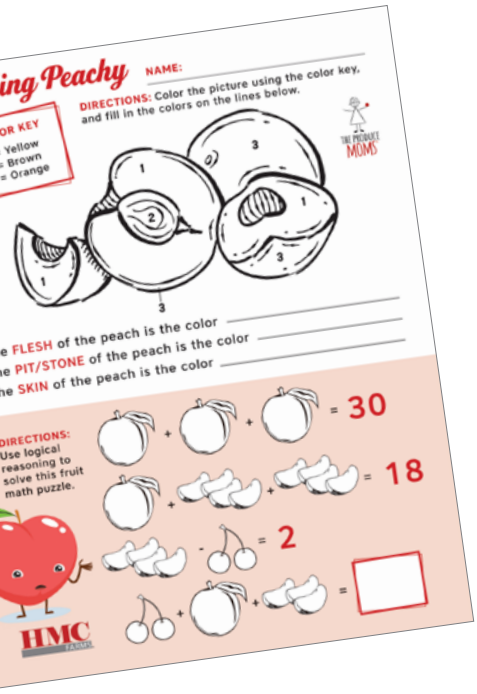
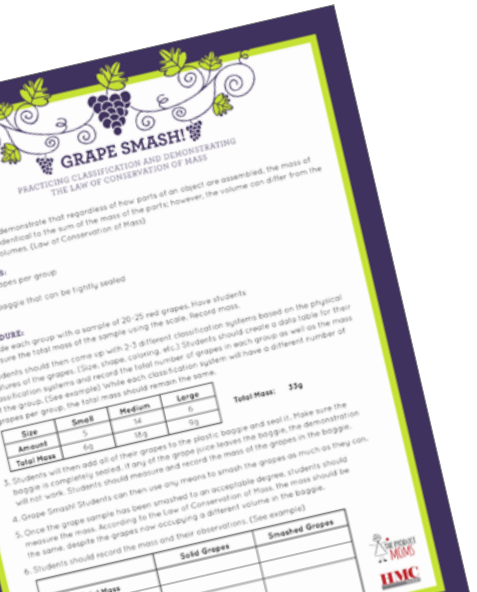


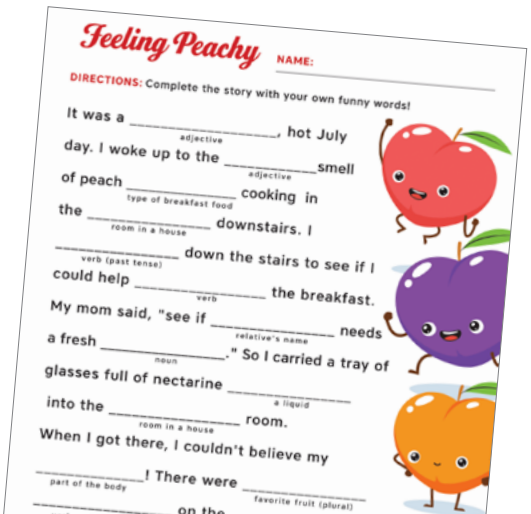
THE PRODUCE MOMS®

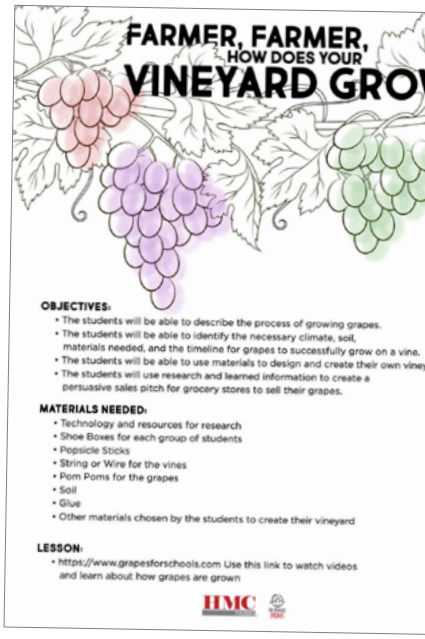
HMC FARMS®

ACTIVITY BOOK

STEM, EXPERIMENTS AND FUN







The HMC Farms mission is to increase consumption of the fruit they grow. HMC has spent generations adapting their growing and handling practices to reliably provide the simple pleasure of great tasting fruit.

Both HMC Farms and The Produce Moms believe that children's eating habits develop early in life and will carry on through their adult years. By providing kids with healthy food options that they actually enjoy eating now, we can help them create healthy eating habits that will last a lifetime.

At home, at school, or wherever kids are learning, today's students are preparing for tomorrow's world. Whether they're future farmers or not, these projects, lesson plans and activity sheets are designed to help familiarize them with modern agriculture and the fruit itself. It really is designed to make learning fun!

In partnership, HMC Farms and The Produce Moms put together an Ebook full of fun science experiments, lesson plans and activity sheets that are perfect for educators and parents alike.

The tradition of family farming has been a part of the HMC Farms story since 1887. HMC Farms is much more than a business, it's a way of life. They have spent generations adapting their growing and handling practices to reliably provide the simple pleasure of great tasting fruit. Their actions are measured in ways that ensure they protect the environment for future generations and the community in which they live and farm.

The core of HMC Farms is an extended family of agricultural and marketing experts... people who have grown up in the produce business, and those who have invested careers in learning everything there is to know about growing and delivering a better piece of fruit to people who enjoy fruit. Their management team, growing team, and marketing team work closely together with a single purpose: to reliably provide the best tasting tree fruit and grapes with consistent flavor every time.

HMC Farms commitment to great tasting fruit can only be assured with the complete control that is needed to properly handle the fruit after harvest. Their packing facilities are located within minutes of their orchards and vineyards. These food handling facilities employ the best practices, and are equipped with leading technology to efficiently deliver the highest quality product. To ensure that we protect our most valued resources — people, air, land, and water — HMC utilizes cutting edge ideas and technology. HMC is continually striving to improve our farms and facilities. It is our never-satisfied attitude that allows them to deliver on their promise of great tasting fruit.

STEM + EXPERIMENTS

What is STEM?

STEM stands for an idea of educating students in four specific disciplines — Science, Technology, Engineering and Mathematics. It is an applied, blended and cohesive approach that encourages a hands-on experience while allowing students a chance to gain and apply relevant “real world” knowledge in the classroom.

STEM has become a critical component to nation-wide Academic Standards. Together with HMC Farms and a middle school science teacher, we developed two STEM projects for middle school students using grapes. Because why not combine a science experiment with one of the most popular fruits?

GRAPE SMASH!

PRACTICING CLASSIFICATION AND DEMONSTRATING
THE LAW OF CONSERVATION OF MASS

OBJECTIVE:

Students will demonstrate that regardless of how parts of an object are assembled, the mass of the whole is identical to the sum of the mass of the parts; however, the volume can differ from the sum of the volumes. (Law of Conservation of Mass)

MATERIALS:

- 20-25 grapes per group
- Cups
- Plastic baggie that can be tightly sealed
- Scale

PROCEDURE:

1. Provide each group with a sample of 20-25 red grapes. Have students measure the total mass of the sample using the scale. Record mass.

2. Students should then come up with 2-3 different classification systems based on the physical features of the grapes. (Size, shape, coloring, etc.) Students should create a data table for their classification systems and record the total number of grapes in each group as well as the mass of the group. (See example) While each classification system will have a different number of grapes per group, the total mass should remain the same.

Size	Small	Medium	Large
Amount	5	14	6
Total Mass	6g	18g	9g

Total Mass: 33g

3. Students will then add all of their grapes to the plastic baggie and seal it. Make sure the baggie is completely sealed. If any of the grape juice leaves the baggie, the demonstration will not work. Students should measure and record the mass of the grapes in the baggie.

4. Grape Smash! Students can then use any means to smash the grapes as much as they can.

5. Once the grape sample has been smashed to an acceptable degree, students should measure the mass. According to the Law of Conservation of Mass, the mass should be the same, despite the grapes now occupying a different volume in the baggie.

6. Students should record the mass and their observations. (See example)

	Solid Grapes	Smashed Grapes
Total Mass		
Description of Appearance		
Sketch of Baggie		

POE

DANCING GRAPES

OBJECTIVE:

This simple, hands-on demonstration can be used to highlight the difference between the scientific skills of making predictions, collecting data and making observations using the 5 senses, and communicating results through written and visual explanations.

STUDENTS WILL:

- Make predictions based on prior knowledge.
- Plan and carry out an investigation as a class, in small groups, or independently.
- Collect data with appropriate tools or technologies and use appropriate units to label numerical data.
- Incorporate variables that can be changed, measured or controlled.
- Keep accurate records during investigations.
- Evaluate possible causes for differing results (i.e., valid data).
- Compare the results of an experiment with the prediction.
- Communicate findings through oral and written reports

MATERIALS (PER GROUP):

- 5-10 red grapes
- 2 clear containers
- Tap water (part one only)
- Carbonated seltzer water (part two only)
- Stop Watch (optional)

PROCEDURE: PART ONE

1. Students will be introduced to materials and told that the grapes will be added to the water. Students will then predict what the grapes will do once added to the tap water and draw a simple sketch.
2. Teacher will then add the grapes to the tap water. Students will observe the grapes are slightly heavier than the water and sink to the bottom. They should record their observations and draw a simple sketch.
3. Have the students explain why the grapes sunk to the bottom. Their final sketch should include labels and represent more of a diagram.

PART TWO

4. Repeat Step 1. The teacher may choose to explain the difference between tap water and seltzer water or to omit that information from students.
5. Teacher will then add the grapes to the seltzer water. Students will observe the grapes sink to the bottom, but this time, the carbon dioxide bubbles in the seltzer water attach to the grapes causing them to rise to the top. Once the grapes reach the top, the bubbles pop and the grapes sink back to the bottom where more bubbles attach to them and the process repeats. Students will record their observations.
6. Students should then explain why the phenomenon happens. The teacher should stress the importance of labeling the diagram.

Name _____ Date _____ Class _____

POE

DANCING GRAPES

PART ONE

DIRECTIONS: After your teacher presents the materials and how they will be used, predict what you think will happen. Draw a sketch of your prediction. Your teacher will then complete the demonstration. Record only what you observe. Draw a sketch of your observations. Finally, explain why the materials responded the way they did. Sketch a diagram of your explanation. Be sure to include labels to explain your final diagram.

PREDICT:

_____

_____

_____

_____

_____

OBSERVE:

_____

_____

_____

_____

_____

EXPLAIN:

_____

_____

_____

_____

_____

DEHYDRATION OF GRAPES

QUESTION:
Does the color of the grape's skin impact the amount of time it takes for the grapes to dehydrate?

MATERIALS NEEDED:
- 10 Green Grapes
- 10 Red Grapes
- 10 Black Grapes
- Parchment paper
- Cookie sheet
- Oven
- Scale that measures in grams
- Timing device
- Data table

RESEARCH IDEAS, METHODS AND TIPS:
Make sure that the grapes that are used in the experiment are fresh and ripe. The weight should be recorded in grams and the time should be recorded in 30-minute increments. Make sure that you measure accurately and record carefully.

PROCEDURE:
Step 1: Rinse all of the grapes.

Step 2: Weigh and record the weight in grams of each group of grapes.

Step 3: Set the oven temperature to 100 degrees and line the cookie sheets with parchment paper.

Step 4: Place all 3 groups of grapes on the cookie sheet.

Step 5: Place the cookie sheet in the oven. After the first 30 minutes, take the cookie sheet out of the oven. Weigh each group of grapes, and record your results.

Step 6: Repeat step 5 every 30 minutes or until all of the grapes are completely dehydrated. Remember to record your results (it could take several hours). If one group of grapes is completely dehydrated before the others, you can remove the group of grapes from the cookie sheet.

Step 7: In order to figure out the water content of each group of grapes tested, you will need to figure the difference between the weights of the grapes at the beginning and the end of the experiment.

Step 8: You will then compare the time it took for each of the groups of grapes to completely dehydrate.

DEHYDRATION OF GRAPES

RESULTS:
Analyze your data/results, explain your results, construct a graph of your results and write a conclusion.

PREDICTION:

_____

_____

DATA TABLE:

(weight in grams)	Weight before dehydrating	30-minutes	60-minutes	90-minutes	120-minutes	150-minutes	180-minutes
Red Grapes							
Green Grapes							
Black Grapes							

GRAPH YOUR RESULTS:

EXPLAIN YOUR RESULTS/CONCLUSION:

_____

_____

_____

_____

FARMER, FARMER, HOW DOES YOUR VINEYARD GROW?

OBJECTIVES:

- The students will be able to describe the process of growing grapes.
- The students will be able to identify the necessary climate, soil, materials needed, and the timeline for grapes to successfully grow on a vine.
- The students will be able to use materials to design and create their own vineyard.
- The students will use research and learned information to create a persuasive sales pitch for grocery stores to sell their grapes.

MATERIALS NEEDED:

- Technology and resources for research
- Shoe Boxes for each group of students
- Popsicle Sticks
- String or Wire for the vines
- Pom Poms for the grapes
- Soil
- Glue
- Other materials chosen by the students to create their vineyard

LESSON:

- https://www.grapesforschools.com Use this link to watch videos and learn about how grapes are grown

HMC FARMS THE PRODUCE MOMS

- Put the students in small groups and have them research different types of grapes
- Each group will choose one type of grape, or the teacher can assign a type to each group, that they would like to grow. They need to learn details such as:
    - What is the best climate and location for this type of grape to grow?
    - What is the best soil to use?
    - What materials will be needed?
    - What is the timeline and process for planting and growing?
    - Is this specific grape used best as table grapes, for wine, etc?
- Each group will then use the provided materials to design and build a new vineyard suitable to grow their type of grape in their shoebox
- Then have each group pretend they are meeting with a grocery store to persuade them to sell their grapes, and create a presentation, sales pitch, or commercial with the following information:
    - The type of grape and uses for it
    - Using the growing process and the uses for the grapes, explain why these grapes should be sold in stores
    - Use technology to show pictures and video of the vineyard and grapes grown
- OPTIONAL : create a new flavor of grapes to include in the vineyard and presentation

COMMON CORE AND NEXT GENERATION STANDARDS:

4th Grade

- 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- CCSS.ELA-LITERACY.W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
- CCSS.ELA-LITERACY.W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.
- CCSS.ELA-LITERACY.RI.4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- CCSS.ELA-LITERACY.W.4.6 With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.
- CCSS.ELA-LITERACY.W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.

5th Grade:

- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- CCSS.ELA-LITERACY.W.5.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information
- CCSS.ELA-LITERACY.W.5.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience
- CCSS.ELA-LITERACY.W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic

CCSS.ELA-LITERACY.W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

HMC FARMS THE PRODUCE MOMS

GROUP MEMBERS:

FARMER, FARMER, HOW DOES YOUR VINEYARD GROW?

TYPE OF GRAPE:

_____

NEW FLAVOR OF GRAPES (OPTIONAL):

_____

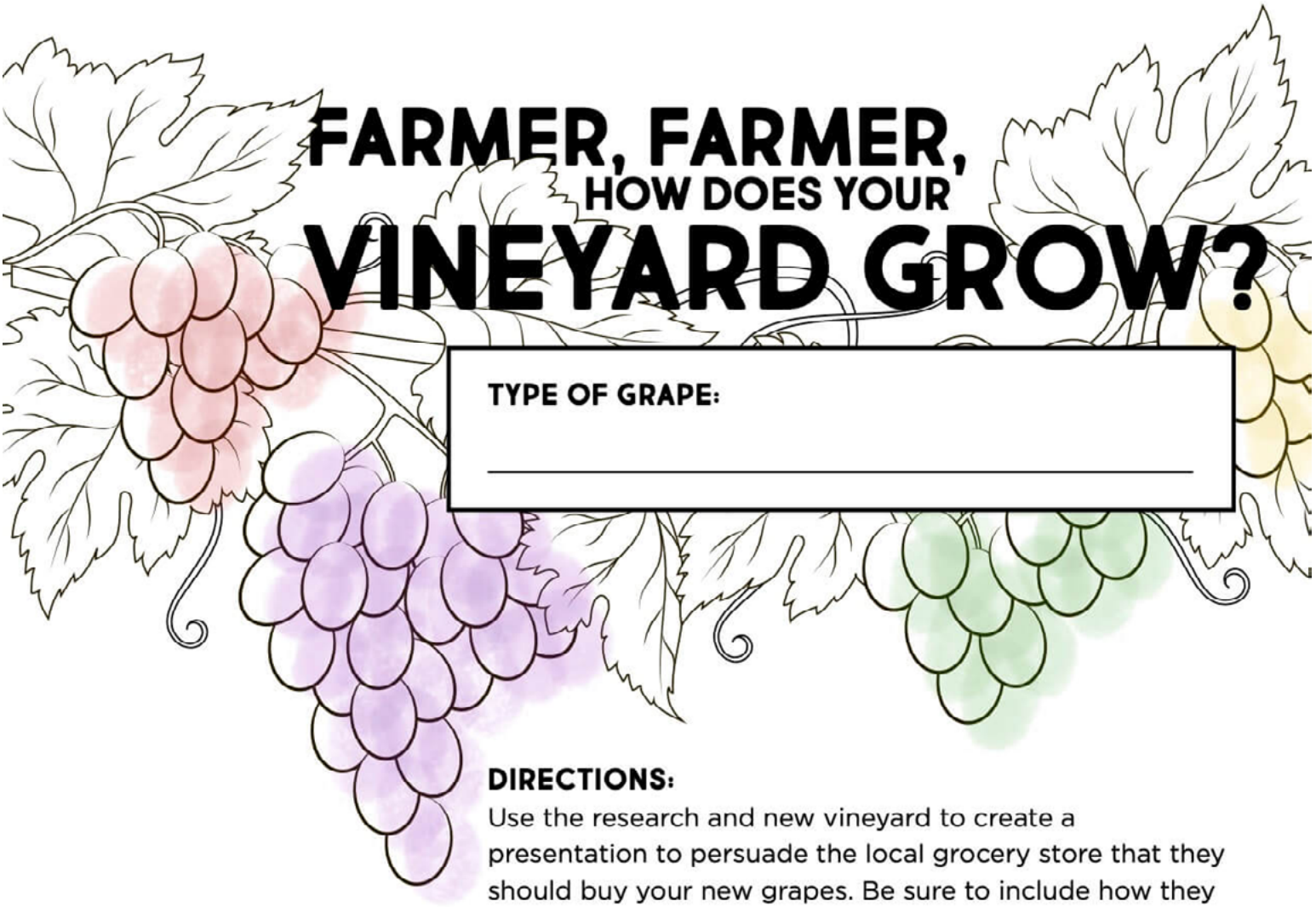
HMC FARMS

THE PRODUCE MOMS

CLIMATE AND LOCATION:	**TYPE OF SOIL:**
MATERIALS NEEDED FOR VINEYARD:	**WHEN TO BEGIN PLANTING:**
HOW THESE GRAPES GROW:	
HOW THESE GRAPES ARE BEST USED:	

GROUP MEMBERS:

FARMER, FARMER, HOW DOES YOUR VINEYARD GROW?



TYPE OF GRAPE:

_____

DIRECTIONS:

Use the research and new vineyard to create a presentation to persuade the local grocery store that they should buy your new grapes. Be sure to include how they were grown, what they could be used for, and describe the flavor and taste. **Be creative and have fun!**

NOTES:

_____

_____

_____

_____

_____

_____

_____

HMC FARMS

THE PRODUCE MOMS

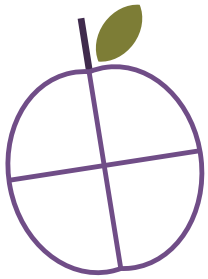
ACTIVITY SHEETS

NAME: _____

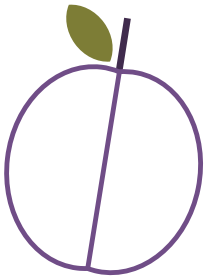
HMC FARMS

Pick your favorite purple crayon or pencil and color the plums according to their fraction.

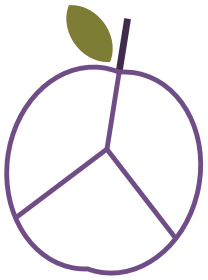
COLOR $\frac{1}{4}$



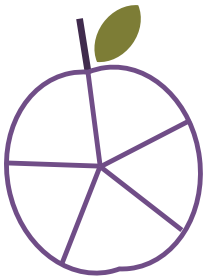
COLOR $\frac{1}{2}$



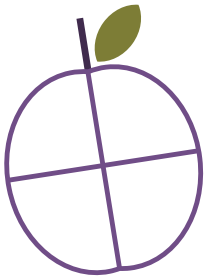
COLOR $\frac{1}{3}$



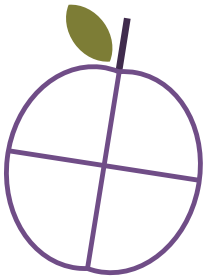
COLOR $\frac{4}{5}$



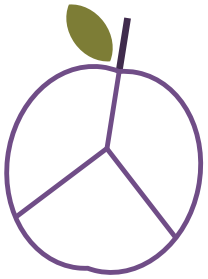
COLOR $\frac{3}{4}$



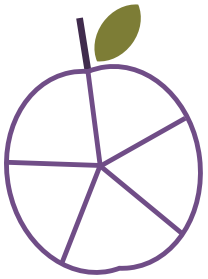
COLOR $\frac{2}{4}$



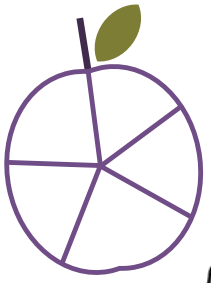
COLOR $\frac{2}{3}$



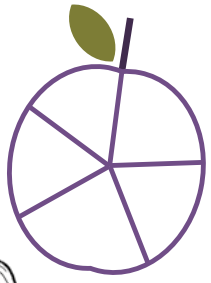
COLOR $\frac{1}{5}$



COLOR $\frac{5}{6}$



COLOR $\frac{5}{5}$

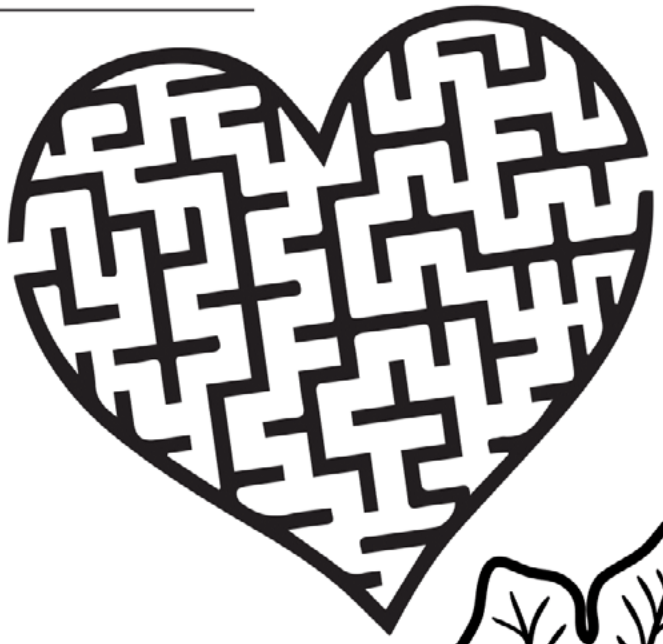


THE PRODUCE MOMS

Name: _____

love grapes with all of your heart

Start



Finish

Grapes have A LOT of good for you things inside of them like fiber and antioxidants. Red Grapes can lower blood pressure, reduce inflammation and reduce heart muscle damage.

HMC FARMS

Unscramble the Words

ε p s r g a

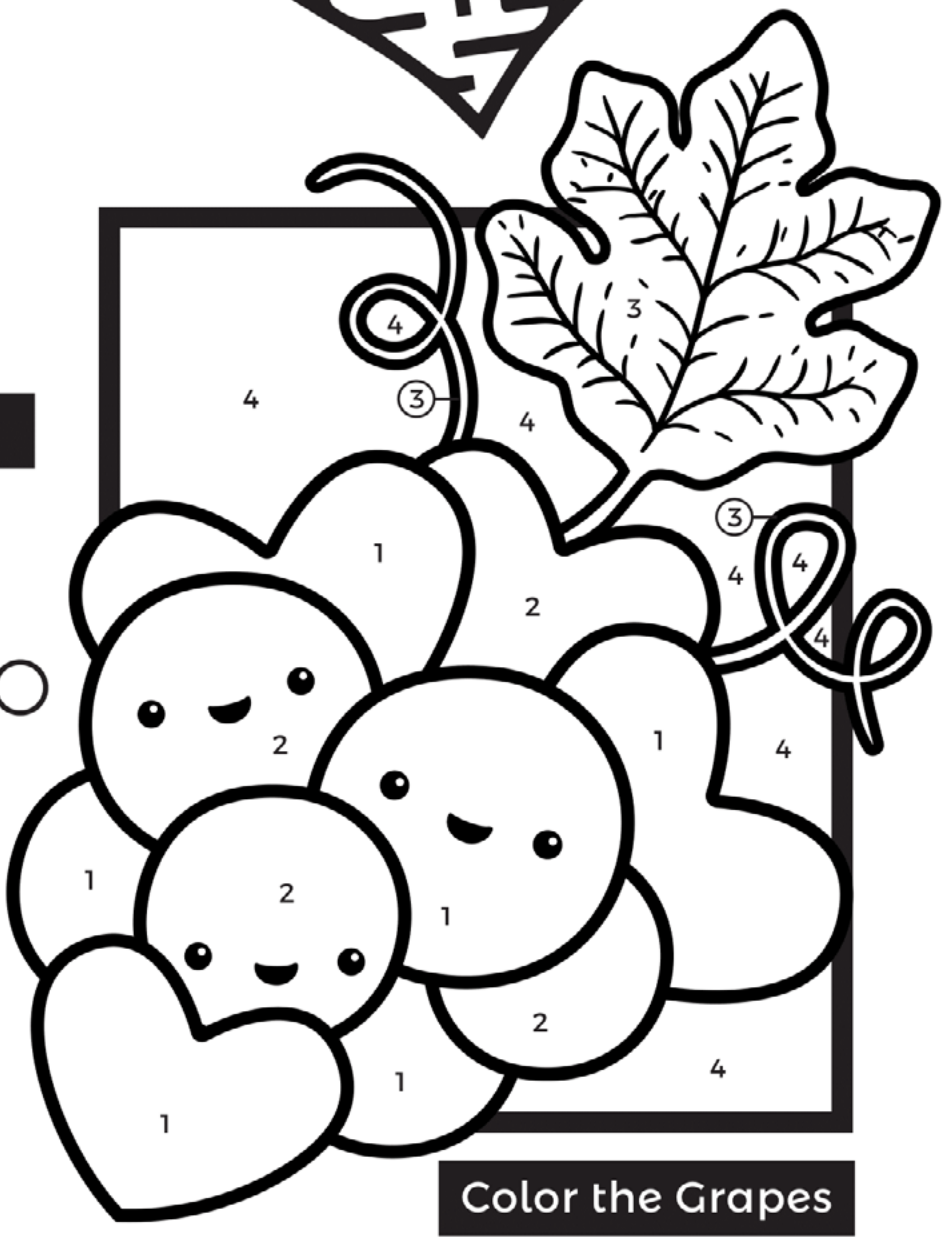
n i x d n t a i o t a

i b f r ε

d l o b o

ε ε p s s u r r

a r t h ε



Color the Grapes

1. Pink 2. Red 3. Green 4.Purple

GRAPE Escape | the Lunch Bunch

Q: WHAT IS THE EASTER BUNNY'S FAVORITE KIND OF MUSIC?

Q: WHY DO GRAPES ALWAYS GET INVITED TO PARTIES?

WORD SEARCH

Z	K	X	U	R	W	E	P	J	B
X	E	A	S	T	E	R	I	A	A
B	U	N	N	Y	G	F	E	P	S
R	T	W	S	Z	H	J	G	N	K
V	U	D	G	K	J	C	G	E	E
Y	R	Y	R	T	V	C	S	I	T
P	L	B	D	J	G	S	L	F	R
G	B	S	T	Y	F	R	U	I	T
G	R	A	P	E	S	H	C	D	R
A	D	W	T	U	V	H	D	E	Q

EASTER EGGS GRAPES

BUNNY BASKET FRUIT

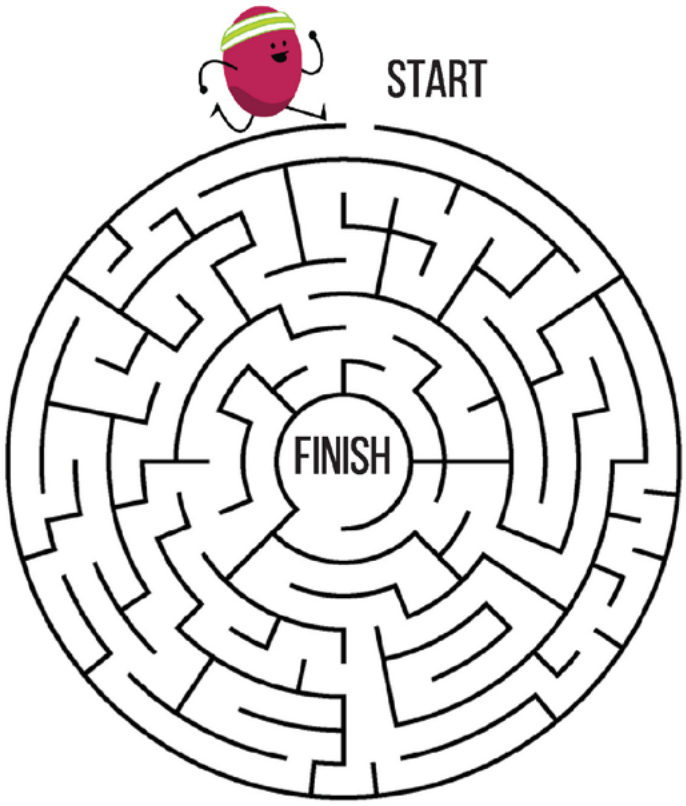
Q: WHERE DOES CHRISTMAS COME BEFORE EASTER?

ANSWERS (TOP TO BOTTOM) : 1. HIP HOP - 2. BECAUSE THEY'RE A BUNCH OF FUN - 3. THE DICTIONARY

NAME: _____

GRAPESFORSCHOOLS.COM HMCFARMS.COM

HMC FARMS



celebrate summer with grapes!

DECODE THE MESSAGE

use the key to fill in the grapes below to reveal a secret message

1 - A	6 - O
2 - E	7 - R
3 - F	8 - T
4 - I	9 - U
5 - M	

2 1 8

5 6 7 2

3 7 9 4 8

NAME: _____

GRAPESFORSCHOOLS.COM HMCFARMS.COM

HMC FARMS

HOMEMADE grape FRUIT LEATHER

GRAPE Escape | the Lunch Bunch

adapted from original recipe at grapesfromcalifornia.com

WHAT YOU'LL NEED:

- 1 bag (about 2 lbs) of HMC Farms grapes of any color, washed
- 1-2 tbsp granulated sugar
- 1 tbsp fresh lemon juice

- blender (traditional or immersion)
- spatula
- measuring spoons
- saucepan
- large baking sheet with rim
- parchment paper
- scissors or knife*

*use adult supervision or assistance

Preheat oven to 200°F on convection or bake mode.

Place the grapes in blender or food processor and purée until smooth. Strain out excess juice if desired. TIP: if you have an immersion blender, try putting the grapes directly into the saucepan and blending to reduce dirty dishes!

Pour the grape purée into a small saucepan with the sugar and lemon juice and bring to a boil. Reduce to simmer for about 30-45 minutes, stirring often and scraping the sides, until the purée darkens a bit and turns glossy.

Line baking sheet with parchment paper. Pour purée onto the parchment and spread into an 1/8-inch thickness, leaving a 1-inch border of space around the edge. Bake 1.5-3 hours, until the purée is tacky and not quite dried in the center (rotate halfway through). Let stand at room temp until fruit leather peels easily from the tray.

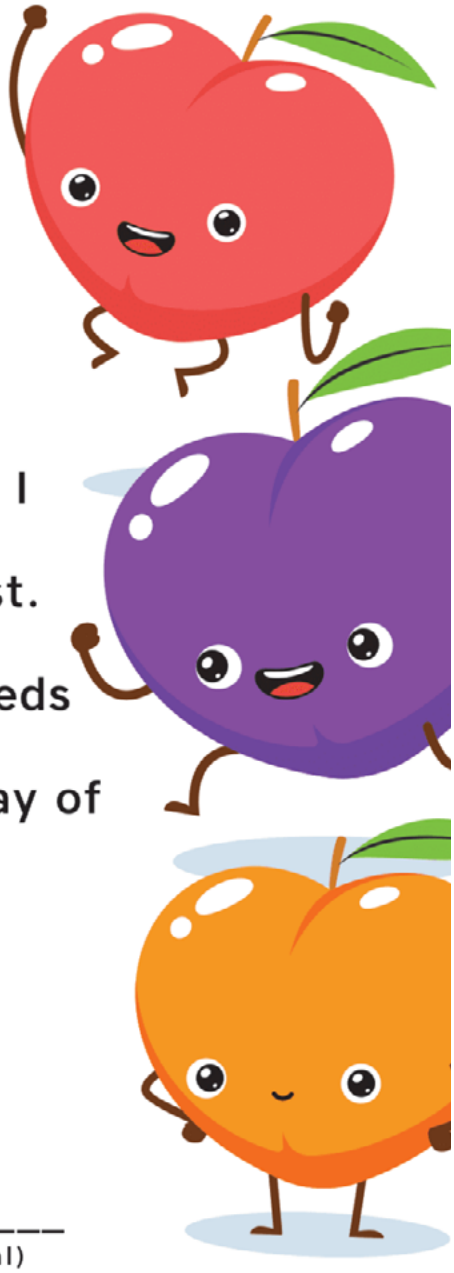
Roll up the fruit leather and parchment, starting at the long end. Using scissors or a sharp knife, cut the fruit leather roll into 1-inch segments.

Store in a sealed container for up to a week at room temp, or 2-3 months in freezer.

Feeling Peachy

NAME: _____

DIRECTIONS: Complete the story with your own funny words!



It was a _____, hot July day. I woke up to the _____ smell of peach _____ cooking in the _____ downstairs. I _____ down the stairs to see if I could help _____ the breakfast. My mom said, "see if _____ needs a fresh _____." So I carried a tray of glasses full of nectarine _____ into the _____ room. When I got there, I couldn't believe my _____! There were _____ _____ on the _____!

(adjective) (adjective) (type of breakfast food) (room in a house) (verb (past tense)) (verb) (relative's name) (noun) (a liquid) (room in a house) (part of the body) (favorite fruit (plural)) (verb ending in -ing) (noun)

HMC FARMS

THE PRODUCE MOMS

STONE FRUIT PANCAKES

One of our favorite breakfasts is stone-fruit pancakes. You can ask your parents to add chopped up pieces of peaches, nectarines, plums or plumcots to your pancake batter. They're a sweet addition to your favorite pancake recipe!

Visit hmcfarms.com for more great recipes!

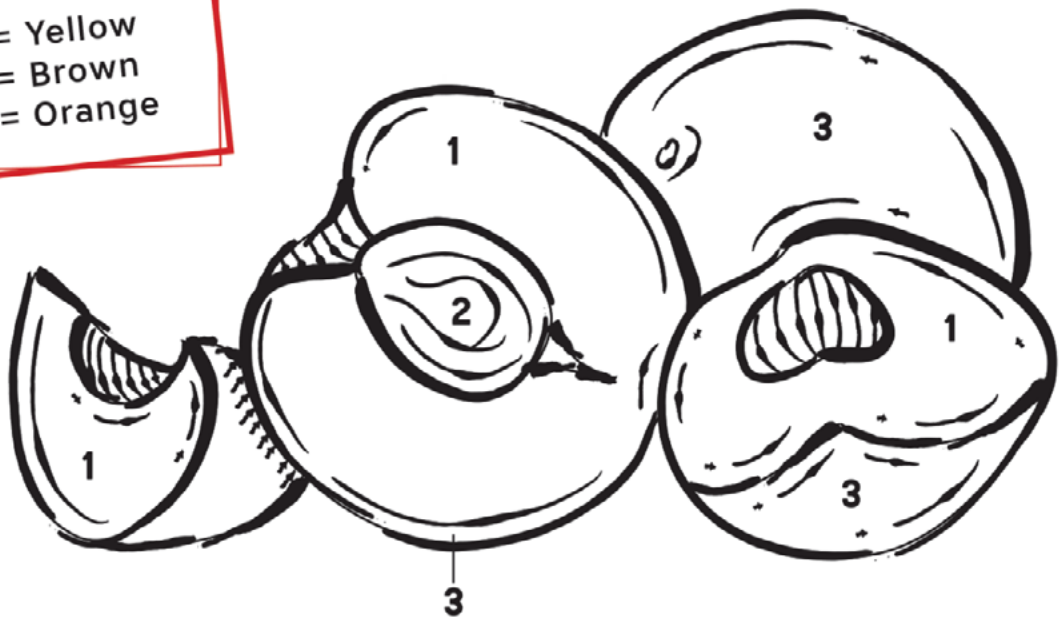
Feeling Peachy

NAME: _____

COLOR KEY

1 = Yellow
2 = Brown
3 = Orange

DIRECTIONS: Color the picture using the color key, and fill in the colors on the lines below.



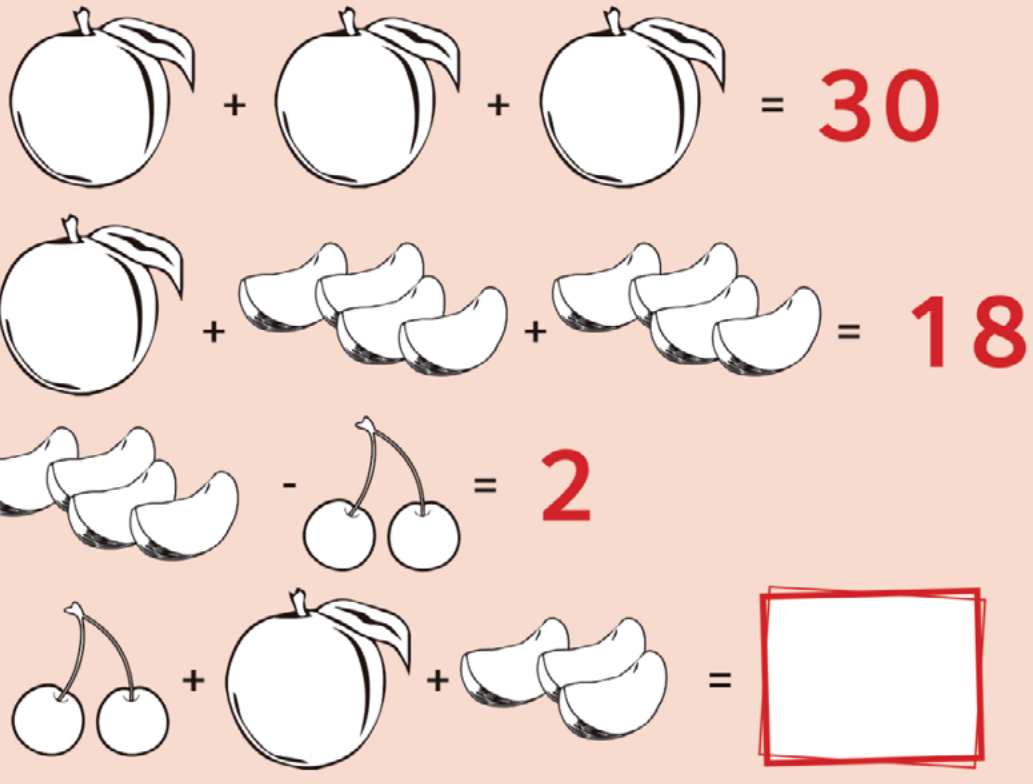
THE PRODUCE MOMS

The FLESH of the peach is the color _____

The PIT/STONE of the peach is the color _____

The SKIN of the peach is the color _____

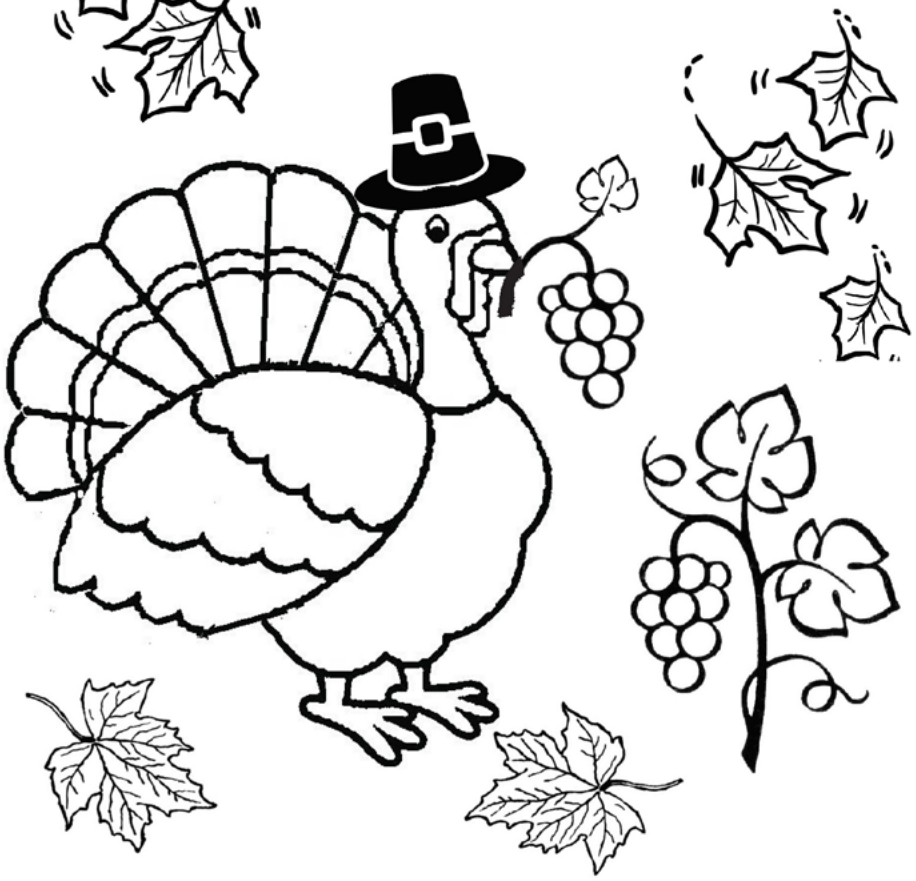
DIRECTIONS: Use logical reasoning to solve this fruit math puzzle.



HMC FARMS

be grapeful this THANKSGIVING

GRAPE Escape | the Lunch Bunch



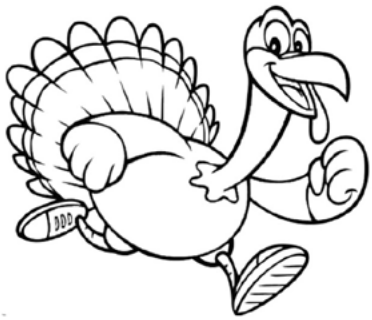
OH NO! GRAPES ARE COVERING ALL OF THE VOWELS IN THESE WORDS. FILL IN THE MISSING LETTERS USING THE CLUES BELOW.

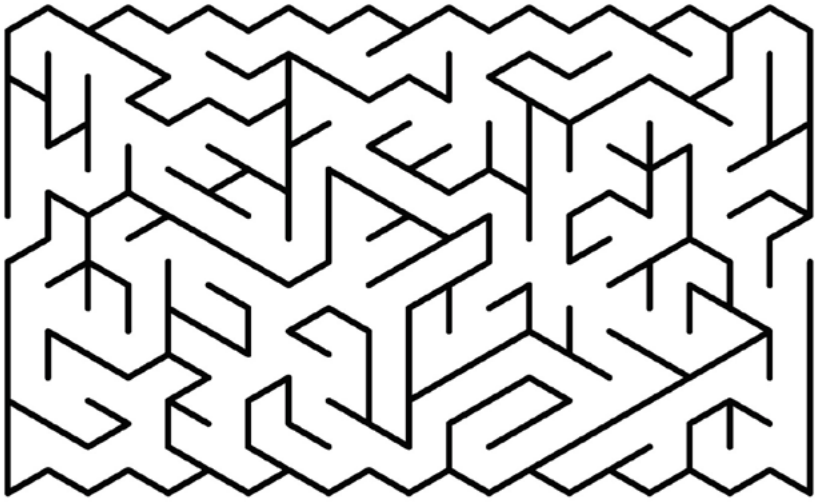
1. TORKOY
2. GOBBLO
3. GROPOS
4. POLGROMS
5. THONKSGOVONG

CLUES:

1. A BIRD THAT REPRESENTS THANKSGIVING
2. THE SOUND THE BIRD FROM CLUE 1 MAKES
3. YOUR FAVORITE FRUIT FROM HMC FARMS
4. THE PEOPLE WHO HELD THE FIRST THANKSGIVING
5. A HOLIDAY IN LATE NOVEMBER

TURKEY TROT





NAME: _____

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HMC FARMS

NAME:_____

GRAPE Escape | the Lunch Bunch

A grape Christmas tree!

CREATE A CHRISTMAS TREE WITH RED GRAPES AND YOUR FAVORITE GREEN FRUIT OR VEGETABLE FOR A TASTY SNACK!

RED GRAPES

GREEN GRAPES

OR SOMETHING ELSE GREEN LIKE KIWI, SNAP PEAS, OR CUCUMBER

RED GRAPES

PRETZEL STICKS

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SHOW US YOUR CREATIONS ON INSTAGRAM AND FACEBOOK @HMCGRAPESFORSCHOOLS

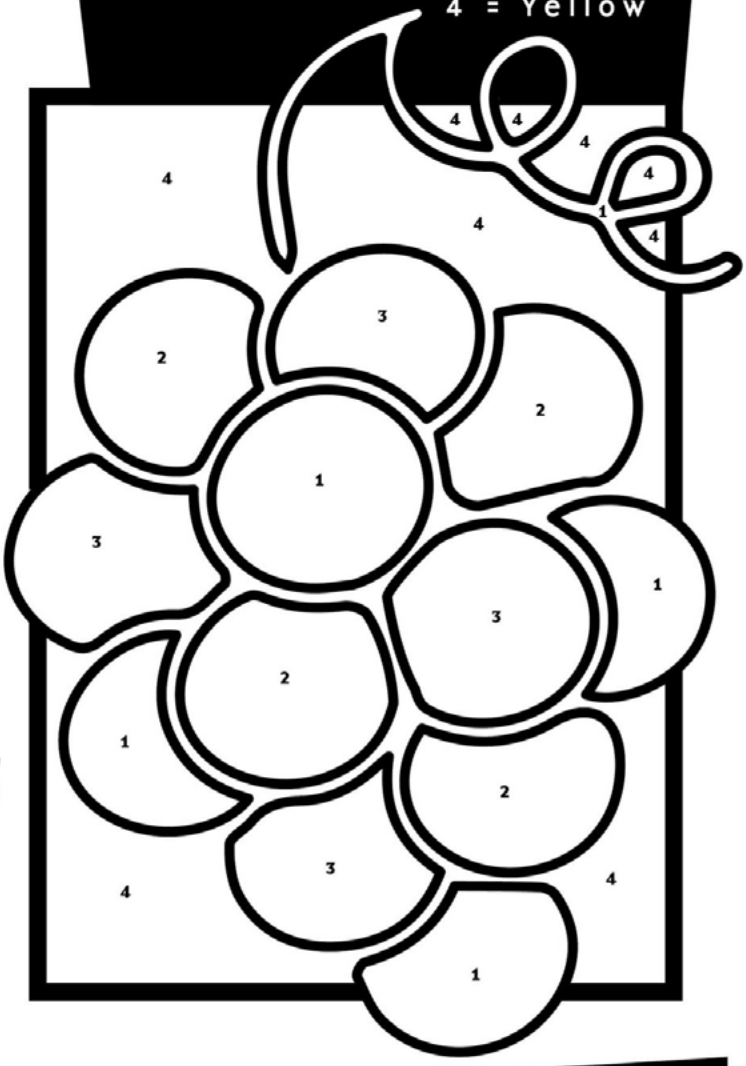
HMC FARMS

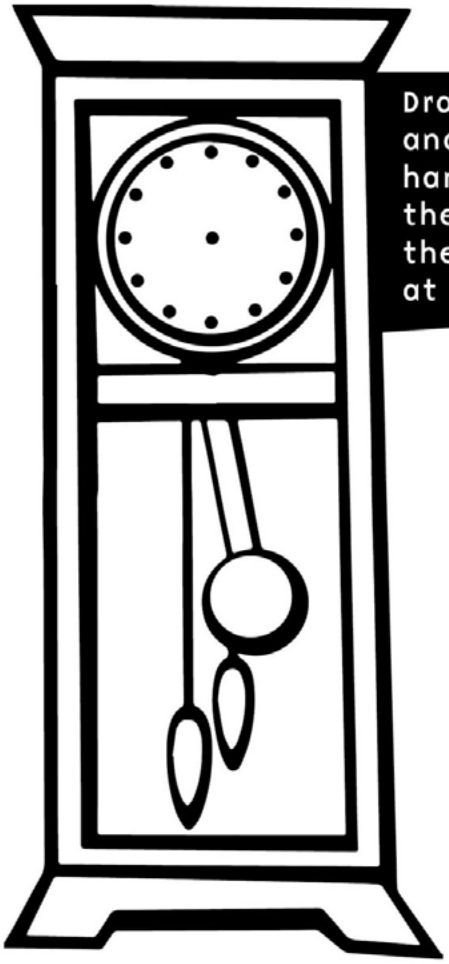
THE TWELVE GRAPES OF LUCK

Did you know that eating 12 grapes at midnight on New Year's Eve is good luck? The 12 grapes represent the 12 months of the year. This Spanish tradition dates back hundreds of years. Eat one grape with each bell strike at midnight!

COLOR BY NUMBERS

1 = Green
2 = Purple
3 = Red
4 = Yellow





Draw the hour and minute hand on the clock like they would be at Midnight.

WORD SEARCH

I	I	E	C	B	G	B	H	T	M	V
D	F	P	S	R	H	Z	W	L	L	C
J	Y	A	T	B	U	N	C	H	M	V
U	E	C	E	N	P	N	E	C	T	T
F	L	S	M	R	A	F	C	M	H	A
H	S	E	R	F	C	R	W	H	J	S
V	W	E	H	C	N	U	L	G	H	T
D	E	P	C	E	N	I	V	W	J	Y
E	E	A	E	U	Z	U	Z	K	G	Z
V	T	R	Y	T	L	R	T	K	I	V
I	G	G	Z	Z	P	Y	P	F	H	A

HMCFARMS
GRAPEESCAPE
CRUNCH
VINE
BUNCH
FRESH
GREEN
LUNCH
RED
STEM
SWEET
TASTY

HMC FARMS

learn more at www.grapesforschools.com & www.HMCFarms.com

RECIPES

POOLSIDE PEACH SALSA

PREP TIME
10 mins

TOTAL TIME
10 mins

SERVINGS
6 servings

INGREDIENTS

- 4 cups peaches diced
- 1/2 cup pineapple diced
- 1/2 cup red bell pepper diced, seeds removed
- 1/2 cup red onion minced
- 3 tsp jalapeno minced, ribs and seeds removed
- 2/3 cup cilantro chopped
- 2 limes juice only
- salt to taste

INSTRUCTIONS

Place ingredients in a bowl and stir to combine. Cover and chill in the refrigerator for 30 minutes before serving.

NOTES

- Pineapple is optional.
- For more heat, leave in some of the jalapeno seeds.

PLUM & BLACKBERRY GRAIN SALAD

PREP TIME
10 mins

TOTAL TIME
10 mins

INGREDIENTS

- mixed salad greens
- quinoa
- HMC Farms plums sliced
- blackberries
- almonds
- goat cheese
- red wine vinaigrette or salad dressing of your choice

INSTRUCTIONS

Toss together salad greens and quinoa. Place plum slices, blackberries, and almonds onto salad base. Sprinkle with goat cheese and drizzle with salad dressing.

PLUMSICLE™ WINE POPS AND ICE POPS

PREP TIME
10 mins

TOTAL TIME
4-6 hours

SERVINGS
6 servings

INGREDIENTS

- pre-made flatbread pizza crust
- red grapes sliced in half
- olive oil
- goat cheese crumbles
- fresh mozzarella cheese
- walnuts chopped
- balsamic glaze
- fresh thyme

INSTRUCTIONS

Add half of the water and sugar to a small saucepan. Heat over medium heat until the sugar is dissolved. Add plumsicles and simmer until the fruit is tender. Approximately 1-2 minutes. Allow the plumsicle mixture to cool slightly. Add to blender with the remaining water and blend until smooth. Add the wine during this step if you are making winesicles. Pour mixture into ice pop molds and place in the freezer. Allow 4-6 hours to freeze. Enjoy!

GRAPE FLATBREAD PIZZA

PREP TIME
10 mins

TOTAL TIME
25-30 mins

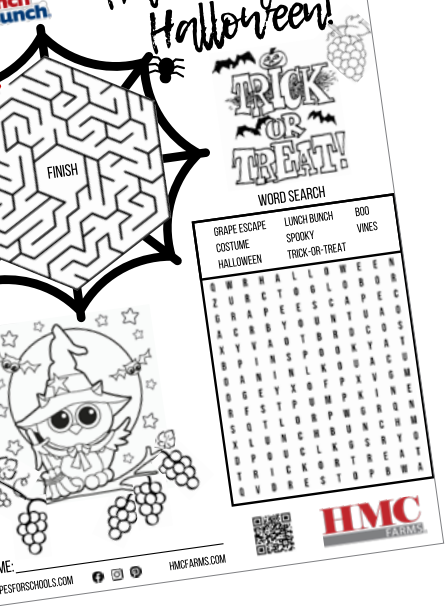
SERVINGS
6 servings

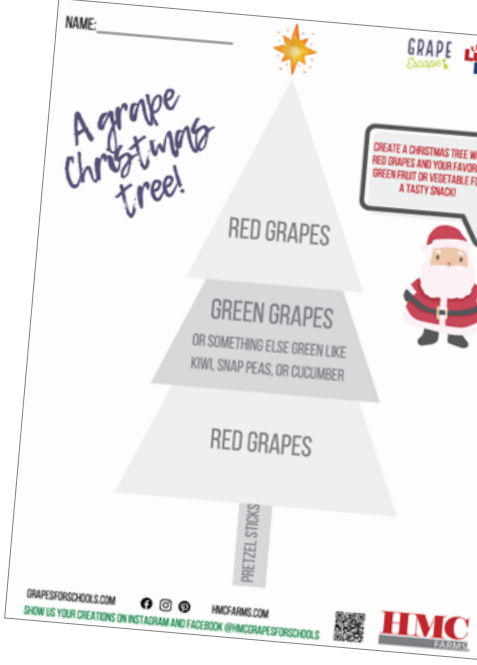
INGREDIENTS

- 1/2 cup water separated
- 1/4 cup sugar
- 6 Plumsicles peeled and chopped
- 1 cup pinot noir

INSTRUCTIONS

Add half of the water and sugar to a small saucepan. Heat over medium heat until the sugar is dissolved. Add plumsicles and simmer until the fruit is tender. Approximately 1-2 minutes. Allow the plumsicle mixture to cool slightly. Add to blender with the remaining water and blend until smooth. Add the wine during this step if you are making winesicles. Pour mixture into ice pop molds and place in the freezer. Allow 4-6 hours to freeze. Enjoy!





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