your wet ingredients bowl, mix:
   - 1 c. milk
   - 1 egg
   - ½ c. oil

5. Combine the wet ingredients with the dry ingredients.

6. Add:
   - ½ c. raisins (optional)
   - ¼ tsp. vanilla
   - 1 tsp. baking soda

7. Fill the muffin tins 2/3 full.

8. Bake at 400 ° for 15-17 minutes.

- **flour** – Montana farmers grow wheat. The flour comes from the seeds of the wheat plant. The seeds, or *wheat berries*, are crushed many times into wheat.
- **brown sugar** – Montana farmers grow sugar beets. The sugar beets are washed, sliced, and processed into brown and white sugars.
- **oatmeal** – Montana farmers grow oats. The oats are processed into oatmeal.
- **milk** – Montana has many dairy cows which produce milk.
- **eggs** – Montana farmers raise chickens and gather their eggs for market.
- **oil** – Montana farmers grow canola, sunflower, and other oil seed crops that make cooking oil.
- **raisins** – Raisins are dried grapes. California grows most of the grapes in the U.S., but Washington and Oregon also grow grapes.
- **vanilla** – Vanilla is made from vanilla beans, a crop of Mexico and Central America.
- **baking soda** – Baking soda is mined from the earth, much of it from an area near Green River, Wyoming.
Directions: Print one What I Know muffin note card for each student. Cut each card out. Each set of KWL cards could be printed on different colored paper to indicate which column of the KWL Chart it belongs in.
What I Wonder

The KWL Chart it belongs in:

*Each set of KWL cards could be printed on different colored paper to indicate which column of

Directions: Print one What I Wonder muffin note card for each student.
What I Learned

*Each set of KWL cards could be printed on different colored paper to indicate which column of the KWL Chart it belongs in.
Directions: Print muffin name tags on card stock and cut out. Hole punch the top of each muffin and string through hole. Write each elementary student’s name on a muffin. Muffins could be printed in six different colors to indicate which lab group students are preassigned to.
Flour

Montana farmers grow wheat. The flour comes from the seeds of the wheat plant. The seeds, or wheat berries, are crushed many times into wheat.
Montana farmers grow sugar beets. The sugar beets are washed, sliced, and processed into brown and white sugars.
Oatmeal

Montana farmers grow oats. The oats are processed into oatmeal.
Montana has many dairy cows which produce milk.
Montana farmers raise chickens and gather their eggs for market.
Montana farmers grow canola, sunflower, and other oil seed crops that make cooking oil.
Montana farmers grow wheat. The flour comes from the seeds of the wheat plant. The seeds, or **wheat berries**, are crushed many times into wheat.
Brown Sugar

Montana farmers grow sugar beets. The sugar beets are washed, sliced, and processed into brown and white sugars.
Montana farmers grow oats. The oats are processed into oatmeal.
Milk

Montana has many dairy cows which produce milk.
Eggs

Montana farmers raise chickens and gather their eggs for market.
Oil
Montana farmers grow canola, sunflower, and other oil seed crops that make cooking oil.
<table>
<thead>
<tr>
<th>Measurement and Equivalents</th>
<th>Measurement and Equivalents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8 tsp. or less = a pinch</td>
<td>1/8 tsp. or less = a pinch</td>
</tr>
<tr>
<td>1/16 tsp. = a dash</td>
<td>1/16 tsp. = a dash</td>
</tr>
<tr>
<td>1 Tbsp. = 3 tsp.</td>
<td>1 Tbsp. = 3 tsp.</td>
</tr>
<tr>
<td>1/8 c. = 2 Tbsp.</td>
<td>1/8 c. = 2 Tbsp.</td>
</tr>
<tr>
<td>1/6 c. = 2 Tbsp. + 2 tsp.</td>
<td>1/6 c. = 2 Tbsp. + 2 tsp.</td>
</tr>
<tr>
<td>1/4 c. = 4 Tbsp.</td>
<td>1/4 c. = 4 Tbsp.</td>
</tr>
<tr>
<td>1/3 c. = 5 Tbsp. + 1 tsp.</td>
<td>1/3 c. = 5 Tbsp. + 1 tsp.</td>
</tr>
<tr>
<td>3/8 c. = 6 Tbsp.</td>
<td>3/8 c. = 6 Tbsp.</td>
</tr>
<tr>
<td>1/2 c. = 8 Tbsp.</td>
<td>1/2 c. = 8 Tbsp.</td>
</tr>
<tr>
<td>3/4 c. = 12 Tbsp.</td>
<td>3/4 c. = 12 Tbsp.</td>
</tr>
<tr>
<td>1 c. = 16 Tbsp.</td>
<td>1 c. = 16 Tbsp.</td>
</tr>
<tr>
<td>Cup = c.</td>
<td>Cup = c.</td>
</tr>
<tr>
<td>Tablespoon = Tbsp.</td>
<td>Tablespoon = Tbsp.</td>
</tr>
<tr>
<td>teaspoon = tsp.</td>
<td>teaspoon = tsp.</td>
</tr>
</tbody>
</table>
**Instructions for Muffin Stuffin & Measuring!**

Playing a game is more fun than memorizing a long list of measurements. Muffin Stuffin & Measuring helps you learn important recipe measurement equivalents. The deck contains 20 pairs and a Muffin Stuffin & Measuring! card. Pairs are the recipe measurement equivalents. For example:

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<tr>
<th>3 tsp.</th>
<th>1 Tbsp.</th>
<th>16 Tbsp.</th>
<th>1 cup</th>
</tr>
</thead>
</table>

The object of the game is to find and discard equivalent pairs. Muffin Stuffin Measuring! is played like “Old Maid.” Two to six players may participate.

### How To Play

1. Shuffle and deal all cards.
2. Players look at their cards. They discard pairs from their hand to center of the table, face up these pairs are out of the game.
3. The dealer now draws a card from the player on his right. If he can make a pair with a card from his hand, he discards the pair. If not, he keeps the card. The next player draws and the game continues in this manner until all pairs are matched. If an incorrect pair is discarded at any time, the player must return that pair to his hand and miss his next turn. The first player to discard all his cards is the winner. Player left holding the Muffin Stuffin & Measuring! card is the loser.

**Note To Teacher:**
This game may be simplified by eliminating some pairs from the deck.
1/8 tsp or less
a pinch
a dash
1/16 tsp
1 Tbsp
3 tsp
1/8 c
2 Tbps
1/6 Tsp + 2 tsp

2 Tbsp

1/4 c

4 Tbsp

1/3 c + 1 tsp

5 Tbsp

3/8 c

6 Tbsp
table-
spoon

Tbsp

tea-
spoon

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