



October 2018

Important 4-H Dates

October

- October 1st - New 4-H Year Begins
- October 7th-13th - National 4-H Week
- October 19th - Photography Workshop
- October 22nd-25th - CSU Extension Forum (Agents out-of-office)
- October 27th – Prowers County Ranch Horse Show

November

- November 2nd-4th - Colorado Leadership Camp
- November 9th-10th - Dare to Be You Camp
- November 23rd-24th - Extension Offices Closed



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719-254-7608

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700 Colorado Street
Springfield, CO 81073
719-523-6971
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Kiowa County
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Prowers County
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719-336-7734
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Bent County
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Crowley County
613 Main Street, Courthouse Annex
Ordway, CO 81063
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Otero County
Box 190
Rocky Ford, CO 81067
719-254-7608
coopext_otero@mail.colostate.edu



National 4-H Week

National 4-H week is October 7th through 13th, 2018. This is a great week to promote the 4-H program in your community, as well as thank the many individuals and businesses that support the local 4-Hers throughout the year. Check your county newsletter for specific county activities.

Minda Witt Memorial Open Boer Goat Show

Minda Witt was an important part of the southeastern Colorado Boer goat industry. Many of you have been impacted by Minda's knowledge and caring heart over the years. October 12th-14th there will be an open Boer goat show, held at the Prowers County Fairgrounds, in honor of Minda Witt. This show includes American Boer Goat Association (ABGA) registered pure-bred doe and buck classes, ABGA registered percentage doe classes, commercial (unregistered) doe and buck classes, as well as a junior market goat show. There will also be a Junior American Boer Goat Association show as well. All JABGA animals must be registered under youth under the age of 18 and youth must hold a JABGA membership in the current year. These shows are a great opportunity to get those stock show wethers out, show off your production herd or just come watch and learn. Check in Friday evening starting at 5:00 p.m at the Prowers County Fairgrounds Livestock Pavilion. Entries are \$15 per head if post marked by September 30th. Entries post marked after September 30th will be \$20 per head. Pen fee is five dollars per pen. Show starts at 9:00 a.m. Saturday morning, starting with commercial classes. ABGA and JABGA shows will follow. The junior show will be shown in conjunction with the open ABGA show.

Jackpot market show will start at approximately 1:00 p.m. Weigh - in will be from 10:00 to 12:00. Saturday evening there will be a dinner and a clinic put on by show management. Sunday show starts at 9:00 with the same class order. For more information please contact Jennifer Seltzer at 970-656-3557.



Photography Clinic

Otero and Prowers Counties are teaming up to present a hands on photography clinic. This is open to any one enrolled in 4-H who is interested in the photography project and will be held on Friday, October 19 at the Bent County Extension office.. We will start the morning at 9:00 a.m. with some classroom time. We will learn about the basics of photography and discuss the photography project requirements. We will then go out into the field and put our new skills to work. We ask that your children come with a packed lunch and an open mind for learning. If you would like to participate in this clinic please contact the Prowers or Otero extension offices no later than Friday, October 12th.

Spooktacular Ranch Horse Show

Prowers County Horse committee is holding a fall ranch horse show at the Holly Fairgrounds on October 27th. There will be a ranch horse clinic put on by Brad Weller in the morning and the show will follow that afternoon. This is a great opportunity to get some one on one help or try the ranch horse competition out for the first time. There might even be some Halloween events involved! The clinic will be \$35 and the show will be \$30 for all of the classes. If you have further questions please contact the Prowers County Extension office.

CLC Camp

This year's CLC camp will be held in Glenwood Springs, November 2nd-4th. This camp is for 6th through 9th grade students. This camp is \$135. This camp is designed to help those coming into middle school and high school seek out and hone their leadership skills. It also promotes out of the box and critical thinking skills. In addition, students will participate in a community service activity by writing a letter to first responders, service men, and service women. These letters will be put into goodie bags and then distributed to where they are needed most. This is a great opportunity to meet new people from across the state and share the growth of young adults together.



Dare to Be You Camp

Dare to Be You will be held November 9th and 10th at the Colorado State Fair grounds Camp Tobin. This camp is for ages 10-13 and is \$50 to register. Campers will participate in a variety of team building and critical thinking activities as well as participate in a community service. Campers will get the opportunity end the camp with a dance.

National Western Stock Show Junior Livestock Entries

Junior Livestock Exhibitors –entries for the junior livestock market shows at National Western are due November 1st. Entry information can be found at <http://www.nationalwestern.com/livestock-shows/livestock-exhibitors>. Please contact your local extension office for additional questions or help.

Catch-a-Calf Contest

Applications are currently being accepted for the 2019 National Western Stock Show Catch-a-Calf Program. The program is open to any 4-H member that is 12 and older by December 31st, 2018. Youth that sign up for the program will compete at a 2018 NWSS rodeo performance to catch a calf. Those that are successful will receive a calf in May 2019. They are responsible for all care and must purchase their own feed and equipment. The deadline to apply is December

1st, 2018. More information and an application can be found online at <http://www.nationalwestern.com/livestock-shows/catch-a-calf-contest/>.

4H Online – Email Blasts

From time to time the State office will be sending emails directly to the 4-H members. It is the easiest and most effective way to communicate important State events and requirements. We know that not everyone particularly enjoys the extra emails and there have been requests to be unsubscribed. It is important to

know that if you do that, you would not receive any re-enrollment emails or information the County office sends directly to you. Please do not “unsubscribe.”

Fall Time Sweet Treats

Snickers Caramel Apple Salad

Ingredients

- 6 regular size Snickers candy bars
- 4 medium granny smith apples
- 1 (5.1oz) package vanilla pudding (dry, not prepared)
- 1/2 cup milk
- 1 (16 oz) tub cool whip, thawed to room temp
- 1/2 cup caramel ice cream topping

Instructions

1. Whisk vanilla pudding packet, 1/2 cup milk, and cool whip together until combined.
2. Chop apples and snickers up into bit size pieces.
3. Stir chopped apples and Snickers into pudding mixture.
4. Place in a large bowl and drizzle with caramel ice cream topping.
5. Chill for at least one hour before serving.



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We work to preserve the Colorado Way of Life.



www.ColoradoFarmBureau.com

Otero County Farm Bureau
719-254-3368

515 North Main Street
Rocky Ford, CO 81067

Bent County 4-H

October 2018 Newsletter

Vol 8, Issue 16, October 2018

What to Look For:

State 4-H News

www.colorado4h.org
Project Resources
StateFairExhibitReq.pdf.



We're on FACEBOOK! Please **LIKE** our pages to stay up-to-date with all the upcoming events & share with your friends,!

◆ Bent County Extension

1. Record Book pick-up
2. Harvest Show
3. New Enrollment Starts
4. Meat Science Boot Camp
5. Quilt Block Workshop
6. Photography Field Tri
7. Creative Cooks Cookbook



County News

Opportunities and Deadlines

September 30—Bent County 4-H Banquet
October 1—Quilting Workshop Deadline
October 2-4—Bent County Harvest Show
October 3—Quilting Workshop in Bent County
October 16—New 4-H Year begins
October 19—Photography Field Trip

Record Books

If you did not pick up your record book at the 4-H Banquet, please pick them up at the Extension Office. Record books will be held at the office until November 1, 2018, but will not be stored after that. Any books not picked up will be purged after November 1, 2018. Feel free to call the office to make arrangements if you need.

Reminder!

Creative Cooks Cookbook

Attached is the Creative Cooks cookbook that includes the recipes from State Fair. Some of our Bent County Members participated in this contest.

4-H Enrollment

Enrollment for the upcoming 4-H year begins October 16, 2018. You are welcome to begin your enrollment through 4HOnline any time after that. Please keep in mind that enrollment is still a 3-step process. Your family must sign the Bent County 4-H Member Agreement, enroll in 4HOnline through your family account, and pay your \$20.00 membership (per member) fee at the Extension Office. If you need any help, please don't hesitate to contact the Extension Office at 719-456-0764.





September 2018 Bent County Council Meeting

New officers and new positions. There is a new lay-Bent Council the meet-old mem-chosen for there seats on the council. The new council will be recognized at the awards banquet. The next meeting for the county council will be after the awards banquet open for anyone who would like to come. The new council officers are:



President-Cassidy Jagers
Vice President-Maggie Chase
Secretary-Holly Morgan
Parliamentarian-Weston Morgan
Reporter-Alicia Deatherage
Senator-Jimmi Boyd

By; Holly Morgan-Reporter

The October Council Meeting will be held just after the 4-H Banquet on September 30, 2018 for all members who would like to attend. This will be a short meeting to tend to any immediate Council business that needs addressed and to pay any bills that need to be paid.

Bent County
Extension Office
10:00 am-12:00 pm
November 30th
December 7th
December 14th

Open to youth ages 8-18

Call 719-456-0764 or email sa.weber@colostate.edu to register by November 23rd

- Become an industry-savvy producer
- Learn about being an informed consumer
- Explore the poultry, rabbit, pork, beef and lamb industries
- Manage food safety and try your hand at the "Build the Best Burger Contest"

Meat Science Boot Camp
Explore the science behind the livestock and meat industries

Explore the science behind the livestock and meat industries at Meat Science Boot Camp. At three two-hour sessions, learn about being an informed consumer and an industry-savvy producer; explore the rabbit, poultry, lamb, goat, pork, and beef industries; manage food safety; and try your hand at the "Build the Best Burger Contest." The Boot Camp will be held from 10:00 am-12:00 pm at the Bent County Extension Office on November 30th, December 7th, and December 14th.

Please call 719-456-0764 or email sa.weber@colostate.edu to register by November 23rd.

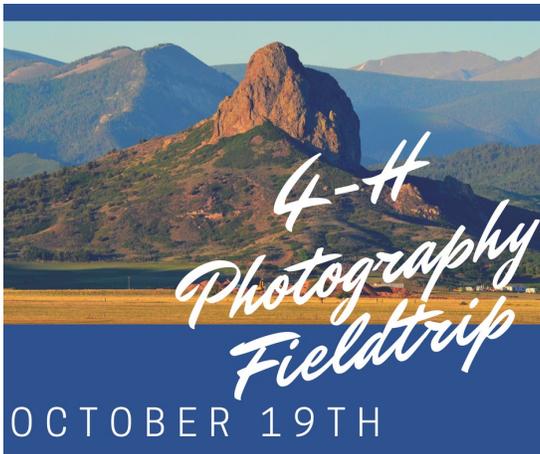


BENT COUNTY OCTOBER 2018



Photography Fieldtrip

Otero and Prowers Counties are teaming up to present a hands on photography clinic. This is open to any one enrolled in 4-H who is interested in the photography project. We will start the morning at 9:00 a.m. on October 19th at the Bent County Extension office with some classroom time. We will learn about the basics of photography and discuss the photography project requirements. We will then go out into the field and put our new skills to work. We ask that your children come with a packed lunch and an open mind for learning. If you would like to participate in this clinic please contact the Prowers or Otero extension offices no later than Friday, October 12th."



Outbound Exchange Program

If you are interest in the 2019 Outbound Exchange Program through 4-H, there is an exchange in Japan, Costa Rica, Finland, and Korea for 2019. I have attached one flyer to this newsletter, but If you are interested in any of the other opportunities, please call the Extension Office, and we'll be happy to share any other information.

<h3>4-H Quilt Block of the Month</h3>	<ul style="list-style-type: none">• Learn quilting basics at the Kickoff class• Pick up a different block to sew each month• Finish your project at a workshop in June 2019• Exhibit your 9-block quilt at the 2019 fairs!	
<h4>Kickoff Class</h4> <p>Otero County Extension Office: September 24th</p> <p>Crowley County Extension Office: September 25th</p> <p>4:00-6:00 pm</p>		<h4>Open to youth ages 8-18 by Dec. 31, 2018</h4> <p>Register by September 21st by calling 719-469-0190 or emailing marlena.griesse@colostate.edu</p>

Get a jump start on your 2019 4-H projects with the 4-H Quilt Block of the Month! Participants will learn the basics of sewing quilt blocks with triangles and squares at the Kickoff Classes. Kickoff classes will be held from 4:00-6:00 pm on September 24th at the Otero County Extension Office and September 25th at the Crowley County Extension Office. Each month after the Kickoff, October-May, participants will pick up a new block to take home and sew. In June of 2019, a final class will be held to help youth finish their 9-block, lap quilts. The quilts can then be exhibited at the County Fair. Whether you are a quilting pro, would like to try a new project, or are new to 4-H altogether, give the 4-H Block of the Month a try!

There is no cost for the blocks, but participants will be responsible for buying the fabric and batting to finish their quilt. Each youth will have their choice of color combination: teal, black, and white; grey, red, and white; pink, black, and white; or yellow, grey, and white. Please call 719-469-0190 or email marlena.griesse@colostate.edu to register by September 21st.



BENT COUNTY OCTOBER 2018



The Upcoming 77th Annual Bent County Harvest Show

The Bent County Harvest Show began in 1942 as the Victory Harvest Show and has since become a long-time tradition to Bent County. Even at its start, the first Harvest Show was identified as a huge success with prizes totaling \$110.00 and red, blue, and white ribbons distributed to about 100 winners. Some Long-time residents may remember that the Victory Harvest Show initially took place in the Decker Building which was formerly occupied by the Houk Motor Company. Now, you will recognize that location as the Family Dollar and Dairy Queen parking lots in Las Animas. During the next several years after 1942, the attendance began to increase and approximately 2,500 to 4,000 people visited the Harvest Show. Then, in 1944, the Las Animas Merchants hosted a free movie matinee on Friday and Saturday and a free barbeque at noon in conjunction with the Harvest Show. As the Harvest Show grew, exhibits included new additions to keep up with the changing world, but not forget what was being left behind (as antiques).

This year, the 77th (or 76th) Annual Bent County Harvest Show will be held on October 2-4, 2018 at St. Mary's Hall in Las Animas, CO. Farm products, gardening, flowers, home art and foods of all sorts as well as the "old" antiques will be a part of the Harvest Show. Still, other categories have been added over the years to increase entries allow residents of all ages to participate. Including the categories already listed, some more of this year's classes/divisions include: clothing construction, needle craft, home furnishings, baked goods, food preservation, handicrafts, art, photography, and produce decorating. There truly is something for everyone to showcase their talents in these exhibits! Items are entered on Tuesday afternoon, judging on Wednesday morning, and then the show is open to the public on Wednesday afternoon and Thursday. Premiums are paid in each class (1st-3rd places). The Grand and Reserve Grand Champions in each division will also receive \$20 and \$10, respectively. Premiums will be paid on Thursday, October 4th at 4:00pm.

If you are a resident of Bent County, a 4-H member, or a Bent County school student (even out-of-district), you are eligible to exhibit in this open class exhibit show. All exhibits shall be made or grown by the exhibitor. Harvest

Show books and flyers are posted and available at local Bent County businesses, and at the Extension Office. Please contact Connie Harris, General Superintendent at 719-456-0706 with any questions, or feel free to contact the Bent County Extension Office at 719-456-0764. We look forward to seeing your entry – everyone is invited to

participate and help keep the Bent County Harvest Show going!



Creative Cooks Cookbook



Colorado State Fair
August 25, 2018
Pueblo, Colorado

ACKNOWLEDGEMENTS

Extension Specialist

Connie Cecil

Superintendents

Verla Noakes

Julia Hurdelbrink

Nadine Henry

Typist & Binder

Pam Carl, Fremont County

Becky Chace, Fremont County



Colorado State University, U. S. Department of Agriculture and Colorado
counties cooperating.

Extension Programs Are Available to All Without Discrimination.

~ Cookbook Index ~

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Appetizers



GRACE PETERSEN
LOGAN COUNTY
Intermediate Individual

EASY HUMMUS RECIPE

¼ cup well-stirred tahini	salt to taste
¼ cup fresh lemon juice (1 large lemon)	1 (15-ounce) can chickpeas
2 Tbsp. extra-virgin olive oil, plus more for serving	or 1 ½ cups cooked chickpeas
1 small garlic clove, minced	2 to 3 Tbsp. water
½ tsp. ground cumin	dash ground paprika

In the bowl of a food processor, combine the tahini and lemon juice and process for 1 minute, scrape the sides and bottom of the bowl then process for 30 seconds more. This extra time helps “whip” or “cream” the tahini, making the hummus smooth and creamy. Add the olive oil, minced garlic, cumin, and a 1/2 teaspoon of salt to the whipped tahini and lemon juice. Process for 30 seconds, scrape the sides and bottom of the bowl then process another 30 seconds or until well blended. Open, drain, and rinse the chickpeas. Add half of the chickpeas to the food processor and process for 1 minute. Scrape sides and bottom of the bowl, then add remaining chickpeas and process until thick and quite smooth, 1 to 2 minutes. Most likely the hummus will be too thick or still have tiny bits of chickpea. To fix this, with the food processor turned on, slowly add 2 to 3 tablespoons of water until you reach the perfect consistency. Taste for salt and adjust as needed. Serve hummus with a drizzle of olive oil and dash of paprika. Store homemade hummus in an airtight container and refrigerate up to one week.

JACK GREER
LARIMER COUNTY
Junior Individual

HOMEMADE GRANOLA

6 cup rolled oats	¼ cup pineapple juice
¼ cup chopped almonds	½ tsp. almond extract
¼ cup chopped pecans	cooking spray
2 Tbsp. brown sugar	¼ cup dried cranberries, opt.
¼ tsp. Kosher salt	¼ cup chopped dried
1/3 cup maple syrup	apricots, opt.
¼ cup honey	

Preheat oven to 300°. Combine first 5 ingredients in a large bowl, toss. Add syrup, honey, juice, and almond extract, toss well. Spray baking sheet (with edges) with cooking spray. Spread mixture evenly into pan. Bake 45 minutes, stirring every 15 minutes. Remove from oven, then stir in dried fruit if desired. Cool completely. Store in air tight container. Yields 10 servings (1/2 cup)

**BRAYLON BRUNS
CAIDEN BRUNS
LOGAN COUNTY
Junior Team**

NUTTY GRANOLA BARS

2 cups old fashioned rolled oats
1 ½ cups trail nut mix
1 cup shredded coconut, loosely packed
¼ cup wheat germ
¼ cup toasted flax seed
3 Tbsp. unsalted butter
2/3 cup agave nectar
¼ cup light brown sugar, lightly packed
1½ tsp. pure vanilla extract
½ cup pitted dates
½ cup dried blueberries
½ cup dried cranberries

Preheat oven to 350°. Line an 8 x 12 inch baking dish with parchment paper. Toss the oatmeal, nut mix, and coconut together on a sheet pan and bake for 10 to 12 minutes, stirring occasionally, until lightly brown. Transfer to a large mixing bowl and stir in wheat germ and flax seed. Reduce the oven temperature to 300°F. In a small saucepan, place butter, agave, brown sugar, and vanilla. Bring to a boil over medium heat and boil for one minute. Pour this mixture over the oatmeal mix. Stir in dates, blueberries, and cranberries. Pour mix into prepared pan. Press down evenly. Bake for 25 to 30 minutes, until golden brown. Cool at least 2 to 3 hours before cutting into squares.

**AMILIANA HAMBURG
CHEYANNE GOSS
ADAMS COUNTY
Junior Team**

SUNSHINE LEMONADE

2 cups lemonade
2 cups orange juice
1 cup seltzer water

Combine all ingredients. Chill and serve.

Breads



**SAMANTHA DEVRIES
NICOLE GLOVER
FREMONT COUNTY
Senior Colorado Specialty Team**

FRESH SWEET CORN FRITTERS

1 cup all-purpose flour	½ cup heavy whipping cream
1 tsp. baking powder	salt and ground pepper to taste
3 ears fresh corn, kernels cut from cob	2 Tbsp. cane syrup
2 eggs separated	

Whisk flour and baking powder into a bowl and mix in corn kernels. Whisk egg yolks with cream in a small bowl and stir into the corn mixture; season with salt and black pepper. Beat egg whites with an electric mixer until fluffy and stiff peaks form in a separate bowl. Gently fold egg whites into the batter, retaining as much volume as possible. Pour vegetable oil into a deep heavy skillet to a depth of 3 inches. Heat to 375° (190 degrees C). Drop fritters into the hot oil, 2 to 3 tablespoons at a time, and cook until golden brown, 2 to 3 minutes per side. Drain fritters on paper towels and serve drizzled with cane syrup.

**LAURA RICHARDS
EL PASO COUNTY
Intermediate Individual**

CORN DODGERS

oil for frying	½ tsp. salt
2 cups cornmeal	2 cups milk
2 Tbsps. butter	1 tsp. baking powder
1 Tbsp. sugar	

Start heating oil in a Dutch oven while you cook the cornmeal, butter, sugar, salt, and milk in a saucepan. Once it's all mixed together, set the saucepan aside and allow to cool for five minutes, then add baking powder. Drop tablespoon-sized portions into the oil and let fry for 10 to 15 minutes or until golden brown.

**VALERIE CAPRARO
GARFIELD COUNTY
Intermediate Individual**

MY TAKE ON TEXAS ROADHOUSE HONEY BUTTER ROLLS

1 ¼ cup milk	1 large egg
2 ¼ tsp. yeast or 1 packet	4 cups flour
¼ cup honey	1 tsp. salt
4 Tbsp. melted butter, separated	

Bring the milk to a boil. Remove it from heat and let it reduce to a warm temperature. Mix the milk, yeast, and honey in a small bowl until well combined. Let it sit for 5 minutes. In a large bowl, mix 3 Tbsp. of the butter, the milk mixture, egg, and 2 cups of flour. Mix slowly until smooth. (Use a mixer with a dough hook if you have one, otherwise it works by hand.) Gradually add the remaining 2 cups of flour and mix until a dough has formed. Add salt, and mix/knead for 8 minutes. Then drop the dough onto a floured surface and knead for a few more minutes. Spray a large bowl with cooking spray and drop the dough inside. Cover the bowl (plastic wrap or a damp cloth works) and let it rise for an hour in a warm place. Spray muffin pan with vegetable oil. Separate into 12 sections and roll into a ball, place in muffin pan cups. Preheat oven to 350° and bake for 12-15 minutes, or until the top is a light golden brown.

**EMILY NELSON
KIOWA COUNTY
Senior Colorado Specialty Individual**

HUSHPUPIES

¾ cup of self-rising flour	1 pinch of onion powder
1 cup of self-rising corn meal	1 pinch of old bay seasoning
1 large egg	¾ -1 cup of buttermilk
1 small onion, finely minced	Canola oil for frying
1 pinch of garlic powder	

In a large mixing bowl, mix together everything but the buttermilk. Add in the buttermilk and stir until just blended. The mixture should be fairly stiff. Add in a bit more buttermilk as needed. Heat the oil to 375°. Drop teaspoons of dough into the oil and fry until golden. Remove from fryer and drain on paper towels. Serve hot with honey butter if desired.

CLAYTON NELSON
KIOWA COUNTY
Junior Individual

BLUEBERRY MUFFINS

2/3 cup white sugar
1 large egg
1/2 cup vegetable oil
1/3 cup milk
1 tsp. vanilla
1 1/4 cup all-purpose flour
1 tsp. baking powder
1/4 tsp. salt
1/2 cup sour cream
1 cup blueberries
1 Tbsp. white sugar to sprinkle on tops

Preheat oven to 375°. Put muffin papers in pan. Combine sugar, egg, oil, milk, and vanilla in a bowl and stir until well combined. Add the flour, salt, and baking powder. Stir until no longer lumpy, but don't overmix. Stir in the sour cream until well distributed. Fold in blueberries. Put in muffin pan, dividing the batter equally. Sprinkle tops with sugar. Bake about 30 minutes, or until toothpick comes out clean. Makes 12 muffins.

**RYLEIGH TUNINK
ELBERT COUNTY
Intermediate Individual**

POPPYSEED ROZKY

Dough

12 oz. can evaporated milk + enough milk to measure 2 cups
1 stick butter or margarine
1 pkg. dry yeast dissolved in $\frac{1}{4}$ cup 110° water to which 1 Tbsp. sugar has been added before the yeast
1 tsp. salt
 $\frac{1}{2}$ cup sugar
6 cups sifted flour + a little more for kneading and rolling
3 eggs beaten

Put milk and butter into a large microwave safe bowl and heat in microwave on high for 2 minutes. While that is heating, make your yeast and set aside to “proof”. When milk has heated, add the salt and sugar and stir well. Add 3 cups flour to the milk mixture and stir until the lumps are dissolved. Add the beaten eggs and stir until they are mixed in. Check to see if your yeast has foamed up. If it has it has been proofed and is ready to use. Check the temperature of your dough mixture. It should feel about body temperature (around 95°). Add the yeast to the dough mixture and stir well. Add 3 more cups of flour and keep mixing until it starts to stiffen. Then switch to kneading with your hands. You can add about $\frac{1}{4}$ cup of flour and knead some more and then add just a little at a time until the dough starts to form into a ball. It should still be pretty sticky. When it will kind of stick together into a ball, take it out of the bowl and grease the bowl. I use Pam spray. Return the dough to the bowl and cover with a lid or plastic wrap and set in a warm place to raise for about an hour. Punch down and let rise again for another half hour. Then divide the dough into 4 pieces.

Filling

2 cans Solo poppy seed filling

Roll out 4 pieces of dough and use $\frac{1}{2}$ can poppy seed for each loaf. Let raise for about 15 minutes. Then bake in 325° oven for about 20 minutes. Remove from oven and brush the tops with melted butter. Let them cool for about 10 minutes before removing to wire racks to finish cooling.

Salads & Sides



**KALANI MOBERG
KATERA MOBERG
ADAMS COUNTY
Senior Team**

SKULL ROCK STEAK SALAD

1¼ lbs. Round London Broil steak	2.5 oz. arugula
2 tsp. Famous Dave's seasoning	16 grape tomatoes, halved
1/4 cup olive oil	Half an avocado, sliced
1/4 cup raspberry balsamic vinegar	3.5 oz. cranberries
One head of iceberg lettuce	4 oz. feta cheese

Rinse off London Broil, then rub with seasoning. Grill London broil in grill pan inside for 9 minutes, then flip sides and grill for 9 more minutes on the other side. While grilling, mix olive oils and balsamic vinegar in an oil mixer and refrigerate. Check temperature of meat, which has to be brought to 160°. Once it has reached 160°, let sit for fifteen minutes. Then cut into slices. To prepare salad, rinse chopped iceberg lettuce and arugula. Put into a large bowl. Slice grape tomatoes and avocado and put on top of lettuce. Then sprinkle on cranberries and feta cheese. Lay sliced steak on top of salad. To complete, take dressing out of refrigerator and pour over salad.

**BRITTANY ROMERO
CHAFFEE COUNTY
Senior Colorado Specialty Individual**

MEXICAN STREET CORN

4 ears corn, shucked	4 Tbsp. melted butter
4 Tbsp. mayonnaise	1 tsp. lime juice
8 Tbsp. Parmesan cheese	Chili powder, optional

In a large pot place the corn in boiling water. Let cook for 5 to 7 minutes or until tender. Remove the corn and drain. Cut off the kernels and place in a large bowl. Add the mayonnaise, Parmesan cheese, butter and lime juice with the corn then mix all together. Add as much chili powder as you prefer. Enjoy!

KAIA RADEFF
DOUGLAS COUNTY
Senior Colorado Specialty Individual

FARMHOUSE PASTA AND CORN SALAD

Salad:

2 cups uncooked miniature farfalle pasta	½ bunch cilantro
6-8 strips bacon, crumbled	2 Tbsp. chopped jalapeno
3 cans corn	½ cup Cotija cheese
1 large avocado	½ cup black beans, drained and rinsed
3 green onions	

Dressing:

½ cup mayonnaise	¼ tsp. paprika
3 Tbsp. freshly squeezed lime juice	½ tsp. chili powder
¼ tsp. lime zest	pinch of salt and pepper
¼ tsp. ground cumin	

Cook pasta according to package, drain and rinse under cold water. Cook bacon according to package, crumble and set aside. Heat a large cast iron skillet on medium high for 3-4 minutes, drain corn, place in a single layer and cook for about 5 minutes stirring once in between until browned. Meanwhile prep the vegetables: chop the avocado into small pieces, chop the green onions, coarsely chop the cilantro, and chop the jalapeno very finely. Add crumbled cheese and black beans. In a large bowl, combine cooked, cooled pasta, corn, avocado, onions, cilantro, jalapeno, bacon, cheese, and toss together. In a small bowl, combine all of the dressing ingredients and whisk together until completely combined. Toss with salad and enjoy!!

**LILIANA BORDERS
LINCOLN COUNTY
Senior Colorado Specialty Individual**

RIMROCK RODEO SALAD

4 chicken breasts
Mrs. Dash Southwest
3-4 ears fresh corn husked
1 16 oz. can black beans, drained & rinsed
½ diced red onion
1 large can green chilies
1 pkg. taco seasoning
cilantro leaves to taste
lettuce
tortilla chips
Chipotle Ranch Dressing

Coat chicken breasts with Mrs. Dash Southwest and grill until an internal temperature of 165 degrees (4-6 minutes per side). Slice into pieces. Refrigerate until ready to serve. Grill corn at 250 degrees, turning frequently until slightly charred. Remove corn from ears. In a separate bowl, add grilled corn, black beans, diced red onion, green chilies, taco seasoning and cilantro leaves. Refrigerate 12-24 hrs. Chop lettuce to bite size. Serve the salad on a bed of lettuce topped with corn mixture, grilled chicken, tortilla chips and dressing.

Makes 4 servings.

RYLAN SCHREINER
MORGAN COUNTY
Junior Colorado Specialty Individual

JALAPENO POPPER CREAMED CORN

8 oz. block cream cheese
1/3 cup sour cream
¼ tsp. chili powder
garlic powder
Kosher salt
freshly ground black pepper
2 Tbsp. extra virgin olive oil
8 ears corn, removed from cob
or 1 15 oz. bag of frozen corn

1 cup cooked bacon crumbled
plus more for garnish
1 cup shredded cheddar¼ tsp.
cheese
2 green onions, thinly sliced
2 jalapenos, seeds removed
and minced, plus another
jalapeno thinly sliced
Juice of 1 lime to taste, opt.

In large bowl, combine cream cheese, with sour cream. Season with the chili powder, garlic powder, salt, and pepper. In a large skillet over medium-high heat, heat oil. Add corn and cook, stirring occasionally, until the corn is golden and lightly seared, about 5 minutes. Add corn to cream cheese mixture and let cool slightly. Add bacon, cheddar cheese, green onions, and jalapenos and toss to coat. Garnish with sliced jalapeno and more bacon. Sprinkle with lime juice, if preferred.

GWYN KINGRY
MADISON PALMER
LARIMER COUNTY
Junior Team

GARDEN PASTA

4 oz. spaghetti
1 Tbsp. olive oil
1 sliced zucchini
1 sliced yellow pepper
1 sliced carrot

1 sliced green onion
1 Tbsp. Italian seasoning
½ Tbsp. garlic salt
1 Tbsp. onion powder
1 12 oz. can diced tomatoes

Pasta

Put water in a pot and boil. Once it is boiling add pasta and cook for 7 min. Drain pasta and put it in serving dish.

Sauce

Put olive oil in frying pan and add all the vegetables and seasonings except tomatoes and stir until soft. Add the tomatoes and let it stay in pan together for 6 minutes. Pour over the pasta and serve.

WYATT HERBERT
BACA COUNTY
Junior Individual

COWBOY PASTA SALAD

1 lb. dried mini pasta shells
1 lb. bacon
1 lb. lean ground beef
1 tsp. cumin
pinch of red pepper flakes
salt & pepper to taste
1 cup mayonnaise
¼ cup BBQ sauce
2 Tbsp. spicy brown mustard

2 Tbsp. Worcestershire sauce
2½ tsp. hot sauce
1 can corn, drained
2 cups cherry tomatoes,
halved
1½ cup shredded cheese
1 cup diced onions or
scallions

Bring a large pot of water to a boil. Cook pasta until al denté according to package directions. Drain and rinse under cold water. Drizzle with a little olive oil to prevent sticking. In the meantime, cook bacon in a large non-stick skillet over medium heat until crispy, about 10 minutes. Set bacon aside to drain grease. Leave a little bacon grease in skillet and add ground beef. Cook and break up until no longer pink. Drain grease. Return to skillet and season with the cumin, red pepper flakes, and a pinch of salt and pepper. Set aside to cool completely. In an extra large bowl, whisk together the mayonnaise, BBQ sauce, mustard, Worcestershire sauce and hot sauce until combined and smooth. Add the cooked pasta, crumbled bacon, beef, drained corn, tomato halves, cheese and onions or scallions. Toss to combine and coat. Enjoy right away or refrigerate until ready to serve.

Soups & Sandwiches



ERICA CAUTHRON
FREMONT COUNTY
Senior Individual

CUCUMBER SANDWICHES

1/3 large cucumber thinly sliced	pinch of salt
12 slices Rye bread	pinch of onion powder
8 oz. Garden Style cream cheese	2 Tbsp. chopped dill
1/4 cup mayonnaise	2 Tbsp. dill sprigs
pinch of garlic powder	

Slice cucumber into thick round slices. Set slices on a paper towel to drain. Cut bread into circles with a biscuit cutter. Cream the cream cheese and mayonnaise. Add garlic powder, salt, onion powder and chopped dill. Spread cream cheese mixture on one side of bread. Top with cucumber slices. Add a bit of cream cheese mixture and garnish with a dill sprig.

DANE DEVRIES
COLTEN DUNN
FREMONT COUNTY
Senior Team

BONE SOUP

20 oz. beans any variety	1 cup chopped onion
7½ cups hot water	1 tsp. minced garlic
1 ham hock or any type of bones you have	½ tsp. salt
12 oz. salt pork	½ tsp. pepper

Sort and rinse beans. Soak beans overnight (6-8 hours) in 8-10 cups of water in a large pot. Drain and rinse beans. Add 7½ cups of hot water to beans, add ham hock, salt pork, chopped onion, minced garlic and salt. Simmer with lid slightly tilted for 1½ to 2 hours. Add pepper 30 minutes before beans have finished cooking.

CALLIE RHYNE
ARAPAHOE COUNTY
Intermediate Individual

GREEN CHILE POSOLE STEW

4-5 pound boneless pork shoulder roast	4 ounces hot green tomatillo salsa
5 tablespoons Mesquite Liquid Smoke	2 bunches scallions (about 20), finely chopped
1 teaspoon salt	1 Tbsp. cumin
2 tsp. cumin	salt & pepper to taste
1 tsp. coriander	2 14 oz. cans green enchilada sauce
2 tsp. chili powder	3 6 oz. cans chopped green chilies
1 14 oz. cans beef broth (low fat, low salt)	shredded Mexican cheese
½ cup extra virgin olive oil	
2 28-oz. cans hominy	
1 bunch cilantro, leaves only (finely chopped)	

Preheat oven to 325°. Using a knife or long-tined fork, spear pork roast all over and then place on a large piece of heavy aluminum foil. Mix together liquid smoke, salt, cumin, coriander and chili powder and pour over roast. Seal tightly, then wrap 1-2 more times in foil. Place in a baking dish with an inch of water in the bottom and bake for 3 hours. Remove from oven, let cool slightly while still wrapped in foil, then shred pork into bite size pieces, discarding any chunks of fat. Put shredded pork into a large pot or crock pot and add all the remaining ingredients except for cheese. Stir together, cover and let simmer for an hour to bring all the flavors together. Serve with cheese as a garnish.

GARRETT FETTY
GRANT FETTY
ARAPAHOE COUNTY
Intermediate Team

ZUPPA TOSCANA SOUP

5 links mild/spicy Italian sausage
½-1 onion, diced
2-3 stalks celery, diced
1 clove garlic, minced
2 cans low sodium chicken broth
½ pint heavy cream

1 can chicken soup
5-6 cubed medium/large potatoes
¼ tsp. crushed red pepper flakes
2 cans evaporated milk
1 can water

While sausage still partially frozen, cut into small pieces, taking off the casing. Brown, drain, and pat dry w/ paper towels. Sauté onion, celery, and garlic until transparent. Combine all ingredients, bring to boil, and simmer for an hour.

MCKENZIE ALBRIGHT
LA PLATA COUNTY
Junior Individual

INCREDIBLE ITALIAN SOUP

1 lb. Italian sausage
2 zucchini squash
3 yellow onions
1 28 oz. can of diced tomatoes

4 10.5 oz. canned beef broth + 2 cans
water
18 oz. three cheese tortellini

Pre-cook sausage in oven at 350° for 35 minutes. Slice into one-inch pieces. Cut zucchini and onion into large cubes. Combine all ingredients except tortellini. Bring to a boil. Simmer for one hour. Add tortellini. Cook for ten minutes. Serve.

**VICTORIA GLOVER
FREMONT COUNTY
Senior Colorado Specialty Individual**

CAJUN CORN AND CRAB BISQUE

3 Tbsp. butter	1 bay leaf
3 Tbsp. all-purpose flour	2 cups milk
1 Tbsp. vegetable oil	2 cups heavy cream
1 lg. onion	1 tsp. liquid crab boil seasoning
1 Tbsp. minced garlic	1 lb. fresh lump crabmeat
1 lg. celery stalk, minced	½ cup chopped green onions
Cajun seasoning to taste	½ tsp. Worcestershire sauce
1 cup chicken broth	salt and pepper to taste
1½ cups frozen corn kernels	additional chopped green onions

Melt the butter in a small saucepan over medium heat; then gradually whisk in the flour. Cook 5 to 7 minutes, whisking constantly, until a golden roux forms; set aside. Heat the oil in a Dutch oven over medium heat. Combine the onions, garlic, and celery and cook 1 minute. Add the Cajun seasoning to taste. Stir in the broth, corn, and bay leaf. Bring to a simmer, then pour in the milk, cream, and liquid crab boil. When the mixture begins to simmer, reduce heat to low and simmer 7 minutes. Stir in the roux, 1 tablespoon at a time, blending thoroughly. Continue to cook, on low heat, whisking until mixture thickens. Stir in crabmeat, green onions, and Worcestershire sauce. Simmer 6 to 8 minutes more. Season with salt and pepper to taste. Garnish with additional chopped green onions.

Main Dish



**QUINCY ALCARAZ
FREMONT COUNTY
Intermediate Colorado Specialty Individual**

GREEN CORN CHICKEN TAMALES

Masa

5 lbs. corn masa	1 Tbsp. onion powder
1 cup butter flavored Crisco	1 Tbsp. garlic powder
1 cup chicken broth	2 cups shredded Monterey Jack Cheese
2 cans cream style corn	1 cup chopped green chili
2 Tbsp. salt	

Add masa to a very large mixing bowl. Melt Crisco and broth in sauce pan and add to masa. Add two cans of corn to masa mixture and mix well. Add dry spices next and mix until well mixed. Masa should be slightly thinner than creamy peanut butter. Add more chicken broth is necessary and fold in cheese and green chili and mix well.

Tamale Filling

3 lbs. boneless shredded chicken	1 cup of chopped green chili
2 cups Monterey Jack Cheese	1 lb. corn husks

Mix all filling ingredients until well mixed.

Soak corn husk in hot water until soft. Rinse off well so husk is free of corn silk and debris. For each tamale spread 4 oz. masa (use a 2 oz. cookie dough scoop) onto the smooth side of corn husk. Spread in a square about ½ inch away from edge of husk. Place two Tbsp. of filling right in center of masa layer and fold husk over filling to form tamale, fold the tail of husk (narrow end) under tamale to form rectangular shape tamale. Place tamales in steamer tail side down, filling side up and steam for 30 to 45 minutes. Optional: Wrap each tamale in a sheet of deli paper to prevent tamale from splitting during to steaming process.

**DECEMBER POOL
GRACE POOL
DOUGLAS COUNTY
Intermediate Team**

BEAN AND VEGETABLE SHEPHERDS PIE

½ lb. cooked vegetables	mashed potatoes (enough to cover dish)
Thick bistro gravy made with well-seasoned vegetable stock (about a cup)	½ oz. margarine
1 can baked beans	

Mix cooked vegetables with gravy and beans. Place in baking dish and cover with a layer of well-seasoned mashed potatoes. Put dabs of margarine on top and bake in a moderate oven to brown the potatoes (about 35 minutes).

**MEGAN PODTBURG
MINDI PODTBURG
WELD COUNTY
Senior Colorado Specialty Team**

CORN/CHICKEN TACO EN FUEGO RECIPE

4 ears of sweet corn, after being cooked, cut off cob
4 chicken breasts, grilled and sliced
salt and pepper to taste
1 cup chopped onion
1 cup chopped bell peppers (any color)
1 jalapeño pepper chopped (use to your preference to taste)
2 Tbsp. olive oil
½ tsp. McCormick Grill Mates Spanish seasoning (use to your preference)
1 tsp. fresh lime juice
1 Tbsp. Tequila (use for flames only and only with adult supervision)

Cook corn on the cob to your preference, then cut corn off cob. Heat grill to 350 degrees. Grill chicken breast on grill until centers reach 160° internally. Slice chicken into bite size pieces. Chop onion, bell peppers and jalapeno. Heat 2 Tbsp. olive oil in a cast iron skillet and then add onion cooking until tender. Then add peppers, corn and chicken to skillet. Add lime juice and Spanish season to taste. Remove from heat and in a safe open area have parents add tequila if desired. Serve with tortilla and sides.

**ATHENA TERRONES
SHELBY WALLACE
BACA COUNTY
Senior Team**

BEEF AND BROCCOLI

Beef Marinade

1 tsp. cornstarch	1/8 tsp. black pepper
1 tsp. low sodium soy sauce or Tamari	3/4 lb. flank or sirloin steak
1/4 tsp. dark soy sauce	1 Tbsp. minced garlic
1/2 tsp. toasted sesame oil	

In a medium bowl, mix together all the ingredients for the marinade. Trim fat and slice very thinly the beef and add to the marinade. Set aside for at least 10 minutes.

Broccoli

Water for blanching	1 bundle of broccoli
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In a large non-stick sauté pan on high heat, bring the water to a boil. Add the broccoli florets and cook for about 30 seconds. Drain and immediately rinse with cold water to stop the cooking process. Set aside.

Sauce

1 1/2 Tbsp. of oyster sauce	1 tsp. toasted sesame oil
1 1/2 tsp. low sodium soy sauce	2 tsp. cornstarch
1/2 tsp. mirin	1/3 cup cold water
1/4 tsp. sugar or raw honey	salt & pepper to taste

Combine all the sauce ingredients together in a small bowl. Set aside.

Heat cooking oil over high heat for about 2 minutes, using the same non-stick pan you used for blanching. The pan needs to be hot enough that you start seeing a little bit of smoke rising. Quickly add the beef to the smoking pan and spread the pieces out to a single layer, allowing them to sear and brown. Add the garlic and continue to cook until the meat is no longer pink. Pour in the sauce, stirring constantly until the sauce boils and thickens about 30 seconds. Add more water if needed to thin out the sauce. Quickly stir in the broccoli and toss everything together to coat well. Salt and pepper to taste. Sprinkle with chopped onion or sesame seeds, if desired. Serve over hot rice or noodles

**SKYLER HOSTIN
DOUGLAS COUNTY
Intermediate Individual**

TERIYAKI CHICKEN NOODLE BOWL RECIPE

1 (5.6 oz.) pkg. refrigerated Yaki-Soba. Discard seasoning pkts.
1 Tbsp. cornstarch
1/3 cup reduced sodium soy sauce
1/4 cup brown sugar, packed
3 cloves garlic, minced
1 Tbsp. freshly grated ginger
2 Tbsp. honey
1 lb. boneless, skinless chicken thighs, cut into 1 inch chunks
1 Tbsp. olive oil
1 tsp. sesame seeds
1 green onion, thinly sliced

In a large pot of boiling water, add Yaki-Soba until loosened, about 1-2 min; drain well. In a small bowl, whisk together cornstarch and 1/4 cup water; set aside. In a small saucepan over medium heat, add soy sauce, brown sugar, garlic, ginger, honey, and 1 cup water; bring to simmer. Stir in cornstarch mixture until thickened enough to coat back of a spoon, about 2 min; let cool to room temperature. Reserve 1/4 cup and set aside. In a gallon size ziploc bag or large bowl combine soy sauce mixture and chicken; marinate for at least 30 min. to overnight, turning the bag occasionally. Drain the chicken from the marinade. Heat olive oil in a large skillet over medium heat. Add chicken and cook until golden brown, 3-4 min., set aside. Stir in Yaki-Soba and reserved soy sauce mixture until well combined, about 2 mins. Serve immediately, garnish with sesame seeds and green onions if desired.

**AUDREY LAFFEY
LARIMER COUNTY
Senior Individual**

MEATLOAF

1 Tbsp. good olive oil
3 cups chopped yellow onions (3 onions)
1 tsp. chopped fresh thyme leaves
2 tsp. Kosher salt
1 tsp. freshly ground black pepper
3 Tbsp. Worcestershire sauce
1/3 cup canned chicken stock or broth
1 Tbsp. tomato paste
2½ lbs. ground chuck (81 percent lean)
½ cup plain dry bread crumbs (recommended: Progresso)
2 extra-large eggs, beaten
½ cup ketchup (recommended: Heinz)

Preheat the oven to 325°. Heat the olive oil in a medium sauté pan. Add the onions, thyme, salt, and pepper and cook over medium-low heat, stirring occasionally, for 8 to 10 minutes, until the onions are translucent but not brown. Take off the heat, add the Worcestershire sauce, chicken stock and tomato paste. Allow to cool slightly. In large bowl, combine the ground chuck, onion mixture, bread crumbs, and eggs, and mix lightly with a fork. Don't mash or the meat loaf will be dense. Shape the mixture into a rectangular loaf on a sheet pan covered with parchment paper. Spread the ketchup evenly on top. Bake for 1 to 1¼ hours, until the internal temperature is 160° and the meat loaf is cooked through. (A pan of hot water in the oven, under the meat loaf, will keep the top from cracking.) Serve hot.

TIMOTHY RHODE
MORGAN COUNTY
Senior Colorado Specialty Individual

ROASTED SWEET CORN GRITS WITH SHRIMP AND
ANDOUILLE SAUSAGE

For the Corn

2 large ears corn
3 tablespoons unsalted butter, melted
salt and pepper to taste

For the corn, preheat oven to 400°. Shuck corn, remove silks, rinse well and let drain. Roll corn in melted butter and sprinkle with seasonings. Place on a foil lined tray and roast for about 25 to 30 minutes, depending on size, brushing with additional butter occasionally. Let cool and cut kernels off of cob; set aside.

For the Grits

1 cup salted chicken stock or broth
4 Tbsp. unsalted butter, divided
1 cup whole milk or half and half
¼ teaspoon salt, or to taste
¼ tsp. freshly cracked black pepper, or to taste
1 cup stone-ground white or yellow grits
1 green onion, sliced, for garnish, optional

Add chicken stock and 3 tablespoons butter to saucepan and bring to a boil, stir in milk, salt and pepper. Slowly add in grits until fully incorporated, then add corn, stir and reduce to a simmer. Cook, stirring often, about 10 minutes, or until liquid is absorbed and grits are creamy. Taste, adjust seasonings if needed and transfer to serving bowl. Top with thin slices of remaining butter and serve immediately.

Shrimp and Andouille sausage!

1 lb. of large shrimp, peeled, deveined	2 Tbsp. extra virgin olive oil
1 Tbsp. Creole seasoning or seasoning salt	2 stalks celery, chopped
1 Tbsp. garlic powder	1 jalapeno, diced
1 Tbsp. onion powder	1 bell pepper, diced
2 tsp. black pepper	1 red pepper, diced
1 tsp. dried thyme	1 small red onion, diced
1 tsp. smoked paprika	3 cloves garlic, minced
½ stick of butter	1 lb. Andouille sausage

To prepare the shrimp, peel and devein shrimp, season with all the spices and set aside. In a large sauté pan add butter and olive oil over medium high heat, add all the vegetables, except garlic and sauté for 5 minutes, add garlic and sauté 1 minute more.

Add Andouille sausage that has been sliced on the diagonal ½ in. thick and sauté about 10-15 minutes, until browned. Add shrimp and cook about 3-4 minutes until no longer pink. Serve on top of hot grits and enjoy!

Desserts



ALI HUPPERT
ADAMS COUNTY
Senior Individual

RASPBERRY CHOCOLATE MOUSSE CAKE

Raspberry Compote

6 oz. raspberries	1½ tsp. lemon juice
3 Tbsp. granulated sugar	1/3 tsp. cornstarch

Combine all ingredients in a small saucepan and stir to combine. Simmer about 10 minutes over medium-low heat, stirring occasionally. Remove from heat and cool at least 15 minutes (while heating mousse).

Chocolate Mousse

1 Tbsp. unflavored gelatin	¼ cup raspberry compote
1/3 cup cold water	4 egg yolks
12 oz. bittersweet baking chocolate (Ghirardelli)	1/3 cup sugar
¾ cup water, split in two	2 cup heavy whipping cream
3 Tbsp. unsalted butter	2 Tbsp. raspberry compote

Mix powdered gelatin with 1/3 cup water, allow to bloom 2 to 3 minutes. Microwave 20 seconds or until liquid. Set aside. Using whisk attachment, beat cold heavy cream in the cold bowl of an electric mixer until soft peaks form. Put in the fridge. Heat water in double boiler over medium heat. Add chocolate, 6 Tbsp. water, butter and 1/4 c. raspberry compote. Let it start melting and stir until melted and smooth, remove from heat. In a saucepan, whisk egg yolks, other 6 Tbsp. water and 1/3 cup sugar. Cook, stirring slowly but constantly, until the mixture reaches 160°. Remove from heat. Stir egg mixture into chocolate mixture until combined and smooth. Add gelatin and stir well. Place ice into a pan. Cool chocolate mixture while slowly stirring for 5 to 7 minutes setting on top of the ice. Fold whipped cream into cooled chocolate mixture until all smooth. Do not whip mixture or the cream will flatten and you will lose the texture. Grease an 8" round cake pan. Use a spatula to spread mousse into cake pan. Refrigerate in pan for at least 4 hours. Turn mousse cake onto prepared 12" round cake board and return to refrigerator.

Chocolate Ganache

10 oz. bittersweet or semi-sweet baking chocolate (I used a mix)
1¼ cup heavy cream
Remaining raspberry compote

Over a double broiler, combine ingredients and stir until smooth. Remove from heat. Spread on mousse cake.

Optional Chocolate Buttercream Topping

2 Tbsp. cocoa	½ tsp. vanilla
2 cups powdered sugar	½ cup softened butter
1/8 tsp. salt	3 Tbsp. heavy cream or milk

Combine all ingredients into electric mixer. Beat for 5 to 7 minutes until smooth and fluffy. Use 8B tip in prepared decorating bag to pipe 12 swirls around top border of cake. Place 1 raspberry on each swirl. Pipe decoration for center. Fill with raspberries.

MINDY LOUNSBERRY ADAMS COUNTY Junior Individual

TO HAVE AND HAVE NOT ZESTY KEY LIME PIE

9" graham cracker crust

1/3 cup unsalted butter, melted
1¼ cup graham cracker crumbs (about 12 graham crackers in a zipper bag with air removed and a rolling pin then measured)
¼ cup sugar

Combine crust ingredients in a medium bowl to the consistency of coarse meal. Press into 9" pie plate evenly all around, about 1/8" thick. If the crumbs won't stick, add 1 Tbsp. of water to the mix. Chill for one hour in the refrigerator. Preheat oven to 375°. Bake 8-10 minutes until lightly browned. Remove to rack for cooling.

Filling

4 large egg yolks
1 14 oz. can sweetened condensed milk
½ cup freshly squeezed key lime juice (about 12 key limes divided in half)
2 tsp. key lime zest

Preheat oven to 350°. Beat egg yolks with electric mixer on medium speed just until thick and light yellow. Don't over mix. Turn mixer off and add sweetened condensed milk. Start mixing on low speed and add half the lime juice mixing just until incorporated. Add remaining lime juice and lime zest. Continue mixing just until blended for only a few seconds. Pour mixture into pie crust and bake for 12 minutes (don't overcook or pie will be rubbery). Remove to rack to cool. Refrigerate for 1 hour before serving. Keep refrigerated. If desired, garnish with whipped cream and lime slice.

**KENNA MCELROY
MADELINE VANDYKE
BENT COUNTY
Intermediate Team**

ASIAN-AMERICAN ALMOND COOKIES

½ cup raw whole almonds
1½ cups all-purpose flour
½ tsp. baking powder
¼ tsp. salt

½ cup butter
1/3 cup sugar
½ tsp. almond extract
1 Tbsp. water

Reserve 36 whole almonds; grind remainder. Sift flour with baking powder and salt. Thoroughly cream butter with sugar. Stir in all remaining ingredients except whole almonds; form dough into 36 balls. Place on greased cookie sheets; press a whole almond into the center of each ball. Bake in preheated 350° oven 20 minutes, or until light brown. Enjoy!

**MEG HUBER
DOUGLAS COUNTY
Senior Individual**

ITALIAN FIG COOKIES (CUCIDATI)

For the dough

½ cup unsalted butter room temperature
¼ cup granulated sugar
¼ cup packed light brown sugar
¼ tsp. baking soda
1 large egg

1 tsp. pure vanilla extract
½ tsp. salt
1 ¾ cups unbleached
all-purpose flour

Place the butter to a mixing bowl and beat on medium-high speed with an electric mixer for 1 minute. Add the granulated sugar, brown sugar and baking soda. Beat until combined. Add the egg, vanilla and salt and mix until incorporated. Scrape the sides of the bowl and beat again for a few seconds. Add the flour in three additions, mixing on low to incorporate. Divide the dough in half and form each into a small rectangle. Wrap the dough in plastic wrap and refrigerate for at least 3 hours or overnight.

For the fig filling

1 cup dried diced Calimyrna or Mission figs stems removed (6 or 7 ounce package)
½ cup chopped pitted dates finely chopped (or substitute raisins if preferred)
½ cup orange juice fresh squeezed (about 1 orange)
1/3 cup diced candied orange peel
2 Tbsp. granulated sugar
1 tsp. lemon zest
¼ teaspoon ground cinnamon
1/3 cup blanched almonds, chopped fine
2 Tbsp. dark spiced rum or Grand Marnier orange liqueur

In a small saucepan, combine the figs, dates, orange juice, candied orange peel, sugar, lemon zest and cinnamon. Bring the mixture to a boil over medium-high heat. Reduce the heat to medium-low and simmer for 5 to 8 minutes or until fruit is soft and the mixture is thick. Remove from the heat and add the chopped blanched almonds and 2 Tbsp. Grand Marnier, if using. Set aside to cool to room temperature. Cover with plastic wrap once cooled until needed. To assemble and bake the cookies, preheat oven to 375°. Line a baking sheet with parchment paper and set aside. Remove the dough from the refrigerator and allow it to rest for 10-15 minutes before rolling out. Place a piece of wax or parchment paper (at least 14 x 10 inches) on a clean work surface. Lightly dust with flour. Roll one portion of the dough into a 10 x 8-inch rectangle. Cut each rectangle into two 10 x 4-inch strips. Portion 1/4 of the filling down the center of each strip (in a rounded mound). Use the parchment paper as a guide and bring one long side of the dough up and over the filling. Repeat with the opposite side forming a tube and enclosing the filling. The dough should overlap slightly on top of the filling. Gently seal the edges. Carefully transfer the filled strips to the prepared baking sheet placing them seam side down on the pan. Bake for 12 minutes or until lightly browned. Remove from the oven and immediately slice each strip (using a large thin knife) diagonally into 1-inch pieces. Transfer the cookies to a wire rack to cool.

For the lemon glaze

1 cup powdered sugar, sifted
2 to 3 tsp. lemon juice, just enough to make a glaze you can slowly drizzle
Sprinkles for decoration, if desired

Combine the powdered sugar and lemon juice in a small bowl and whisk until smooth. Drizzle on each cookie then top with colored sprinkles if desired.

Recipe Notes

Chopped candied orange peel can be found in the section of your grocery store with fruit cake ingredients.

Prep time does not include the 3 hours to chill the dough.

We used Grand Marnier in this recipe.

Adapted from a Better Homes and Gardens recipe published in Christmas Cookies, 2003

**BAILEY TAICLET
EL PASO COUNTY
Junior Individual**

ALMOND RING

¼ cup water
12 oz. almonds
½ cup sugar
1 tsp. cinnamon
1 tsp. clove
sprinkles

Bring water, almonds, and sugar to boil. Reduce heat until it solidifies. Continue to heat until it melts down again. When it reaches this point add the cinnamon and clove into the pot. Stir quickly and place on a greased pan. Add sprinkles and allow to cool.

**MIA GREER
LARIMER COUNTY
Intermediate Individual**

SOPAIPILLA CHEESECAKE

2 8 oz. tubes refrigerated crescent dinner roll	1 tsp. vanilla extract
2 8 oz. packages cream cheese, softened	½ cup butter, melted
1 cup sugar	½ cup cinnamon sugar

Preheat oven to 350°. Grease a 9 x 13 baking pan. Unroll one package of refrigerated crescent rolls. Line the bottom of the pan and flatten, pinching seams together as you go. In a medium bowl, add together the cream cheese, sugar, and vanilla. Beat well with an electric mixer until smooth. Spread cream cheese mixture over the crescent roll. Unroll the other can of crescent rolls and place on top of cream cheese mixture. Pour one stick of melted butter over the top and sprinkle with about ½ cup of the cinnamon sugar mixture. Bake at 350° for 30 minutes. Allow to cool, eat at room temperature or served chilled. Refrigerate any leftovers. Garnish with fruits.

**ELLY MAY RHEA
EMILY RHEA
GUNNISON COUNTY
Senior Team**

DIS-ASSEMBLED CHEESECAKE COCKTAIL

Cheesecake filling

40 oz. cream cheese (5 blocks at room temperature)
6 large eggs
1 1/3 cups granulated sugar
1/4 tsp. salt
1 tsp. vanilla extract
1 pint low fat sour cream

Preheat oven to 400°. Grease a 10-inch spring form pan. Fill a roasting pan 1/4 full with hot water. Place your spring form pan in the water bath and wait 10 minutes to see if any water seeps into your spring form. (if so, dry it, grease it and place your spring form in a pie dish. Then place the pie dish with the spring form in the water bath.)

In a large mixing bowl, add one block of cream cheese and beat it until creamy. Continue adding one block of cream cheese at a time and beating well, scraping the bowl as needed. There must not be any lumps in your batter. Add the eggs one at a time, mixing after each addition on low. Add the remaining ingredients one at a time, mixing to combine after each addition. When all ingredients have been added, beat on high (or as high as you can without splashing) for seven minutes. Transfer the batter to the spring form pan (filling no more than 3/4 of the way to the top) in the water bath and bake for 10 minutes at 400°. Then lower the temperature to 375° and bake for 50-55 minutes. The top should be set, except for a small circle in the middle. Do not insert anything into the cheesecake to test it, or it will crack. Turn off the heat and let the cheesecake stay in the oven with the door ajar for one hour. Leave the cheesecake in the spring form pan and let it finish cooling on a wire rack. Refrigerate the cheesecake overnight before cutting into it. Store it in the refrigerator for up to three days or freeze it for up to 3 weeks.

Blueberry compote

- 1 cup blueberries
- 1/4 cup granulated sugar
- 1/2 tsp. lemon zest

Place all ingredients in a small sauce pan and cook on medium heat until slightly thickened. Cool before serving.

Strawberry compote

- 1 cup strawberries, sliced
- 1/2 cup granulated sugar

Place all ingredients in a small sauce pan and cook on medium heat until slightly thickened. Cool before serving.

How to serve:

Place cheesecake filling, blueberry compote, strawberry compote, and graham crackers in a serving tray garnish with mint and enjoy!

**ERIN TEMPEL
TAYLYNN ENGELHARDT
PROWERS COUNTY
Intermediate Team**

PLUS LÉGER QUE L’AIR GATEAU (LIGHTER THAN AIR CAKE)

Cake

3 large eggs	2½ tsp baking powder
2½ cup cake flour	1 cup sour cream
3 tsp. vanilla	½ tsp salt
1½ granulated sugar	1½ sticks unsalted butter
1 cup milk	soft

Preheat oven to 350°. Cut butter into ½ inch slices. Grease and flour pans. In a small bowl combine eggs, vanilla, milk, and sour cream. Wisk together. Sift dry ingredients (cake flour, sugar, baking powder, and salt) into large bowl. Slowly add butter a few pieces at a time using medium speed into the dry mixture. Then slowly add egg mixture and incorporate well. Pour into pans. Bake for 35 min. Cool 10 min and remove from pans. Let cool completely before finishing dessert

Filling

1 cup smashed blackberries
1½ cup sugar
1 Tbsp. fresh lemon juice
3 Tbsp. cornstarch or pectin

In large pot over medium heat, add blackberries and sugar and bring to a slow boil. When full boil is reached, add lemon juice and cornstarch (pectin). Continue to boil for 90 seconds. If necessary adjust cornstarch/pectin amount by adding 1 tsp. additional until mixture is not runny.

Topping

2 cups heavy whipping cream
½ cup sugar

Add cream to mixer and whip on high until stiff peaks form. Slowly add sugar to mixture and incorporate. Remove whipped cream and place into decorator bag for future use. Refrigerate bag until needed.

Assembly:

After all parts have been completed, assemble cake by trimming crust from cake. Slice cake into halves and place the fresh blackberry jam between them. Reassemble into a stack and top with fresh whipped cream and garnish

ELLA HAUCK
PUEBLO COUNTY
Senior Individual

HARRY POTTER CHOCOLATE BOTTOM PUMPKIN TART

Tart dough

1 cup all-purpose flour
1/8 tsp. salt
3 Tbsp. granulated sugar
3/4 stick (6 tablespoons) cold butter or margarine, cut into pieces
1 large egg yolk
2 Tbsp. heavy cream
1 tsp. vanilla

To make the dough, place the flour, salt and sugar in the bowl of a food processor and pulse a few times to combine. Scatter the butter pieces over the flour and pulse about 15 times until the mixture resembles coarse, yellow meal. Transfer the mixture to a large mixing bowl. Whisk together the egg yolk, cream and vanilla and pour over the flour mixture. Toss with a rubber spatula until the dough begins to stick together. Knead very briefly to form a cohesive mass and form into a disk. Wrap in plastic wrap and refrigerate 2 hours or up to 3 days. Preheat the oven to 425°. On a generously floured surface, roll out the disk (make sure you flour the top of the disk as well) to an 11-inch circle. Tart

dough is hard to roll out, but this is a very forgiving dough, especially if you use margarine in place of the butter. Simply gather up the torn dough, re-flour the work surface, briefly knead the dough into a ball, and roll it out again. Fit the dough into a 9inch tart pan. If the dough breaks, you can patch it by gluing extra scraps with a bit of water. Prick the bottom of the shell with a fork, line with aluminum foil. Bake for 20 minutes or until the dough is dry and set. Remove the foil and reduce the heat to 350°, and bake another 7 to 10 minutes until the crust is golden brown. Remove from the oven to cool.

Chocolate bottom

½ cup heavy cream

4 oz. bittersweet chocolate, chopped

To make the chocolate bottom, place the cream and chocolate in a microwave-safe bowl and microwave on high for 2 minutes, stopping to stir every 30 seconds. Stir until smooth and pour into the bottom of the tart shell. Cool until set.

Pumpkin filling

- 1 ½ cups canned pumpkin pureé, not pumpkin pie filling
- ½ cup granulated sugar
- ½ tsp. ground cinnamon
- 1/8 tsp. ground allspice
- 1/8 tsp. ground cloves
- 1/8 tsp. ground nutmeg
- ½ cup heavy cream
- 2 large eggs
- 1 Tbsp. cornstarch
- 1 ½ oz. bittersweet chocolate, melted, for drizzling, if desired

To make the filling, combine the pumpkin, sugar, cinnamon, allspice, cloves, nutmeg, and heavy cream in a medium saucepan and cook, stirring frequently, until hot but not bubbling. Whisk the eggs with the cornstarch and add to the pan. Continue cooking, stirring constantly, until thickened and bubbling. Remove from the heat. Cool to room temperature. Pour the cooled filling into the tart shell and smooth the top with a rubber spatula. If desired, drizzle melted chocolate on top. Refrigerate until firm.

**ELLE ADAMS
SARAH FADENRECHT
PUEBLO COUNTY
Intermediate Team**

DEVILS FOOD CAKE

Cake

½ cup unsweetened cocoa powder
½ cup dark brown sugar
1 cup boiling water
9 Tbsp. soft butter
¾ cup granulated sugar

1½ cups all-purpose flour
½ tsp. baking powder
½ tsp. baking soda
2 tsp. vanilla extract
2 large eggs

Preheat oven to 350°. Grease and flour pan. Makes 18 large cupcakes. Put cocoa powder, brown sugar and sugar in bowl mix well, pour boiling water whisk to mix and set aside. Cream the butter and sugar together, beating well until light and fluffy set aside. In another bowl stir flour, baking powder and baking soda set aside. Dribble the vanilla extract into the creamed mixture mixing all the while. Drop one egg into the creamed mixture, followed by a handful of the flour mixture, then add the next egg. Keep mixing and incorporating the dry ingredients then mix and fold the cake mixture until well blended scraping the bowl with the spatula. Put the cake batter into prepared pan(s) and cook for 15 minutes or until tester comes out clean. Let cool in pan for 5-10 min. before taking cakes out.

Whipped cream

2 cups heavy cream
4 Tbsp. powder sugar

Add cold whipping cream to mixer bowl. Add powder sugar. Whip on high speed until light and fluffy to soft peaks.

Chocolate Garnish

1 cup semi-sweet chocolate chips
¼ cup heavy cream

Melt 1 cup semi-sweet chocolate and heavy whipping cream in plastic ziplock bag in hot water. Once melted snip a small hole and trace desired pattern on parchment paper.

Strawberries

Cut and fan strawberries.

**JANEY ADAMS
LEAH FADENRECHT
PUEBLO COUNTY
Senior Team**

GROOT COOKIES

Groot Cookies

¼ cup butter
¼ tsp. vanilla
½ cup flour
¼ cup powdered sugar
2 tsp. cocoa

Preheat oven to 300°. Cream butter and vanilla. In another bowl whisk flour, sugar, and cocoa. Add dry mix to butter mixture mix until dough holds together. Place on ungreased baking sheet and bake 20 minutes. Cool.

Buttercream Frosting

1 stick unsalted butter softened
3 cup powdered sugar
½ tsp. vanilla
approximately 1 Tbsp. milk

Cream butter and add sugar gradually. Add vanilla, milk. Whip together until smooth and spreadable. Color as desired.

Moist Devil's Food Cake

2 cups cake flour or sifted all-purpose flour	1 cup hot coffee
1 tsp. salt	1 cup canola oil
1 tsp. baking powder	1 cup buttermilk
2 tsp. baking soda	2 eggs
¾ cup unsweetened cocoa powder	1 tsp. vanilla
2 cups sugar	

Preheat oven to 325°. In a large bowl whisk together dry ingredients. Add coffee, oil and buttermilk and mix until combined. Add eggs and vanilla and mix for another 2 minutes. Pour batter into 2 greased and floured 9-inch round baking pans. Bake for 30 minutes. Let cool in pans until warm and then remove from pans and allow to cool completely on cooling rack. Serve.

MORIAH BARTON
PUEBLO COUNTY
Intermediate Individual

NUTCRACKER IN A NUTSHELL

12 Tbsp. (1½ sticks) unsalted butter, room temperature
1 cup packed golden brown sugar
1 Tbsp. honey
6 large plums, halved, pitted, each half cut into 6 wedges
1½ cups all purpose flour
2 tsp. baking powder
½ tsp. ground cinnamon
¼ tsp. salt
1 cup sugar
2 large eggs
½ tsp. vanilla extract
¼ tsp. almond extract
½ cup milk

Preheat oven to 350°. Stir 6 Tbsp butter, brown sugar and honey in heavy medium skillet over low heat until butter melts and sugar and honey blend in, forming thick, smooth sauce. Transfer to 9-inch-diameter cake pan with 2-inch-high sides. Arrange plums in desired shapes like circles, on top of the sauce. Mix in flour, baking powder, cinnamon and salt in medium bowl. Mix in remaining 6 Tbsp. butter in large bowl until light. Add sugar and beat until creamy. Add eggs and beat until light and fluffy. Beat in extracts. Add dry ingredients alternately with milk, mixing just until blended. Spoon batter evenly over plums. Bake cake until golden and tester inserted into center of cake comes out clean, about 1 hour 5 minutes. Transfer to rack; cool in pan 30 minutes. Using knife, cut around pan sides to loosen cake. Place platter atop cake pan. Invert cake; place platter on work surface. Let stand 5 minutes. Gently lift off pan. Serve cake warm with whipped cream.

**REESE KOYLE
PUEBLO COUNTY
Junior Individual**

TRADITIONAL AUSTRIAN DINNER

Cake

6 egg whites
5 oz. dark chocolate
½ cup butter
6 egg yolks
1½ tsp. vanilla
½ cup sugar
¾ cup flour
⅔ cup apricot jam

Grease and flour two circle cake pans. Separate eggs. Let whites warm to room temperature. In saucepan melt chocolate with butter, don't overheat. Once melted let cool. Add egg yolks and vanilla to chocolate mixture. Lightly whisk. Beat egg whites until soft peaks form. Add sugar 1 Tbsp. at a time until stiff peaks form. Fold in flour and egg whites to chocolate mixture. Rotate flour and egg whites over 4-5 turns. Be gentle with the egg whites. Scoop mixture into pans. Bake 350° for about 20-30 minutes. Once cool fill middle with apricot jam and cover in chocolate ganache.

Chocolate Ganache

1 cup heavy cream
10 oz. chocolate

Melt cream in sauce pan. Add chocolate. Let cream melt chocolate. Heat slowly if need be. Whisk until smooth. Let cool. Pour over layered cake. Chill.

In the Element of



Colorado Leadership Conference
November 2-4, 2018
6th-9th Grades
\$135.00



Community Recreation Center
Glenwood Springs, CO

CLC Workshop Descriptions

Dancing the Day Away: Students will learn basic dances that they will put into practice at the dance.

Heart of the Fire: Students will learn fire safety and preparedness in a fun way while showing thanks to first responders.

Facing Wind Head On: Students will need to use their heads in this workshop as they build a structure that can withstand wind.

Going with the Flow: Students will be creating boats and testing them to see how much weight they can hold without sinking.

Exploring the Earth: Students will work together in teams to figure out how to solve clues during a scavenger hunt.



2019 COSTA RICA EXCHANGE

Spend a **SUMMER ABROAD** and
immerse yourself in another culture!



Are you curious about daily life, culture, and 4-H in other countries?

Live with a host family in Costa Rica and immerse yourself in a world that most tourists rarely get to see. You will share everyday life with friends and relatives in your host community and build friendships that will last a lifetime.

STATES' 4-H INTERNATIONAL PROGRAM DETAILS:

Dates:	June 20 - July 19, 2019
Capacity:	20 delegates maximum, 5 delegates minimum
Cost:	\$1,575 plus airfare + \$50 travel agent fee Current airfare estimate: \$800-\$1,300 (varies based on applicant's location; Alaska may be higher)



Delegates arrive in Costa Rica for a two-night arrival orientation, which includes sightseeing and cultural activities. Afterwards, delegates meet their Costa Rica 4-S host families and begin the homestay (a host sibling of similar age is not guaranteed). Delegates will also participate in a variety of 4-S club related activities. The program concludes with a departure debriefing in San José.

Program Fees Include:

- Overnight National Departure Orientation in a U.S. gateway city
- Two-night arrival orientation in San José
- Sightseeing and cultural excursions in San José
- In-Costa Rica expenses: lodging, meals, and most transportation (depending on host family location, delegates may be responsible for local bus transportation during the homestay)
- Orientation materials and States' 4-H t-shirts
- Accident & Sickness Insurance
- A portion of adult chaperone expenses

Program Timeline*:

December 1:	Application & \$1,000 first payment due to States' 4-H Office
January:	States' 4-H notifies applicant of acceptance
February 1:	\$1,000 second payment due to States' 4-H Office
Late-February:	States' 4-H issues air tickets
March 1:	Medical form & passport copy due to States' 4-H Office
Spring:	State orientations
April 15:	Third & final payment due to States' 4-H Office
Late Spring:	States' 4-H Group Conference Call
June 20:	Students fly to a U.S. gateway city for National Departure Orientation the day before the international flight.

*Some states may have an earlier timeline set in order to approve documents before they are forwarded to the National Office.

First payment check will not be deposited until applicant is accepted. First and second payments pay for airfare and part of the program fee.



2019 COSTA RICA EXCHANGE

States' 4-H International's mission is to enhance world understanding and global citizenship, which we believe can be achieved through living with a local host family and immersing oneself in another culture.



"This was a life changing experience and it has truly changed my mindset on others and the world. I feel a like a different person now, in a good way, and I now have an international family!"

Who can apply:

4-H youth who want to learn first-hand about another culture and gain a global perspective. Must be between ages **15-18** from the first day to the last day of the exchange (you must not be in college). 4-H enrollment guidelines and ages vary by state.

How to apply:

Contact your local 4-H coordinator to apply and learn about your local deadlines.

Cancellation & States' 4-H Policies:

- Program Cancellations:
 - * Before January 31, 2019: \$300 cancellation fee. The remaining \$700 of the first payment will be refunded.
 - * After January 31, 2019: no refunds issued.
- Airfare is non-refundable once issued (airline credit may apply)
- In-State Fees may apply
- No donor checks are accepted by the States' 4-H Office; donors must send checks directly to the delegate
- Program details subject to change

FAQs:

Q: Will a chaperone accompany the group?

A: Yes! Adult chaperones accompany the group during international travel and remain in-country to provide support during the exchange.

Q: Do I need to speak Spanish?

A: No prior language study is required, but it is certainly helpful! Our international partners have English-speaking staff on hand to assist you in communication.

Q: How will States' 4-H prepare me for my homestay?

A: States' 4-H provides travel handbooks that cover everything from packing lists to financial matters to cultural information. In addition, each state conducts an spring orientation covering these topics. Delegates also receive details during the States' 4-H group conference call in late spring and a National Departure Orientation the day before the international flight.

For more information:

Courtney Loflin

Courtney.loflin@colostate.edu

(970) 491-2711

www.states4hexchange.org

exchange@states4h.org

OB@states4h.org

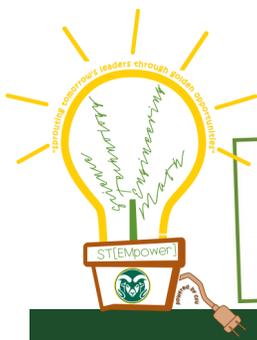
(800) 407-3314



Facebook Page www.facebook.com/states4hexchange



Instagram [@states4hinternational](https://www.instagram.com/states4hinternational)



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SCIENCE, TECHNOLOGY,
ENGINEERING, AND MATH
COLORADO STATE UNIVERSITY
EXTENSION

Mad Scientist Experiments For Taking Over the World (MUW—Ha-Ha-Ha-Ha)



BACKGROUND

Humans are curious, and from our very earliest ancestors, we have wondered about our place in the world and universe. In the New World 5,000 years ago, the Mayans developed an extremely accurate calendar system. These ancient people had a written language and the most accurate pre-telescope astronomy in the world. The Mayans adopted the use of zero from the Olmec who lived nearby. Can you imagine doing math without using a zero? Their advances, however, were isolated to the New World (North, Central, and South America.)

CAREERS

Instead of the career exploration being in the sidebar this month, it is part of each activity.

First clarify and articulate potential future directions that would be enjoyable to you. Look for clues. You will naturally find some activities more engaging than others.

Try out each of these activities, and then follow the links from Colorado State University to find out more about the 4-year education you will need to pursue that option. There are also 2 year programs at many community colleges that could be a better fit. And of course, there is always a career in academics.

You and your parents can check out the CSU Career Center and take a quiz to find your perfect major!

<https://career.colostate.edu/resources/take-this-quiz-to-find-your-perfect-major-at-csu/>

Have fun, as you begin plotting your world domination!

(MUW—Ha-Ha-Ha-Ha)

The people in Mesopotamia and Ancient Egypt were the first to explore mathematics, astronomy, and medicine in the Old World, and that knowledge spread to other cultures, including the Greeks. Ancient Greek philosophy is the foundation of today's Western Culture.

For centuries, science worked very differently than it does today. Aristotle lived in Athens in the 4th Century BC. He founded the methods used by scientists for almost 6,000 years! He applied techniques of logical thinking, observation, inquiry and demonstration to every problem.

Muslim scholars, between the 10th and 14th centuries, developed the scientific method. Ibn al-Haytham lived from 965 to 1040, and he was a mathematician, astronomer, and physicist. He is considered the architect of the scientific method:

1. Observation of the natural world
2. Stating a definite problem
3. Formulating a robust hypothesis
4. Test the hypothesis through experimentation
5. Assess and analyze the results
6. Interpret the data and draw conclusions
7. Publish the findings

Europeans brought these ideas back with them during the Crusades, and Roger Bacon (1214-1284) is the first person to promote inductive reasoning as part of the scientific method.

1. Observation
2. Hypothesis
3. Experiment
4. Verification

Galileo Galilei was the first modern scientist. He lived from 1564-1642, and he was prolific in exploring the universe, mathematics, and engineering. He was the first person to look through a telescope (a modern invention of his day) at the stars.

If you found the introduction fascinating, perhaps a career in human sciences is for you. Archeologists study human history and prehistory through the excavation of sites and the analysis of artifacts and other physical remains. Anthropologists study human biological and physiological characteristics and their evolution. <https://anthropology.colostate.edu/> and <https://anthropology.colostate.edu/archaeology/>

Objectives—you will:

- Have fun exploring several science and engineering activities!
- Follow the scientific method
- Explore education for careers in archeology, anthropology, microbiology, chemistry, food science, engineering, computer science, and robotics
- Plot your world **domination** schemes

(MUW—Ha-Ha-Ha-Ha)



"So please welcome our keynote speaker, Professor Melvin Fenwick — the man who, back in 1952, first coined the now common phrase: 'Fools! I'll destroy them all!'"

POWER WORDS

Many of the bold words found in the text may be new terms for you. They are defined below:

- **acid**: compound usually having a sour taste containing hydrogen ions capable of reacting with a base to form a salt and water.
- **alkaline**: another term for base—having a pH greater than 7.
- **anthocyanin**: a blue, violet, or red pigment found in plants.
- **bacteria**: unicellular microorganism that have cell walls but lack organelles.
- **base**: a compound capable of reacting with an acid to form a salt and water.
- **diorama**: a model representing a scene with three-dimensional figures in miniature.
- **caustic**: able to burn or corrode organic tissue by chemical reaction.
- **chemical**: a compound or substance and its interactions.

- **contamination:** the action or state of making or being made impure by polluting or poisoning.
- **distilled water:** water that has been boiled into vapor and condensed back into liquid in a separate container to remove impurities.
- **domination:** the exercise of control or influence over someone or something.
- **extract:** remove or take out, especially by force.
- **fungi:** group of unicellular or multicellular organisms that produce spores for reproduction, and feed on organic matter (examples, mold, mildew, and mushrooms).
- **indicator:** a compound that changes color at a specific pH value or in the presence of a particular substance and can be used to monitor **alkalinity**, acidity, or the progress of a reaction.
- **inoculate:** introduce cells or organisms (like bacteria or fungi) into a culture medium (like agar).
- **litmus paper:** a paper stained with litmus (an indicator); blue litmus paper turns red in acidic condition, and red litmus paper turns blue in basic conditions.
- **logarithmic:** a mathematic concept to abbreviate big numbers.

GROSS GARDENS

Microbes are **organisms** that are everywhere, but too small to see (like Horton's Whos who lived in Whoville). We can grow colonies of them that we can see. Your mad plot is to grow colonies of **bacteria** and **fungi** in colonies to see them for yourself!

Materials:

- Safety goggles
- Disposable gloves
- 10 clear plastic 9 ounce Solo brand cups (they work the best)
- Sharp scissors
- 5 teaspoons of beef stock powder
- 5 cups of water
- 5 teaspoons of sugar
- 5 teaspoons of gelatin
- Saucepan for boiling mixture
- Mixing spoon
- Hot pads
- Sticky tape
- Felt-tip pen to label "Petri dishes"
- Cotton swabs



DO:

Directions:

Petri Dishes

- Make your "Petri dishes." Cut the rim of five of the clear plastic solo cups between 1" and 2" shorter. This will be the base of your Petri dish. The five **unaltered** cups will be your Petri dish tops.
- As soon as you cut your Petri dish, place the lid over it to keep it **sterile**.



Homemade Agar

Note: Agar is derived from red seaweed. Gelatin is derived from animal bones, hooves, horns, etc.

- Put on your safety gear (goggles and gloves). Remember that the pot and agar will be **HOT!** Use potholders.
- Pour water into a saucepan and bring to a boil.
- Add beef stock powder, sugar and gelatin to the boiling water and stir for a minute until all the ingredients have dissolved.
- Place lid on your pan, and cool the agar mixture for 15 minutes. The mixture needs to be hot to avoid the gelatin setting in the saucepan, and the lid will help prevent **contamination** from bacteria in the air.
- Take the lid off each Petri dish and divide the agar among the 5 Petri dishes (remember to pour into the shorter cups). You can fill each dish about half-way. Put the lids on as soon as you are done to prevent contamination with the bacteria in the air.

- Place your Petri dishes in the fridge for about 4 hours until the agar has set. Do not touch the agar or you will contaminate it with bacteria on your fingers.

Inoculate Your Garden

- Now it is time to collect and grow your microbes on the agar Petri dishes. Use them immediately (store up to 2 days in the fridge).
- You will collect microbes from five different places. For example, the toilet seat, a cell phone, your mouth, your hands, and the bottom of your shoes. You can pick any five places (the above are examples).
- Do one Petri dish at a time, and keep the others in the refrigerator. Use the cotton swab by rubbing a surface to collect the microbes. Open the lid and gently rub the surface of your agar. Place the lid over the base. With the tape, seal the two sides together. You do not want your lid or base to slip, and you do not want to open this again. Ever. Turn the Petri dish upside down. Water condensation will collect at the bottom of the dish—away from the upside down agar and the bacteria and fungi growing on the agar. Label your dish with today's date and location of your microbes.
- Repeat until you have **inoculated** all five of your Petri dishes.
- Looking at your five locations, number them between 1 and 5, predicting which one will grow the most bacteria to the least bacteria.
- Find a warm dark spot for your Petri dishes. For example, the refrigerator motor pumps out warm air. You could place your Petri dishes on the floor next to your fridge (if there is a space). Another spot could be under the bathroom sink. Place your five Petri dishes in that spot. Be sure to tell everyone not to disturb them.
- Check them each day. Depending on how warm the spot, your colonies will start to appear between 1-3 days. It can take up to a week if the spot is cooler.

REFLECT:

Examine Your Garden

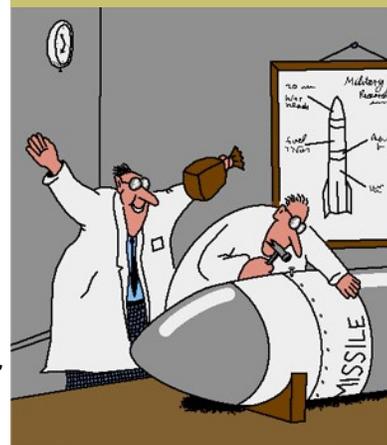
- Put on goggles and gloves. **DO NOT OPEN THE PETRI DISHES!**
- Take your Petri dishes out and examine them. Which place grew the most microbes? Which location grew the least microbes? Are you surprised? Did you guess right? Take pictures of your microbes. Name your microbes. Teach your microbes to take over the world. Wait, they already have...(Microbes are EVERYWHERE!)
- The microbes you grew were most likely common, harmless bacteria and fungus. You do not know that for sure, though. **Do not open your sealed Petri dishes.** Throw away the entire unopened and still taped Petri dish in the outdoor garbage can.

APPLY:

- Are there mad microbes that you can enlist in your plans for world domination?
- If this activity was absolutely "IT," explore careers in microbiology. <http://csu-cvmb.colostate.edu/academics/mip/Pages/default.aspx>

(MUW—Ha-Ha-Ha-Ha)

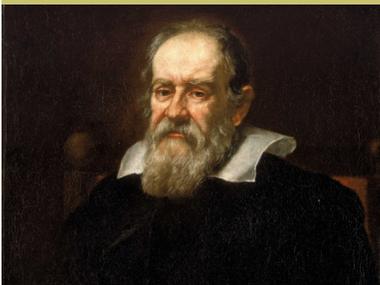
- **microbe:** a microorganism, especially a bacterium causing disease or fermentation.
- **nemesis:** the inescapable agent of someone's or something's downfall or a long-standing rival; an archenemy.
- **organism:** an individual animal, plant, fungus, or single-celled life form.
- **pigment:** the natural coloring matter of animal or plant tissue.
- **solution:** a liquid mixture in which the minor component (the solute) is uniformly distributed within the major component (the solvent).
- **sterile:** free from bacteria or other living microorganisms; totally clean.
- **unaltered:** remaining the same; unchanged.



Featured Cartoons:

Gary Larson is an American cartoonist. He is the creator of *The Far Side*, a single-panel cartoon series that was syndicated internationally to over 1,900 newspapers for fifteen years. The series ended with Larson's retirement on January 1, 1995. https://en.wikipedia.org/wiki/Gary_Larson

FASCINATING FACTS MALE SCIENTISTS:



- **Galileo Galilei** was known for his work as astronomer, physicist, engineer, philosopher, and mathematician. He has been called the "father of observational astronomy", the "father of modern physics", the "father of the scientific method", and even the "father of science". Galileo studied speed and velocity, gravity and free fall, the principle of relativity, inertia, projectile motion and also worked in applied science and technology, describing the properties of pendulums and "hydrostatic balances," inventing various military compasses, and using the telescope for scientific observations of celestial objects. He was a devout Catholic, yet his observations and reasoning were often at odds with the Churches teachings. The Church tried and condemned Galileo for "vehemently suspect of heresy" and he remained under house arrest for the last 9 years of his life.

ACIDS & BASES & COLORS—BOOM!

Well, everything except the boom! A really messy fizz, definitely! While you are planning world domination, you never know if you will need **caustic chemicals!** **Acids** and **Bases** would do the trick!

Materials:

- Small red cabbage
- Knife
- Cutting board
- Bowl
- Sieve
- **Distilled water**
- Freezer or • Blender
- Disposable gloves
- Goggles
- Clear plastic cups
- Measuring cup
- Permanent marker
- Household chemicals (more about this later)
- Plastic spoons
- Datasheet (page 19)
- Pencil
- Large plastic garbage bag
- Coffee filters (flat filters work best)
- Scissors
- Large pot
- Hot pads

DO:

Directions:

Red Cabbage Indicator

- ***Cabbage is very difficult to cut. For this first step, ask an adult to help you.***
- There are several ways to **extract** juice from the cabbage:
 - Cut the cabbage into quarters and place in a plastic shopping bag. Put into the freezer overnight. Remove and thaw. Put a bowl into the sink, and with your hands, squeeze the juice from the cabbage into the bowl. Remove any pieces of cabbage in the juice.
 - OR**
 - Cut the cabbage into ~2" chunks and place into the pot. Add distilled water until just covered. Turn on the burner and bring to a boil, then turn off the burner. Allow to steep until cool.
 - OR**
 - Cut the cabbage into ~2" chunks and place into a blender. Cover with distilled water. Thoroughly blend. Use the sieve and strain the cabbage from the juice into a bowl.
 - Refrigerate in a bowl covered with plastic wrap up to 1 week.

Preparing the Household Chemicals

- **DO NOT MIX CHEMICALS!** (For example, if you mix bleach and ammonia, it produces a poison gas that can kill.)
- **DO NOT** pick drain cleaner, oven cleaner, or bleach. **Very dangerous!** Be sure that your parent approves of all the chemicals you are going to use.

- **Practice safe chemistry:** regardless of the chemical you select, practice good chemistry safety precautions. Many chemicals can burn your skin or damage your clothes. Should you get some on you, IMMEDIATELY remove the article of clothing and wash your skin completely rinsing in lots of water (5 minutes to be safe). Do not handle the clothing on the spots of the spill, but wash immediately. Lab chemicals can burn holes in the fabric.

- Follow the directions below precisely.
- **Involve your parent.** Be sure that your parent is there with you as you conduct your experiment. If you are uncomfortable handling these chemicals, ask your parent to add the chemical and the red cabbage juice.

- Make a garbage bag lab coat. This will help protect you and your clothing in case of an accidental spill. Lay the garbage bag flat on a table. Slit the top of the bag in the center so you can put your head through (indicated by the blue line at the top of the image to the right). Slit the sides at the top (indicated by the green lines) for your arms. With a permanent marker, make the pocket (of course, with the mandatory mad scientist pocket protector), a collar, and button opening if so inclined!



- **(MUW-Ha-Ha-Ha-Ha!)**

- Safety Equipment: put on your lab coat, goggles and disposable gloves.

- Explore your house for potential liquid chemicals to use. The best choices are clear with little to no color (like vinegar). Check with a parent that you can test them.

- **Liquids:**

- When you find a chemical you would like to include, label your cup with the chemical's name with the permanent marker (for example, "vinegar"). Add 3 plastic spoons of the chemical to your cup. Use a clean spoon for each chemical (**Do NOT reuse the same spoon!**)
- Chemicals to consider: vinegar, tap water, ammonia, dish soap (especially if it is clear), fabric softener, liquid laundry detergent, bleach, clear soda (like sprite or 7-up), distilled water, liquid bath bubbles, glass cleaner, shampoo, lemon juice, mouthwash (especially if it is clear), saliva (spit spit spit!!!) apple juice, etc.

- Explore your house for potential powder (solid) chemicals to use. The best choices are white powders with little to no color (like baking soda). Check with a parent that you can test them.

- **Solids:**

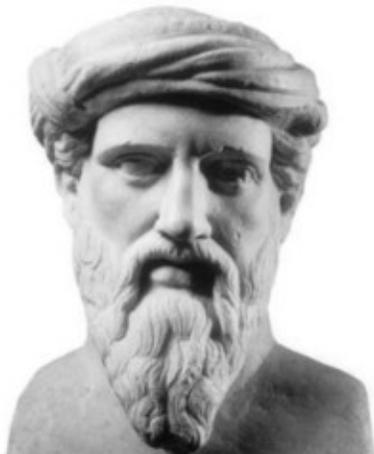
- When you find a chemical you would like to include, label your cup with the chemical's name with the permanent marker (for example, "baking soda"). Add 1 plastic spoon of the chemical to your cup. With the same spoon, add 3 spoons of distilled water. Dissolve the solid in the water stirring with the same spoon.
- Use a clean spoon for each chemical (**Do NOT reuse the same**



- **Nikola Tesla** was an amazing scientist. His experiments in electricity were fundamental in developing the way we safely get our electricity today. He immigrated from Serbia (now Croatia) and worked for Thomas Edison when he first arrived. There is evidence that he, not Edison, made the first vacuum lightbulb. He later had labs in Colorado Springs where he did most of his work.

He had Obsessive Compulsive Disorder, and needed to do things in threes. Before he entered a building, he would walk around the block three times. He used 18 (6x3) napkins at every meal.

He believed that power should be free, and it is rumored that he found a way to tap into unlimited energy from the atmosphere. He, unfortunately, never kept lab books, so we don't know what he had discovered. His life was spent in and out of insane asylums, and he died in absolute poverty. There is no way we could ever repay the debt of his life.



• **Pythagoras** lived about 2550 years ago. He was a mathematician from Ancient Greece born on the island of Samos. He traveled to Croton and founded a school. The students were sworn to secrecy and lived very simply. He is credited with many mathematical and scientific discoveries, including that the Earth was a sphere. Long before telescopes, he identified the “morning and evening star” as the planet Venus. He divided the Earth into Climatic Zones. We still learn his Pythagorean theorem in school! He was an influence on Plato and classical philosophy.

He was a vegetarian, but he would not touch or eat beans. In fact, instead of escaping through a bean field, he was killed by attackers.

Q: **What’s a mad scientist’s favorite kind of dog?**
A: A Lab!

spoon!) Some powders will mix completely, others will not.

- Chemicals to consider: flour, salt, sugar, corn starch, baking soda, baking powder, powder sugar, talc (baby powder), borax, laundry detergent powder, powder bath bubbles, cake mixes, etc.

Conducting the Experiment

- There are some caustic chemicals found in homes that your parents probably said not to test. These chemicals, like oven cleaner and drain cleaner, are **VERY CAUSTIC**. As a future mad scientist, you need to practice the skills when using these dangerous chemicals. To practice:
 - **IMMEDIATELY** remove the article of clothing and wash your skin completely rinsing in lots of water (5 minutes to be safe). Do not handle the clothing on the spots of the spill, but wash immediately. Some chemicals may burn holes in the fabric.
 - Follow the directions below precisely.
 - **Involve your parent.** Be sure that your parent is there with you while you finish your experiment. If you are uncomfortable handling these chemicals, ask your parent to add the chemical and add the red cabbage juice.
 - Wear your protective gear the entire experiment. If your goggles fog on the inside lenses, step away from your experiment to remove them and de-fog them.
- Measure 1/2 cup of cabbage juice and set aside (in another clean plastic cup is fine).
- Divide the remaining amount of red cabbage juice among your chemicals to be tested. To do that, measure the total remaining cabbage juice with your measuring cup. Divide that by the number of chemicals you are testing, and that will give you how much of the red cabbage juice you have available for each chemical. Use 3/4 a cup of red cabbage juice maximum, or if you have less, use that amount.

Total remaining cabbage juice: _____ cups

Divided by # Chemicals to be tested: _____

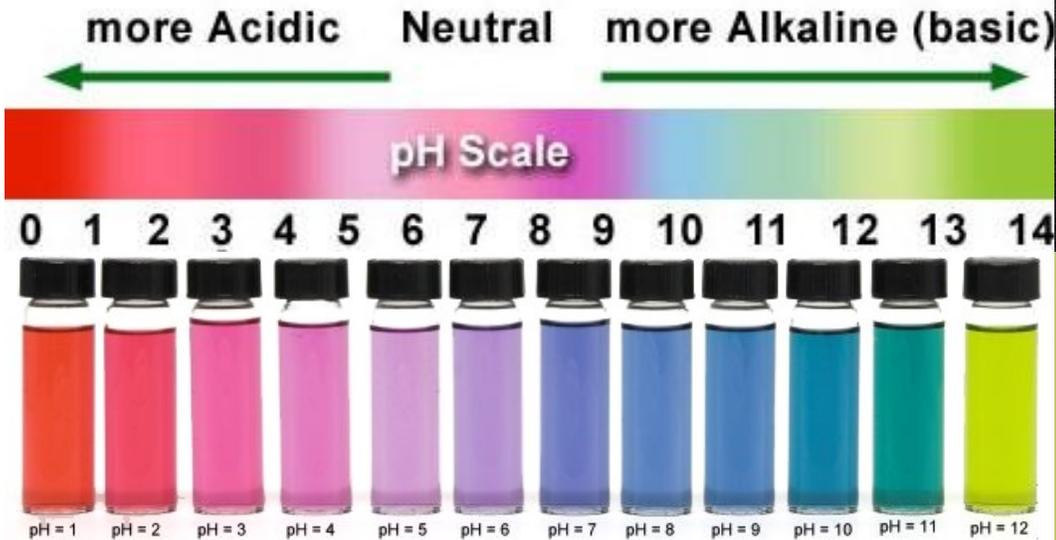
Equals amount Cabbage juice per chemical: _____ cup

NOTE: if you have more than 8 ounces (1 cup) per chemical, only use 6 ounces (3/4 cup).

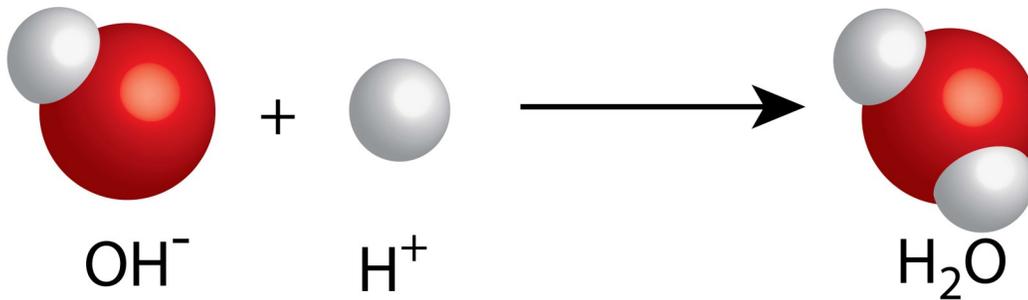
- Place each of the cups with the chemicals in a line in the kitchen sink.
- **Do NOT taste or touch.** Acids generally taste sour, like vinegar and bases generally taste bitter like baking soda. Use your experience to make a best guess. Look at each chemical, guess, and separate the acids on the left from the bases on the right. Record your guesses on your data sheet.
- Measure the red cabbage juice to the amount you calculated (up to 3/4 cup) and add it into each cup containing a household chemical.
- What happened? Are the colors in the two groups similar? Would you like to rearrange any of your colors? Go ahead and move the chemicals, and on your data sheet, indicate the changes.

REFLECT:

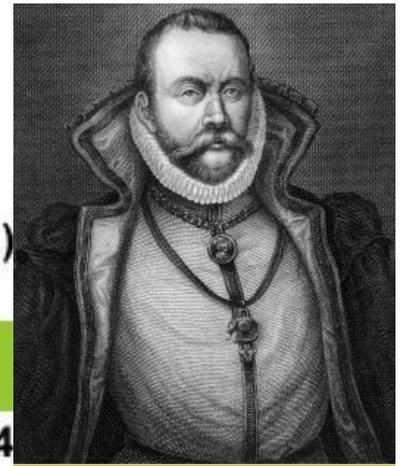
- Now take each chemical and match the color to the pH scale below. This is a scale from very acidic (scale of 0) to neutral (scale of 7, or equal numbers of hydrogen ions and hydroxide ions) to very basic (scale of 14).



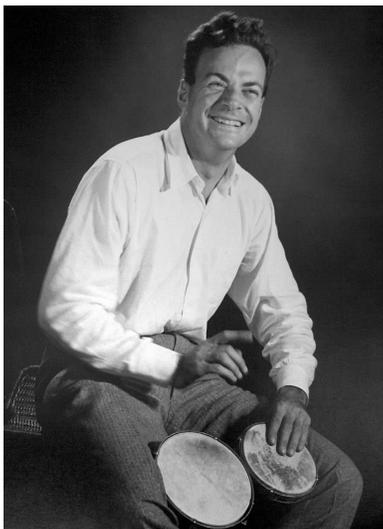
- Water is one oxygen atom and two hydrogen atoms bonded very tightly together. The oxygen is similar to a South Pole magnet, and the hydrogen are like the North Pole. Sometimes, a hydrogen atom breaks the bonds with the water molecule, and forms a hydrogen ion (H^+) and a hydroxide ion (one oxygen and one hydrogen, OH^-). In equal amounts, the solution is neutral.



- A solution is acidic or basic depending on the number of hydrogen ions in the liquid. A hydrogen ion is like a weak North Pole magnet. It is attracted and attaches to a South Pole magnet or a metal. If the chemicals you add act like a metal or a South Pole magnet, it will attract the hydrogen ions to it. This is a base. If the chemicals act like North Pole magnets, they will repel the hydrogen ions, and the ions will not attach to those molecules. The more hydrogen ions, the more acidic.
- The acronym pH means “potential of Hydrogen.” The pH scale is a **logarithmic** scale of the number of hydrogen ions in the solution. This is weird math, because the lower the number on the pH scale, the more hydrogen ions in the solution. It is crazy to think that the pH of 3 has 100 times more hydrogen ions than a pH of 4, 1000 times more hydrogen ions than a pH of 5, 10,000 times more than a pH of 6, and so on. These are enormous numbers of hydrogen ions!



- Tycho Brahe** was a Danish nobleman from a wealthy family. He was fascinated with astronomy and the movements of the stars. He hired people from all over Europe with excellent eye sight to make and record observations in the night sky at his observatory. This was before the invention of the telescope; in fact, Brahe died several years before Galileo looked at the planets. While he was in college, he lost his nose in a duel. After that, he wore a metal nose. He was also really quirky! He had a pet elk, and both he and his elk loved to drink. It was the death of both of them (but not at the same time). His elk, after drinking beer fell down some stairs and died. Brahe was drinking too much at a party. He needed to urinate, but it was rude to leave before the king. He developed a bladder infection that eventually killed him.



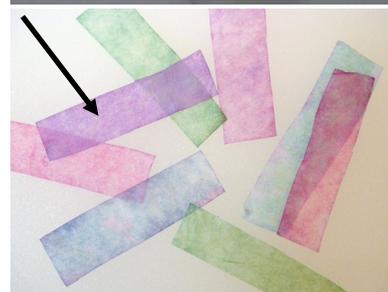
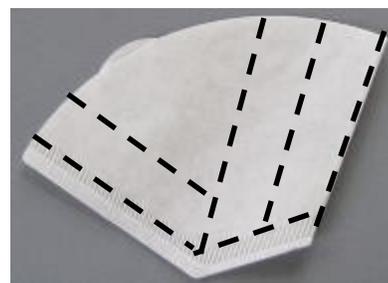
• **Richard Feynman** is considered the finest physics instructor of the 20th Century. He earned the Nobel Prize for his theory on quantum electrodynamics. He also was a junior scientist working on the Manhattan Project at Los Alamos, NM (the first atomic bomb). He was a practical joker, and would pick locks and crack open safes. He would spend time working in nightclubs, and played the bongos. Feynman was part of the NASA investigation team trying to determine the cause of the Challenger explosion in 1986. He found it difficult to get the NASA team to listen, so instead, he casually threw a rubber o-ring in ice water. The o-ring immediately warped in the cold water, and the room was stunned into silence. It was determined that was the cause of the accident.

- Red cabbage juice is an **indicator**; it changes color in acids and bases. The **pigment** in cabbage juice is **anthocyanin**. It gives cabbage its purple color. Anthocyanin molecule changes shape by attaching more and more hydrogen ions as a solution becomes more acidic, and it loses more and more hydrogen ions as the solution becomes more basic. The different shapes reflects light differently, so we see different colors!
- Record each of the chemicals you selected and write down the pH of the color that most closely matches the color of your chemical. Which are the acids? Which are the bases?
- What happens when you mix vinegar (acid pH 3) and baking soda (base pH between 8 and 9)? Reaction that releases a gas, massive bubbles, and is great for volcanos! Acids and bases react, but the product is neutral called a salt. Strong acids (like hydrochloride) and strong bases (like sodium hydroxide) violently react. As much fun as that sounds, it is VERY DANGEROUS! Chemistry labs keep acids far away from bases in case of an earthquake (or other catastrophe)!
- What do you think will happen if you mix one of the acids with one of the bases? We know that vinegar and baking soda are safe, so we will use these to chemicals to find out. Get a clean cup and put it into the sink. Measure and pour one-quarter cup of the vinegar (with red cabbage juice) into the cup. Measure and slowly add one-quarter cup of the baking soda/red cabbage juice solution into the same cup. What happened? What is the final pH of the vinegar / baking soda / red cabbage juice solution?
- To clean up, start with dripping water into one cup at a time, slowly filling it with water. Keep filling it until the cup is overflowing. Slowly increase the water and flush the cup for about 1 minute. If there is still any color from the experiment in the cup, continue flushing until it is clear. Empty the cup into the sink and throw the cup into the outside garbage can. Repeat with each cup.



APPLY:

- All foods are acidic, basic, or neutral. You can test them yourself.
- You can always test them the same way you tested your household chemicals, or you can make **litmus paper**.
- You need the 1/2 cup of red cabbage juice you set aside, coffee filters and scissors.
- Cut the coffee filter into strips following the diagram on the right. You can get six strips (the filter is two sheets crimped together) about 6 inches long and 1 inch wide. Cut off the crimped edges, and then cut your strips.

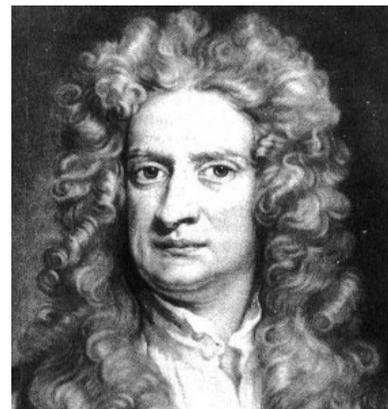


- Put your red cabbage juice cup in the sink. Take each filter strip you cut and put it into the red cabbage juice until thoroughly soaked. Remove and gently squeeze out the extra juice. Carefully unfold the filter and allow it to dry. You should have each strip the same color as the neutral (pH 7) red cabbage juice, like the strip with the arrow on the prior page.
- For liquid foods (i.e. chicken broth, milk, etc.) pour three spoons into one of your plastic cups and add 1/4 cup distilled water. Dip the litmus paper about half way into the liquid, remove, rinse with distilled water, and dry. Check the color of the litmus paper against the pH scale on page 8.
- For solid foods (i.e. broccoli, bread, etc.) you can puree in a small blender. For example, add broccoli flowerets into your blender, add 1/2 cup of distilled water, and puree. Dip the litmus paper about half way into the liquid, remove, rinse with distilled water and dry. Check the color of the litmus paper against the pH scale on page 8.
- Once you have tested several kinds of food, make predictions if the food is acidic, neutral, or basic before testing. Keep a record of all your experiments.
- Do the colors of the food give you any information about their pH factor?
- How can this information help you as you plan your world domination?

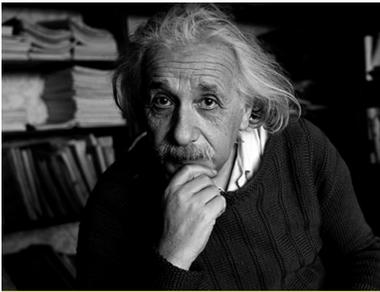


- If this activity really captured your interest, explore careers in chemistry! <http://www.chem.colostate.edu/>

(MUW—Ha-Ha-Ha-Ha)



- **Sir Isaac Newton** studied motion, light, gravity, calculus, and optics during the first prolific (producing a large number) 40 years of his life. The last 40 years, he became very eccentric (acting oddly), almost paranoid. Evidence shows that he may have had mercury poisoning (quite common in early days of chemistry). Here are some fascinating facts:
 - Newton was born the year that Galileo died.
 - He was a premature baby and not expected to live.
 - Newton did not like criticism and made lifelong enemies with those who criticized him.
 - During the plague epidemic, his university closed. He returned to his mother's house and continued studying light. He cut a hole in her curtain. He held a prism in the beam of light, and another prism upside down. From these experiments, he determined that the rainbow of color was part of the light..



“WITCHES” FINGERS

Of course, as you plan your world domination, you will need to take an occasional cookie break! This is the perfect recipe to program your robot to make!

Alfred Einstein is the most famous modern scientist, and his name is among the very few greats in science: Galileo, Newton, and Darwin. Einstein excelled in math, science, and music, but he didn't do well in other subjects.

- The beginning of Einstein's fascination about science came from a pocket compass, which was shown to him by his father when Einstein was five years old. He wondered what made the needle point in a certain direction and not anywhere else.
- Albert Einstein never learned to swim. However he loved sailing and continued to do so as a hobby throughout his life. Also, Einstein never wore socks. He thought wearing socks was a pain, and he would often get holes in them.
- "Imagination is more important than knowledge, for knowledge is limited, but imagination encircles the world."
- **Time magazine** named Albert Einstein its "Person of the Century."



This recipe is on the Food Network courtesy of Giada De Laurentiis (<https://www.foodnetwork.com/recipes/giada-de-laurentiis/witch-finger-cookies-2229436>). The article is unaltered and only formatted to fit this series of STEM activities. Ms. De Laurentiis is an Italian chef; she appears on several TV networks, and authors cookbooks.

Materials:

- Vegetable oil cooking spray
- 2 cups all-purpose flour
- 1/2 teaspoon baking powder
- 1/4 teaspoon fine salt
- 1/2 cup (1 stick) unsalted butter, at room temperature
- 1 cup sugar
- 1 large egg, at room temperature
- 1 teaspoon pure vanilla extract
- 28 large sliced almonds
- 1/2 cup raspberry jam

DO:

Directions:

- Place an oven rack in the center of the oven. Preheat the oven to 325 degrees F. Spray a rimmed baking sheet with vegetable oil cooking

- spray or line with a silicone baking mat. Set aside.
- In a medium bowl, whisk together the flour, baking powder and salt. Set aside.
- In the bowl of a stand mixer fitted with the paddle attachment, beat the butter and sugar together until light and fluffy, scraping down the sides of the bowl with a spatula as needed, about 2 to 3 minutes. Beat in the egg and vanilla until smooth. Gradually beat in the flour mixture until a dough forms.
- Using about 1 1/2 tablespoons of dough at a time, roll the dough between your palms into 5-inch-long fingers about 1/2-inch thick. Firmly press a sliced almond into the end of each finger to make fingernails. Make several horizontal cuts, about 1/4 inch deep and 1/2 inch long, in the center of each finger to make knuckles. Press the dough on either side of the cuts to shape the knuckles. Arrange the fingers on the prepared baking sheet and bake until light golden, 16 to 18 minutes. Transfer the fingers to a wire rack and cool completely.
- In a small saucepan, heat the jam over low heat until warm, about 2 minutes. Dip the blunt ends of the fingers in the warm jam and arrange on a platter.

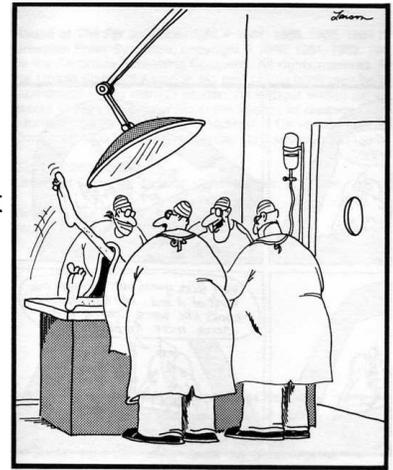
REFLECT:

- What an incredible idea—using delicious and nutritious food to take over the world! Colorado State University has an entire department in Food Science and Human Nutrition. If you love food and science, maybe this is the place to find your future career!
<http://www.fshn.chhs.colostate.edu/>

APPLY:

- Share your cookies with family and friends!
- Spend time online exploring careers in food science!

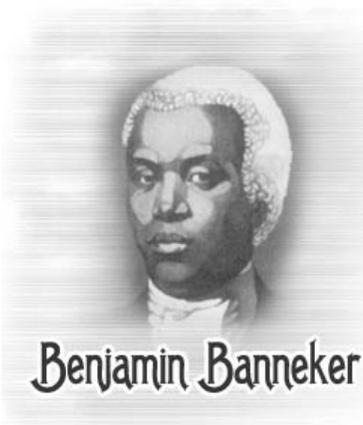
(MUW—Ha-Ha-Ha-Ha)



"Whoa! That was a good one! Try it, Hobbs — just poke his brain right where my finger is."

FEMALE SCIENTISTS AND SCIENTISTS OF COLOR:

- Looking at the scientists included in this issue, it is evident that there are no people of color or females in that list. There are several reasons. Many women and people of color were denied access to scientific societies or publishing their work. Jared Diamond has a very interesting hypothesis that explains why Eurasian and North African civilizations conquered so much of the rest of the world. It has to do with their agriculture and the ability to domesticate animals and plants. Agriculture allowed more time for these people to develop "better" weapons. It is not because of any inherent genetic superiority. So, this next section includes these "Mad" scientists—and their contributions.



Benjamin Banneker

- **Benjamin Banneker**, an African American, was born in 1731 in the colony Maryland to a free family. His grandfather was a slave. His grandmother, an Englishwoman living in the colonies, owned him. They fell in love, so his grandmother freed and married his grandfather. He attended Quaker School, but he was primarily self-taught. He studied astronomy, predicted an eclipse, and was most famous for writing Almanacs. His Almanacs were very successful because of his knowledge of astronomy. He would wrap himself in a great cloak, settle under a pear tree, and meditate on the heavenly bodies all night long. He slept in the morning and worked in the afternoon. He was part of the group who surveyed the original boundary of the District of Columbia (Washington D.C.).

MAD SCIENTIST LAUNCHER

How else will you lob your mad inventions at the world? Yes, with your mad scientist catapult!

Materials:

- 1— quart size plastic baggie
- 1—9 oz clear plastic Solo cup
- 2—heavy-duty rubber bands
- 4—craft sticks
- 5—thumb tacks or push pins
- 3—feet string
- 5—paper clips
- 5—small nails
- 1—rubber eraser
- Marshmallows
 - Mini
 - Regular
 - Jumbo

Equipment (not part of the design)

- Scissors
- Hammer
- Tape measure
- Masking tape
- Datasheet (page 20)
- Pencil

DO:

Directions:

- Your task is to design the most efficient launcher you can design. Since you do not want to burn down your house launching flaming balls of fire, you will use marshmallows instead.
- Construct your launcher following these rules:
 - You may only use the materials listed above, and only in the quantities specified.
 - You do not have to use all of the materials listed.
 - You may not use any other materials.
 - The equipment (scissors, hammer, tape measurer, masking tape except for 12", datasheet and pencil) may be used to alter the materials, but they may not be used in the marshmallow launcher design.
 - When your launcher is operated, your hand may move in a downward and or backward direction only. You may not move your hand in an upward and/or forward direction (meaning, you may not toss or throw the marshmallow).
 - Find a good launch site. Be sure your launch area has plenty of room for lobbing your marshmallows. Mark that spot with a piece of masking tape.
 - When you are ready to launch the marshmallows, Launch each size of marshmallow 3 times each. Measure the distance and record how far each marshmallow traveled on your datasheet.



REFLECT:

- What observations did you make about each launch?
- Is there a relationship between the size of marshmallow and the distance launched?
- What do you think that difference is?
- While you were launching your marshmallows, did you think of ways to improve your launcher? How?
- If you choose, you may include searching the internet for improving your launcher.

APPLY:

- Make modifications to your launcher. You can use additional materials now.
- Retest your launcher from the same launch site. Launch all three sizes of marshmallows.
- Did your design improve how far you could launch your marshmallows?
- Mechanical engineers design and build machines that use energy (like elevators, airplanes, and conveyor belts) and machines that produce energy (like wind turbines). If this activity helped you best envision how you will dominate the world, look into engineering careers. <https://www.engr.colostate.edu/>



(MUW—Ha-Ha-Ha-Ha)

Q: What do you get when you divide a pumpkin's circumference by its diameter?

A: Pumpkin Pi



- **Hypatia** was a philosopher, astronomer, and mathematician, who lived in Alexandria, Egypt, then part of the Eastern Roman Empire. She was a prominent thinker of the Neoplatonic school in Alexandria, where she taught philosophy and astronomy. She is well known for her generosity, love of learning and expertise in teaching. None of her works survived after the burning of the Library of Alexandria.

It isn't known when she was born, but she was brutally murdered in 415 AD. Her murder signaled the end of the classical period.



• **Maria Curie** was born in Poland in 1867. She is the first woman to win a Nobel Prize, and the only person to win two Nobel Prizes in two different disciplines in chemistry and physics. She and her husband, Pierre Curie, developed the theory of radioactivity (a term she coined). She was the first woman faculty member at the University of Paris in 1900. She continued her work in both chemistry and physics after the death of her husband (1906). She discovered the elements, polonium and radium, and the element curium is named in her honor.

CITATIONS

- Allen Helbig EvilScientist, <https://i.pinimg.com/236x/5e/66/d0/5e66d0f524640e7788b1160e6207b971--mad-scientists-school-stuff.jpg>
- <https://en.wikipedia.org/wiki/0>
- https://en.wikipedia.org/wiki/Maya_astronomy
- <http://www.ibnalhaytham.com/discover/who-was-ibn-al-haytham/>

MAD SCIENTIST DOODLE-BOT

Of course, you will need your own robot to do your doodle bidding, freeing up your hands for plotting your world domination. This is the only activity with a couple of items you will probably have to purchase online.

Materials:

- Electric motor (1.5-6v Electric Motor or a 9v Electric Motor) with leads (the wires) at a hobby store, or order online:
 - Use a search engine and search on “Electric Motor 1.5-3V” for using 2 AA batteries, or “Electric Motor 9v” using a 9 volt battery
 - If you find a 1.5-3V motor, also search and purchase a “AA 2 battery holder”
- 1 plastic Solo 8 ounce cup
- 1 felt-tipped pen (water-based ink)
- 2 AA batteries or 1 9v battery
- 1 rubber eraser
- 2 wires if you did not get a motor with leads
- 4 pipe cleaners
- 2 craft sticks
- 3 heavy-duty rubber bands
- 12” masking tape (1 roll for the class)



Equipment (not part of the design):

- Scissors
- Butcher paper or newspaper to cover table and testing section of floor
 - Home improvement stores have paper rolls in the painting department

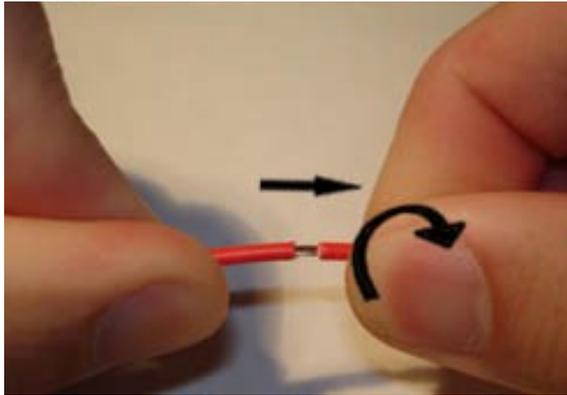
DO:

Directions:

- Your challenge is to design a Doodle-Bot. A Doodle-Bot is a robot that will automatically doodle for you.
- Take a large piece of butcher paper (or spread out several sheets of a newspaper) and tape it (them) to the floor with the masking tape.
- Connect your battery to the motor. The leads will probably not have any exposed wire under the plastic insulating sheath. It would be very easy to pull the wires out of the battery holder or the motor, so be sure to anchor the wire whenever you pull.
 - If you have a wire stripper, you can use that. Find the gauge (diameter) by looking at the tip. You can see the wire surrounded by the plastic. Find the right size hole. Clamp down with the wire stripper about 1/4 inch from the end, hold the wire so it will not pull out of the motor/holder, and gently pull the plastic off the wire. If not sure of the gauge wire, start with a larger gauge, and decrease until you have the correct size.
 - If you do not have a wire stripper, you can use a sharp pair of scissors. You need to be very careful not to nick the



wire. Gently clamp the scissors down on the wire, but do not cut through it. Next, holding the scissors, take each end of the wire and gently pull towards the scissors' handle, twisting the wire along the blades of the scissors. This will score and cut the plastic around the wire, but not the wire.



Once you see the wire all the way around the plastic insulating sheath, gently pull it off the tip. Remember: DO NOT PULL on the motor or the battery holder wires.

- Check to verify that your motor and battery are working. Attach the two wires with the black insulating plastic together (be sure it is wire touching wire) by gently twisting them together. Touch wires with the red plastic sheath together. Your motor should be spinning. Do not connect them yet. You do not want to run out of battery while designing and building your doodle-bot.

Building Your Doodle Bot:

- Here are the rules:
 - You MUST use all the materials listed (not the equipment) in your design.
 - You may use the equipment to only alter the materials.
 - You may not use any different or additional materials, other than those listed.
 - Only test your Doodle Bot on the butcher paper or newspaper.
 - You may not touch your Doodle Bot while it is doodling.

REFLECT:

Modifying Doodle Bot's Doodles:

- You can adjust the line smoothness by trying different eraser weights and positions.
- The path that the Doodle Bot takes can be adjusted by changing the angle or height of the pen and/or craft sticks. Detach the pen and craft sticks, and reposition them at different heights and angles.
- Once you have experimented with a design, you can, with minor adjustments, make some cool patterns.

APPLY:

- Robotics is a multi-disciplined career in both computer programming and engineering. If this activity sparked your imagination into new ways to dominate the world, look into careers in one or both of these fields.

<https://compsci.colostate.edu/> and <https://www.engr.colostate.edu/>

(MUW—Ha-Ha-Ha-Ha)

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MAD SCIENTIST LAIR

Every mad scientist needs that defining lair for creating havoc on the world. In this activity, you will begin to design your very own lair! Once you have the overall look, you can build a **diorama** of your dream mad laboratory!

Materials:

- Paper
- Color pencils
- Stuff around the house
- Mad Scientist imagination!

DO:

Directions:

- Spend some time exploring the old science fiction movies for ideas (they were the BEST for creating mad scientist laboratories).
- Do you envision yourself more as a Dr. Victor Frankenstein (biology), Dr. Henry Jekyll (chemistry to change humans), Dr. Hans Zarkov (Flash Gordon's scientist and rocket builder), The Brain (from Pinky and the Brain), or perhaps a new and terrifying **nemesis**?



- A traditional diorama is built in a box with a window or side cut-away. Shoeboxes work great, but you can also use a larger box if so inspired.
- Start with the floor and walls. How do you want your lab to look? Is it Steampunk? Stainless Steel (use aluminum foil), or something else?

REFLECT:

- Once you have your idea, begin designing your diorama.
- Joan Steiner was an artist and designer who made wonderful scenes using everyday objects, like pretzels for logs, a postage stamp for a picture on the wall, an upside down chess pawn as a hanging lamp, or safety pins to be handles).
- You can use Legos to make equipment, floors, walls, etc.

- What materials can you use to represent your lab. For example, a spool of thread would make a great stool, and fishhooks are excellent hooks for pulley and winch. Use barbless hooks.
- Legos are great for adding gears and switches.

APPLY:

- Put everything together in your diorama. When you are pleased with your diorama results, take a picture and send it to Dr. Shaw at barbara.shaw@colostate.edu. She will include your images in future issues of ST[EMpower] articles posted online!
- Architecture is a wonderful career. If this activity captured you, then architecture may be a career for you.
<http://la.agsci.colostate.edu/>

(MUW—Ha-Ha-Ha-Ha)



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Supplemental Information

MAD SCIENTIST LAUNCHER DATASHEET

Sketch your launcher design here:

	Small Marshmallow	Medium Marshmallow	Large Marshmallow
Trial 1 Launch 1			
Trial 1 Launch 2			
Trial 1 Launch 3			
Average of Trial 1			
Trial 2 Launch 1			
Trial 2 Launch 2			
Trial 2 Launch 3			
Average of Trial 2			
Trial 3 Launch 1			
Trial 3 Launch 2			
Trial 3 Launch 3			
Average of Trial 3			