

Southeast Area News – March 2018

SEA Leader Webinars

The Southeast Area 4-H Agents are excited to offer a new opportunity for our leaders, monthly webinars. These monthly webinars will cover important information for organizational and project leaders. The webinars will be offered using Zoom. The second webinar is on Wednesday, March 21st at 7 p.m. It will cover inclusivity. For those not able to attend at that time, the webinars will be recorded for later viewing. For instructions on attending see your local extension office.

Meat Quality Assurance

All 4-H members in breeding and market beef, sheep, swine, goats, poultry, rabbits, dairy animal and horse projects must complete Meat Quality Assurance training the first two years they show livestock, and then again when they change age divisions. You may attend any MQA in the area; be sure to sign in and complete the quiz so your county will know you attended. The hands-on learning stations will be used again. This is a come and learn-by-doing training that will take approximately an hour to complete. Parents and leaders are strongly encouraged to attend. Plan to attend one of these sessions:

- March 15th - Cheyenne County - 4-6 p.m. - Community Building
- March 16th - Kiowa County - 9-11 a.m. - Community Building
- March 19th - Baca County - 6-8 p.m. - Minnick Building
- March 20th - Prowers County - TBA
- March 21st - Bent County - 5-7 - McClave School
- March 22nd - Crowley & Otero Counties - 5-7 p.m. - Ark Valley Fairgrounds

Colorado 4-H Shooting Sports Leader Training

The dates for the 2018 Colorado 4-H Shooting Sports Leader Trainings have been set. Approved leaders can register for these trainings through 4-H Online. See your local extension office for more information.

- Weld County - March 9th-11th
- Pueblo County - March 23rd-25th
- Arapahoe County - April 6th-8th
- Mesa County - April 13th-15th

Livestock Judging Field Day

The 2018 Livestock Judging Field Day is scheduled for Saturday, March 24th at the Morgan County Fairgrounds in Brush. The field day will allow youth to gain valuable knowledge related to selecting your 4-H livestock projects. The field day will cover beef, swine, sheep, and goats. The program costs \$10 for youth (includes lunch) and there is an adult jackpot for \$5. Registration will start at 8:30 a.m. and the program will begin at 9 a.m. For more information contact Marlin Eisenach at 970-542-3543.

Horse Judging

A horse judging team has started in Otero County, and is open to all Southeast Area Counties. For more information, contact Coach Trish Leone at 719-468-9823 or Marlana Griesse in the Otero County Extension Office at 719-254-7608.

Daniel Kasza Memorial 4-H Scholarship

Are you looking for money for college? All Baca, Bent, Cheyenne, Crowley, Kiowa, Otero and Prowers 4-H members who are graduating seniors are encouraged to apply for the Daniel Kasza Memorial 4-H Scholarship. Criteria and applications are now available from Southeast Area Extension Offices and on the area website, and are due April 1. One \$750 scholarship will be awarded to an eligible applicant. Contact Kaye, kmkasza@yahoo.com or 719-688-2299, for more information.

Colorado 4-H Foundation Scholarships

The Colorado 4-H Foundation has a scholarship application program that awards over 20 scholarships to Colorado 4-H members. These scholarships all require 4-H membership, but focus on different fields of study and interest. The scholarship application can be found on the 4-H Foundation website at <http://co4hfoundation.extension.colostate.edu/benefits/colorado-4-h-foundation-scholarships/>. The deadline to submit application is April 1st.

Add/Drop Deadline

Members wishing to either add or drop a project have until April 16th to do so. All additions and drops must be done in writing, on the appropriate form, and signed by both the member and their parent/legal guardian. Add/drop forms are available at the Extension Office. Remember, you must be enrolled in at least one project to maintain your 4-H membership, and to participate in 4-H activities.

Creative Cooks

Express your creativity at the District VI Creative Cooks and Cake Decorating Contests! Both contests will be held at the Minnick Building on the Baca County Fairgrounds in Springfield on April 19th. Set up for the contests will start at 5:00 pm and the contests will start at 6:00 pm. There is a \$5 per person entry fee that must be paid when arriving.

During the Cake Decorating Contest, youth are given the opportunity to show off their skills while decorating a cake in a given amount of time. The Creative Cooks contest allows youth to plan a menu, set a place setting, cook a dish, and participate in an interview with the judge. Judging is based on creativity, taste, and visual appeal, among other factors. Complete contest requirements can be found at www.colorado4h.org.

We hope to see you all there! For more information or entry forms, contact your local Extension Office. Entries are due to your Extension Office by April 2nd.

Adventure into the Land before Time

Picketwire canyon, a portion of the Comanche National Grasslands, located outside of La Junta Colorado is home to the over 1,300 dinosaur tracks. This tour dives into the scientific discoveries that have been made within the canyon; along with local history and stories about the settlers we homesteaded the land. This tour is a jam packed and will start at 8 a.m. on Tuesday, May 29th at

the Comanche National Grasslands office and then travel out to the canyon making various stops along the route including a 19th century church, settler's encampments and the dinosaur tracks themselves. Participants will need to pack a lunch and plenty of water as we will be out all day. Once you are signed up you will receive a list of proper clothes to wear that day and other gear to bring such as sunscreen. It is \$15 for youth and \$20 for adults, and there is a limit of 35 participants total. For more information contact your local extension office.

Camp Go West

Are you ready for some adventure this summer? Join the Southeast Area on the camp experience of your life. Camp Go West will occur July 1-3 and you will be transported into endless fun including canoeing, hiking, roasting marshmallows around the campfire and so much more. This camp is three days jam-packed with excitement. We will be staying at YMCA Camp Jackson in beautiful Rye, Colorado. This camp is open 9 to 18 year olds. Registration is \$150 including meals, lodging, activities and camp goodies. Stay tuned because there will be a discount to the first 30 youth from the Southeast Area to register and there will be half-scholarships offered. Registration opens May 1st and closes June 1st on 4-H Online! Be sure to mark your calendars, so you don't miss out on the fun!

State Fair Exhibit Requirements

The 2018 State Fair Exhibit Requirements have been updated. You can find them at http://www.colorado4h.org/project_resources/StateFairExhibitReq.pdf. Please be sure to refer to the exhibit requirements when you are planning on your project, as this is what it will be judged on at both county and state fair.

District VI Shooting Sports Contest

Mark your calendars for the 2nd annual District VI 4-H Shooting Sports Contest. It will be Saturday, June 9th, 2018 at the La Junta Rifle Club.

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.”

Bent County 4-H



March 2018 Newsletter

Volume 9, Issue 13, March 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, let's get to 500 likes!

- ◆ Bent County Extension
- ◆ Bent County Fairgrounds

County News

Opportunities and Deadlines

March 1-4—Western Region Leaders Forum
March 1 —Producing Partners Applications Open
March 17—Horse Showmanship Class (Fairgrounds)
March 16-17—District Retreat, Near Divide
March 20—MQA—Prowers County
March 21—MQA—Bent County (@ McClave School)
March 22—MQA Otero/Crowley y Counties
March 28—4-H Council Meeting—Las Animas
March 30—Cake Decorating Workshop (McClave UMC)

4-H Workshops

The Bent County 4-H Council is sponsoring a number of upcoming workshops that will be available to 4-H members .

Horsmanship Series: Class 1 (Showmanship)

There will be a showmanship workshop on **March 17, 2018 from 10:00am—11:30am at the Bent County Fairgrounds** for all 4-H members enrolled in horse projects. Every member is required to do showmanship, so this is a perfect opportunity to learn what you don't already know, and brush up on what you do. Christina Delpozo and Ashley Mick will be teaching this class, and they will be the new horse superintendents this year.

1. MQA Requirements
2. Producing Partners Form (Big R 4-H Gift Cards)
3. Upcoming 4-H Workshops/Classes & Dates
4. Look For Changes in your fair book this year!
5. New State Fair Requirements



The next classes will be determined from this one depending on what events members are participating in, and the level of riding ability and halter knowledge. Check it out, get involved with other members, and learn something new!

Cake Decorating

There will be a hands-on cake decorating workshop on **March 30, 2018 at 9:30-11:30am at the McClave United Methodist Church**. Each participant will need to bring a prepared cake, but all other supplies will be provided. Please contact the extension office to RSVP to be sure we provide appropriate amounts of supplies for each participant.

Sewing Workshop

Come learn to sew or hone your sewing skills with Ginny Freed at the **Bent County Extension Office on April 6, 2018 from 9:00am-12:00pm** if you are enrolled in a 4-H sewing project. Participants will leave with a finished product from this workshop. Materials will be provided. If you have a sewing machine you can bring, please do so.



Sheep/Goat Tagging

If you intend to enroll in a sheep or goat livestock project this year, tagging for Bent County Fair will be at the Bent County Fairgrounds on May 3, 2018 from 4:00pm—6:30pm. Plan to be there!

New State Fair Requirements

Participants from the Bent County 4-H Clubs should be aware that there have been some changes to the State Fair requirements in several categories. If you intend to take part in the Colorado State Fair as a showman for any project, be sure you review that State Fair Requirements. These can be accessed through 4Honline, or you are welcome to review them in print at the Extension Office.



Daniel Kasza Memorial 4-H Scholarship

Are you looking for money for college? All Baca, Bent, Cheyenne, Crowley, Kiowa, Otero and Prowers

4-H members who are graduating seniors are encouraged to apply for the Daniel Kasza Memorial 4-H Scholarship. Criteria and applications are now available from Southeast Area Extension Offices and on the area website, and are due April 1. One \$750 scholarship will be awarded to an eligible applicant. Contact Kaye, kmkasza@yahoo.com or 719-688-2299, for more information.

MQA Requirements

Bent County will have MQA in McClave at the McClave School on Wednesday, March 21, 2018 from 5-7pm. If you are not able to participate in Bent County, please let the Extension Office know, and we can help make arrangements for you to attend in a neighboring county in our region. A list of members who are required to take MQA and are a Bent County 4-H enrolled member are attached to this newsletter. Please be sure you are/are not required to attend!



Fair Book Changes

The Bent County Fair will be July 21-28, 2018 this year. Please take note that you will see a few changes in the fair books this year. They are as follows:

1. Added tie-out clarification in general livestock section
2. Added breeding swine category
3. Added 4-H online links for dog and horse sections for references
4. Fair books will be available after the March 5, 2018. They can be picked up at the Extension Office

Beef Weigh-In

If you weighed in and tagged a beef on February 24, 2018, please check the attached list to make sure all information is correct. If there are any discrepancies, please contact the Extension Office so we can get that corrected. State Fair forms and retinal scans are available as well as brand inspections if you needed one. Retinal scans and brand inspections are at the Extension Office, and the State Fair form is attached to this newsletter.

Stock Show U/Steer-Aid Clinic

WW Feed & Supply will again host its Steer-Aid Clinic in conjunction with a Stock Show University by Sullivan Supply. It will be free of charge and is set for Saturday, June 2, 2018. The event is geared specifically for beef exhibitors. The activities will take place at the Bent County Fairgrounds. Youth will bring their own animals and it will be an all-day instruction and hands-on experience for you to actually clip and groom your steer or heifer under the guidance of an expert. More details will be provided when the date nears.



Opportunities.....Don't Miss Out!

Citizenship Washington Focus is June 23-30th. If you are age 15 or older, you are welcome to apply for this once-in-a-lifetime opportunity trip! Applications are due February 16, 2018.



Bent County Council 2018 January Bent County Council Meeting

The new time for the county council meetings have began and on a new day to. The meetings have been moved to the fourth wednes- and now are p.m. The new laws have also and will be next meeting. details were add- seneor.



day of the month scheduled for 6:00 budgets and by- been looked over adopted at the (Some further ed.) A Parliamen-

By; Holly Morgan-Reporter



BENT COUNTY 4-H T-SHIRT DESIGN CONTEST

Each club is asked to submit their ideas & design to the Bent County 4-H Council for the NEW t-shirt design for 2018!

The Bent County 4-H Council will select the winning club & that club will be awarded with a Pizza Party at their next club meeting!

You'll have the option to place an order for a t-Shirt with the 2018 design once a winner is selected!

All ideas & designs need to be submitted by the February Council Meeting!



2018 MQA List

Griffin Boyd

Kylie Brassfield

Ethan Bronniman

Ryan Bronniman

Anointed Brown

Trinity Brown

Colby Ebright

Grady Ebright

Hudson Goble

Beauty Gregory

Kevin Hall

Avery Hemphill

Oliver Hemphill

Emmett Homm

Layton Homm

Cassidy Jagers

Brett Jones

Morgan (Tuff) Kelley

Braden Marks

Kristen Marks

Jason Miller

Tyanne Miller

Karson Roesch

Serenity Rouille

Seth Rouille

Isaac Stephens

Jozlyn Sykes

Jonathon Tague

Hannah Taylor

Cylen Turner

Addison Vallejos

Kennedy Vallejos

Riggin Van Campen

Shali Van Campen

Madeline Vandyke

Leeanna Ward

Carlin Weber

Chloe Weber

Roree Willbanks

2018 Producing Partners



Big R is proud to support our 4-H and FFA livestock exhibitors and invite you to join our newly enhanced Producing Partners Program.

It is a large investment for feed, supplies and clothing needed to be a livestock exhibitor and Big R wants to help.

Big R has combined all the traditional discounts we offered in the past for feed, show supplies and clothing into one simple program. The combined amounts have been taken into consideration to determine how much support each Producing Partner will receive for the project they have chosen.

Listed below is the information needed to enroll in Big R's producing partners as well as the amount we will give for each animal you are raising.

Good luck to you and we will see you at the fair!

Information Needed:

Name: _____ Phone Number: _____

Address: _____

City, State, Zip Code: _____

Chapter/ Club Name: _____

Chapter/Club Leader Name & Phone Number: _____

Project: Horse -\$100.00 Cattle- \$200.00 Lamb- \$60.00 Goat- \$55.00 Llama/Alpaca- \$55.00

Swine- \$75.00 Rabbit- \$30.00 Chicken- \$30.00 Dog- \$45.00 Turkey- \$40.00 Fowl- \$30.00

Important: All funds are issued after verification has taken place with Chapter/Club Leader and full funds are issued in a Big R gift card once that is complete. Limits do apply. Max of 1 large animal and 2 small animal sponsorships per person. Start date to enroll March 1st 2018 and ends April 30th 2018. Sign up is limited to one Big R location. Signing up at multiple Big R locations is prohibited. Program can be ended at any time should limits be reached.



**County Extension
Offices**

Baca County
700 Colorado St.
Springfield, CO 81073
719-523-6971

Bent County
1499 Amb. Thompson Blvd.
Las Animas, CO 81054
719-456-0764

Cheyenne County
425 S. 7th W.
P. O. Box 395
Cheyenne Wells, CO 80810
719-767-5716

Crowley County
613 North Main St.
Courthouse Annex
Ordway, CO 81063
719-267-5243

Kiowa County
1305 Goff
P. O. Box 97
Eads, CO 81036
719-438-5321

Otero County
411 N. 10th
P. O. Box 190
Rocky Ford, CO 81067
719-254-7608

Prowers County
1001 S. Main
Lamar, CO 81052
719-336-7734

District VI 4-H Contests Cake Decorating and Creative Cooks

April 19th, 6:00 pm
Minnick Building, Baca County Fairgrounds, Springfield
Entry Deadline is April 2nd

Cake Decorating Contest

- ✿ Must be enrolled in Cake Decorating
- ✿ Decorate the cake at the contest, while judge watches
- ✿ Very specific requirements for each unit
- ✿ Time limit for contest based on project unit



Creative Cooks Contest

- ✿ Any member may enter
- ✿ Individual and/or team competition
- ✿ Plan a meal, and service for the meal
- ✿ Prepare and serve one food from the meal
- ✿ Answer questions about the meal, including nutrition and food safety
- ✿ SE Colo CattleWomen award for best entry using beef

Complete details of all contests are in the State Fair Contest Requirements at www.colorado4h.org. or contact your Extension Office. Entry deadline is April 2nd.

Contest Entry Form

Return entry form to your Extension Office by April 2nd.

Name(s) _____ Age 12-31-17 _____

_____ Age 12-31-17 _____

Check and complete the information for the contest(s) you plan to enter:

_____ Creative Cooks

_____ Cake Decorating Unit Number: _____

Entry Fees: \$5/individual, \$10/team Paid: _____



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

ST[EM]power



CAREERS

We have been exploring career ideas over the past 3 months. If you missed those issues, you can find activities 38 through 40 located here:

<http://tra.extension.colostate.edu/stem-resources/>

The 12 broad interest categories are:

- Adventure
- Animals and Nature
- Art
- Business
- Computers
- Math
- Music and Dance
- Science
- Sports
- Talking
- Travel
- Writing

What are your four top ranked broad interests from the results of your quiz:

- 1.
- 2.
- 3.
- 4.

Last month, you worked on a project that combined your top interests. The project you selected also reviews your interests.

- Selecting your favorite TV shows, movies, and books, The TV shows and movies you watch, the books you

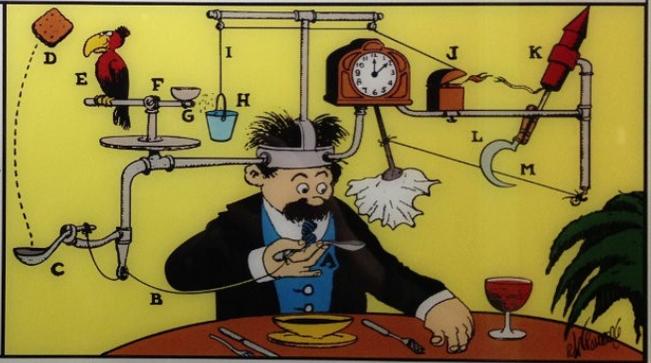
Rube Goldberg Machines! Wacky Fun!

Dr. Barbara J. Shaw

Self-Operating Napkin

By Rube Goldberg

PROFESSOR BUTTS WALKS IN HIS SLEEP, STROLLS THROUGH A CACTUS FIELD IN HIS BARE FEET, AND SCREAMS OUT AN IDEA FOR A SELF-OPERATING NAPKIN.
AS YOU RAISE SPOON OF SOUP (A) TO YOUR MOUTH IT PULLS STRING (B), THEREBY JERKING LADLE (C) WHICH THROWS CRACKER (D) DAST PARROT (E). PARROT JUMPS AFTER CRACKER AND PERCH (F) TILTS, UPSETTING SEEDS (G) INTO PAIL (H). EXTRA WEIGHT IN PAIL PULLS CORD (I) WHICH OPENS AND LIGHTS AUTOMATIC CIGAR LIGHTER (J), SETTING OFF SKY-ROCKET (K) WHICH CAUSES SICKLE (L) TO CUT STRING (M) AND ALLOW PENDULUM WITH ATTACHED NAPKIN TO SWING BACK AND FORTH THEREBY WIPING OFF YOUR CHIN.
AFTER THE MEAL, SUBSTITUTE A HARMONICA FOR THE NAPKIN AND YOU'LL BE ABLE TO ENTERTAIN THE GUESTS WITH A LITTLE MUSIC.



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BACKGROUND

Rube Goldberg (1883-1970) was born in San Francisco on July 4th, 1883. He graduated from the University of California Berkeley with a degree in engineering, but he realized that engineering was not the career for him. His first job at the San Francisco Chronicle led to early success. He moved to New York City to work for Hearst publications. That is when he became a household name. He was a Pulitzer Prize cartoonist, and he is best known for his zany invention cartoons, like the one above. He is the only person to be listed in the Merriam Webster Dictionary as an adjective. It's estimated that he developed a whopping 50,000 cartoons in his lifetime. (From Rube Goldberg, Inc.: <https://www.rubegoldberg.com/about/>)

Objectives

You will:

- Identify and describe Sir Isaac Newton's Three Laws of Motion
- Build and explain how the Simple Machines function
- Construct a Rube Goldberg Machine utilizing the Three Laws of Motion and Simple Machines

DO:

Materials:

- Plastic cup half full of water
- Coins (3 quarters, 1 dime, 1 nickel, and 1 cent)
- Corrugated cardboard

- Die cast small toy car (e.g. Matchbox or Hot Wheels)
- Marbles
- Books—at least 3—thicker the better
- Ruler
- Scissors
- Pull-back car
- Paper
- Pencils at least 2—rounded work best
- Masking tape
- Rolling pin
- Twine or rope (about 6-8')
- Toilet paper tube
- Hard boiled eggs 3
- Dowel 12"
- Tubing (about 24" - purchase from the pet store)
- Bowls 2
- Balloons

Note: Everything that moves on Earth follows the Three Laws of Motion. Testing the three laws of motion is endless fun! The activities included in this lesson are for easy demonstration only. There are millions of ways to explore (like a good game of baseball, or swimming, or playing jacks or marbles or...)

Three Laws of Motion: First Law—Inertia

An object at rest will remain at rest unless acted on by an unbalanced force. An object in *motion* continues in *motion* with the same speed and in the same direction unless acted upon by an unbalanced force.

Object at Rest

- Fill the plastic cup at least half full of water.
- Cut a square piece of cardboard a bit larger than the cup.
- Place the cardboard on top of the cup and a quarter centered over the cup on top of the cardboard.
- Predict what will happen when you flick the cardboard with your thumb and index finger so that the card goes straight off the top of the cup.
- Flick the card. What happened?
- Repeat this with a nickel. Predict and then flick.
- Repeat with a cent. Predict and then flick.
- Repeat with a dime. Predict and then flick.
- Stack all the coins with the quarter on the bottom. Predict and flick.
- Stack all the coins with the dime on the bottom. Predict and flick.
- Explain what happened to the coins.
- *The coins are at rest and they remain at rest. When the card is flicked away, gravity pulls them down into the cup. If you flick the card too slowly, the lighter coins may move because friction (another force) will start to pull them with the card.*



- read are very telling about your interests. Keep in mind that you may also be drawn to art.
- If you selected writing a story, then you are interested in writing. The story itself is revealing about other interests.
 - If you selected designing something using recycled materials, then you also have an interest in art, science, or math.
 - If you selected the journal, then you have an interest in writing and math. (Isn't it funny how some interests in math seem so un-math-y?)
 - If you presented activities to younger 4-H members, then you also have an interest in talking.

Are you surprised at what you selected? Did you pick something that falls into your top ranked interests, or did you pick something that was outside those interests?

This month, reflect:

- What you did
 - How you did it
 - What was successful
 - What you would change
 - Did you have fun?
- Spend some time really analyzing your project.
- What aspects of your project were the easiest for you to do? List those.
 - What skills do you have that made that part of the project easy to do?
 - Which interest was dominant in your project? For example, if you made art out of recycled material, and science is one of your top

interests, did that influence what you made? Did you focus your art project on scientific aspects (e.g. selecting colors that you change with the light, or including motors and gears to make your art move)?

- Start an interest journal this month (if you didn't start it last month). Writing sparks different parts of the brain than typing does. If you utilize both writing and typing, you will be able to discover more about yourself.
- In your journal, keep things that you find interesting. For example, you see a beautiful sunrise, and you want to capture the feeling, take a picture and write a haiku in your journal. Print the picture and tape it next to your haiku.
- If you see something on the internet that is fascinating or peaks your interests, print it and tape it in your journal.
- Write your thoughts about yourself at the end of the day or first thing in the morning. Try different questions, like: Why is my favorite color red? When is my favorite time of the day?
- Don't examine the journal just yet. Right now, you are just gathering those things that please you, spark your interest, or fascinate you.
- Have fun!

Object in Motion

- I am Aroldis Chapman, a pitcher for the Cincinnati Reds, and I have the record fast pitch of 105.1 mph. I am on the International Space Station and doing a space walk. I have a baseball in my hand. I anchor myself to the space station, and face away from the Earth. I throw the ball as hard as I can away from the Earth. What happens to the ball?
- *The ball will continue traveling in a straight line at 105.1 mph forever, unless it gets too close to another object (like a planet). The gravity from that planet will pull the ball away from the straight line, and probably slow it down some. If a bit of space debris hits the ball, the impact will change the course and speed.*
- Make a ramp with the corrugated cardboard as long as possible (depending on the piece of cardboard you have). Make the ramp wide enough so that you can roll your cars (both the die cast car and pull-back car) down it. You can optionally make a rim on the sides to keep the car from rolling off the ramp.
- Set the ramp on three books (not the chair as pictured).
- Place a coin or marble on top of the car. If your car is a convertible, you can use the marble. If not, you can place a coin on the top of the car.
- Hold the ruler at the end of the ramp, so that the car will smack into it and stop abruptly.
- Predict what will happen to the marble or coin when the car hits the ruler.
- Try it out! Try different ramp heights.
- What happened? Why?
- *The marble or coin on top of the vehicle is traveling at a constant speed when it hits the ruler. It continues at a constant speed. There are two forces that act on the marble or coin. The first is gravity, dragging it down. The second force is collision with air molecules, slowing the marble or coin down. What would happen if you tried this one in space?*



Three Laws of Motion: Second Law— $F=ma$

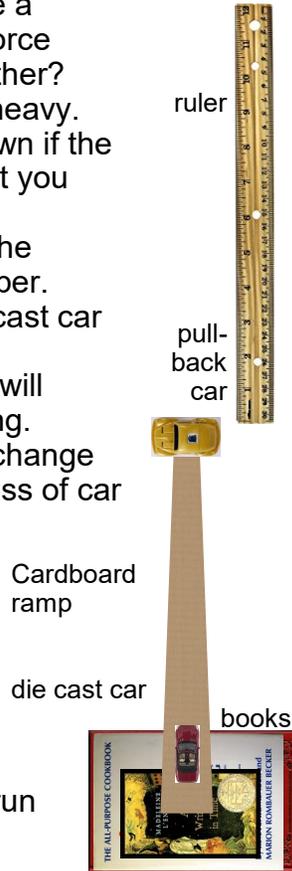
The acceleration of an object as produced by a net force is directly proportional to the magnitude of the net force, in the same direction as the net force, and inversely proportional to the mass of the object.

- The formal description of the second law is crazy hard to understand, but you already understand it, because you use it every day. The description is $F=ma$. If I have a turkey baster, and I fill it with water. I hold the baster so the bulb is



down and the tip is pointed up. What happens to the water if I slowly squeeze the bulb? What happens if I squeeze the bulb hard and fast? Yep, you already understand it.

- “F” is the force you apply to the turkey baster bulb
- “m” is the mass of water, and that remains the same
- “a” is the acceleration, and that is different depending on how hard you squeeze
- It will dribble out if you slowly squeeze (low force, low acceleration), but if you really squeeze hard, the water will go flying out (high force, high acceleration). Easy Peasy!
- What happens when mass is different? You have a baseball and a bowling ball. You use the same force (throwing it as hard as you can), which will go further? The baseball, of course. The bowling ball is too heavy. So if the mass goes up, the acceleration goes down if the force remains the same. Also easy peasy! (Don’t you LOVE math and science!)
- You need the die cast toy car, the pull-back car, the ramp, a ruler, the coins, the books, pencil and paper.
- As the ramp goes up, the acceleration of the die cast car will increase.
- When we add coins to the die cast car, the mass will increase. Tape the coins on so they don’t go flying.
- Set up your experiment for 6 trials, and you only change one variable (height of ramp in Trials 1-3, and mass of car in Trials 4-6):
 - Trial 1: Lowest ramp no coins
 - Trial 2: Middle ramp no coins
 - Trial 3: Highest ramp no coins
 - Trial 4: Middle ramp, 1 quarter taped down
 - Trial 5: Middle ramp, 2 quarters taped down
 - Trial 5: Middle ramp, 3 quarters taped down
- Set up your ramp with the pull-back car at the bottom of the ramp, so that your die cast car will run into the side of it. You will measure how far the die cast toy car pushes the pull-back car depending on the mass of the car and the acceleration of the car. How far the pull-back car is pushed is the force. Record the distance with each of your six trials.
- Graph your results, and explain what happened.



POWER WORDS

- **acceleration**: increase in the rate or speed of something.
- **force**: an influence changing the motion of a body or produce motion or stress in a stationary body; magnitude of such an influence is calculated by multiplying the mass by acceleration.
- **inclined plane**: a plane inclined at an angle to the horizontal.
- **lever**: a rigid bar resting on a pivot, used to help move a heavy or firmly fixed load with one end when pressure is applied to the other.
- **mass**: the quantity of matter that a body contains, as measured by its acceleration under a given force or by the force exerted on it by a gravitational field.
- **pulley**: wheel with a grooved rim around which a cord passes; acts to change the direction of a force applied to the cord and used to raise heavy weights.
- **Rube Goldberg machine**: a deliberately complex contraption in which a series of devices that perform simple tasks are linked together to produce a domino effect in which activating one device triggers the next device in the sequence.
- **screw**: inclined plane wrapped around a pole.
- **wedge**: portable inclined plane to separate two objects, lift up an object, or hold an object in place.
- **wheel and axle**: wheel attached to smaller axle; these two parts rotate together; the force transfers from one to the other.

Three Laws of Motion: Third Law—Action/Reaction

For every *action*, there is an equal and opposite *reaction*.

- The Third Law of Motion is how forces act on objects as they start to move. A frog is sitting on a lily pad, and hops to a nearby lily pad. What happens to the first lily pad as the frog jumps?
- You and your friend are each standing on skateboards facing each other. You push your friend away from you. What happens to you on your skateboard?
- In both instances, the lily pad and your skate board move in the opposite direction of the jump/push with as much force as was applied on the jump/push. Crazy fun!

FASCINATING FACTS

Sir Isaac Newton

- Sir Isaac Newton was born in 1643 and died in 1727.
- He is considered the father of modern science.
- He developed the mathematical formulae for the Three Laws of Motion, Gravity.
- He invented a branch of calculus.
- He improved telescopes by using a lens and a mirror instead of two lenses.
- He developed a theory that white light (i.e. sunlight) is composed of Red Orange Yellow Green Blue Indigo and Violet light (the colors we see in a rainbow).
- Even though Newton is considered the father of modern science, he practiced alchemy (which is not science).

Simple Machines

- Archimedes was the first person to propose simple machines, by discovering the mechanical advantage of a lever.
- Archimedes lived around the 3rd Century BC.
- Archimedes was the first person to understand that simple machines do not create energy, they only transform it.

Rube Goldberg Machines

- Rube Goldberg earned his engineering degree at the University of California Berkeley in 1904.
- He worked as an engineer for 6 months before deciding he wanted to be a cartoonist.
- He won a Pulitzer Prize in 1948 for a political cartoon called Peace Today.

- You need the pull-back car, marbles, and the cardboard ramp.
- Lay the cardboard ramp on the floor. Pull back the pull-back car to wind-up the wheels to the maximum. Most pull-back cars will click when the car is fully wound. Release the pull-back car on the cardboard. What happened? Measure how far the car went. Repeat several times. Does the car go about the same distance each time?
- Place the marbles in paired rows as wide and long as the ramp, on a hard floor (not carpet or a rug).
- Place the cardboard ramp on top of the marbles.
- Pull back the pull-back car and hold the wheel.
- Place the car at the start of the ramp and release the wheel.



- Measure the distance the car moved. Measure the distance the ramp moved. Repeat several times.
- What happened to the car, and what happened to the ramp? Why?

Six Simple Machines

A simple machine is a device that makes work easier by magnifying or changing the direction of a force. Work (in physics) is defined as moving an object over a distance.

The following six activities demonstrate how the simple machines work.

• Lever

- You need a ruler (lever), pencil (fulcrum), and a book. Place the pencil on a table and put the ruler over the pencil at the 1" mark. Place the book on 0 to 1" on the ruler. Push down on the far end of the ruler. Move the pencil to the 6" mark (pictured) with the book still on the end by 1". Push down on the ruler again. Move the pencil to the 9" mark, and push down on the ruler again. Which pencil position was the easiest to move the book?



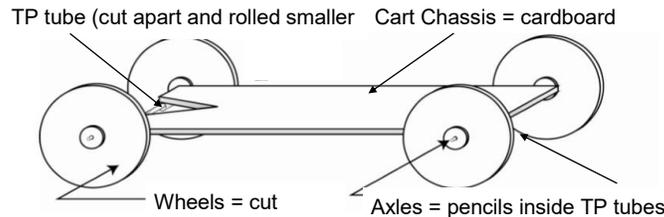
• Pulley

- You need a rolling pin, a rope or twine (about 6'-8' long is great), a bucket with a handle, a heavy book, and someone to help you. Tie one end of the rope to the bucket. Loop the rope over the rolling pin. Pick up the book. Ask your helper to hold the rolling pin. Place the book in the bucket and pull on the rope. Which is easier to pick up the book; with or without the pulley?

• Wheel and Axle

- You need cardboard, 2 pencils, scissors, something with a round bottom (like a cup or jar of jam), tape, and a TP tube. Use your round object to trace 4 circles on your cardboard. Cut them out. Find the center of your circles, and poke the pencil through each of the 4 circles. Cut your toilet paper tube into two pieces. Reform a tube's diameter slightly larger than the pencil and tape back into a tube. Cut a piece of cardboard that is smaller than the length of

the pencils. Tape the 2 TP tubes to each side of the cardboard. Insert the pencils into each tube, and attach 1 wheel to each side of the pencil. Use your book. First, drag your book across a table. Put it on your vehicle. Make sure that the book does not touch the wheels (use something to lift the book away from the wheels). Pull your vehicle across the table. Which was easier? Why?



- **Inclined Plane**

- You need the cardboard ramp and three hard boiled eggs. Place the ramp at a shallow incline. Predict what will happen if you roll the egg down this ramp. Roll the first egg down the ramp. Place the ramp at a steep 45° angle. Predict what will happen if you roll the egg on the ramp to the floor. Try it. Predict what will happen if you hold the egg at the same height as the 45° ramp and drop the egg on the floor. Try it. Compare your three eggs. Were your predictions correct? What did the inclined plane do? The amount of work remains the same, but it takes less force to move an object with an inclined plane.

- **Screw**

- A screw is an inclined plane that wraps around a central column. Archimedes designed a pump that would move water from the irrigation canal to the field. You need a 12" dowel and tubing (from the pet store), tape, a couple of books and 2 bowls. Spiral the tubing around the dowel, and secure with tape. Place water in one of the bowls. Place the water bowl at a lower level than the empty bowl. Place the Archimedes Screw into the lower bowl, and hover it over the upper bowl. Turn the screw so that end of the tubing in the water twists up out of the water. Keep turning the dowel and the water will move from the lower bowl to the upper bowl. How did this work?



- **Wedge**

- You need a pair of scissors and a piece of paper. Cut the paper. Scissors are a combination of 2 wedges (the blade of each arm of the scissors) and a lever (the fulcrum is the pivot point, and the blades are the work end of the lever). A needle is a wedge when you use it to sew. An axe is a wedge when you use it to cut wood.

REFLECT:

You have spent some time working through the Three Laws of Motion and Simple Machines. In the reflection section, you will plan for a simple

- Mr. Goldberg was Jewish. He published political satire during World War II. He started receiving hate mail and death threats. To protect his children, he had their last names changed to George.
- Goldberg is an adjective in the Merriam-Webster Dictionary. It means, "doing something simple in a very complicated way that is not necessary."

CITATIONS

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Turkey Baster Image <https://images-na.ssl-images-amazon.com/images/>

[I/61ybG2qfU8L._SY450_.jpg](https://images-na.ssl-images-amazon.com/images/I/61ybG2qfU8L._SY450_.jpg)

Three Laws of Motion

Image flick: <https://www.tutorvista.com/content/science/science-i/force-laws-motion/inertia.php>

Image ramp: <http://progressiveearlylearning.com/blog/>

Image 3rd Law: <https://www.youtube.com/watch?v=EUQAFajIEKs>

Simple Machines

Image of wheel and axle: <https://inventorsof tomorrow.com/2016/10/25/design-a-car/>

Image of lever: <http://science-mattersblog.blogspot.com/2011/01/simple-machines-balance-lever.html>

Image Archimedes Screw: http://ptgmedia.pearsoncmg.com/images/chap1_0131856731/elementLinks/01fig09.jpg

Image Engineering Process: <https://sites.google.com/a/wsp.org/ms-pawlishens-science-site/design-build/engineeringtechnology/study-guides>

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task and solve it using a Rube Goldberg machine solution. The cartoon on the first page is one of Mr. Goldberg's inventions. Wacky fun!

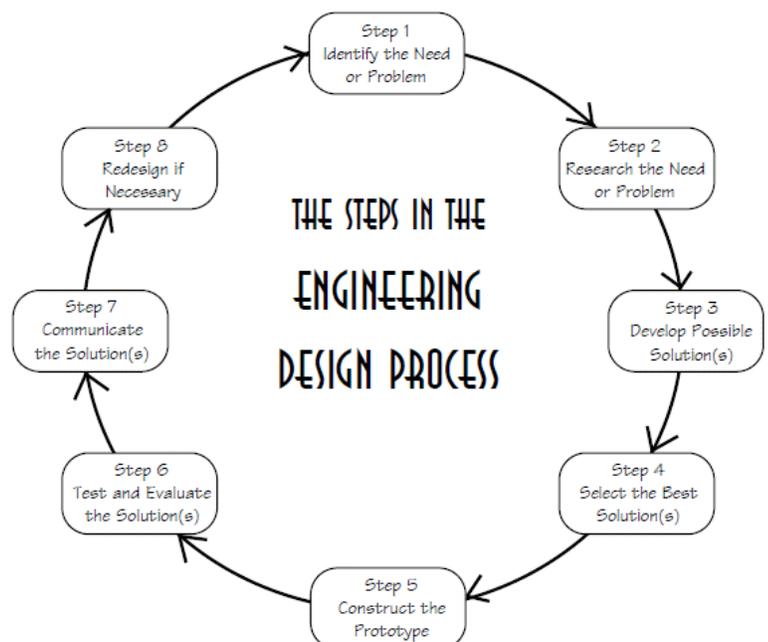
Have you ever played the game, Mouse Trap? That is a Rube Goldberg Machine. Sometimes movies have Rube Goldberg machines that crack an egg or open a gate. Not only that, but the Rube Goldberg Inc. holds a competition every year. They have wonderful videos of people solving simple problems. This year's competition is to pour cereal into a bowl. Goofy fun! <https://www.rubegoldberg.com/>

Your task is to build a machine that will pop a balloon in at least 12 steps using as many recycled materials in your Rube Goldberg Machine as possible (with the exception of the balloons—those should be new!).

- Consider working with a group of friends. Brainstorming with several people brings a project to a whole new level of excellence.
- Brainstorm ideas. Explore the Rube Goldberg site listed above. Not only will you find some of Mr. Goldberg's crazy invention cartoons, but you can also see videos of people who entered the contest in past years. Click on Contests on the top menu bar. When you go to the contest page, click on Past Year's Results at the bottom of the page.
- List your steps, and sketch out the design. What supplies will you need as you build your Rube Goldberg Machine?
- Develop your supply list, and scrounge for recycle materials.
- Once you have all your planning completed, you are ready to apply your design!

APPLY:

- Work through the engineering design process. It is okay to “work the problem” until you find a great solution.
- Set up your Rube Goldberg Machine, and test it.
- If any step didn't go as planned, discuss how you can redesign that section so it will function, and move the machine to the next step.
- What changes can you make to improve it?
- Test it several times.
- Videotape your Machine in action!



Supplemental Information

Rube Goldberg Machine Contest

If this issue of the 4-H STEM Activity galvanized (excite someone, typically into taking action) your interest, I have great news!

Register for the 2018 Rube Goldberg Machine Contest [Click Here](#)

Log in

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Contests Home

- Introduction to Rules and Hosting
- Find A Host
- Host a contest
- Schedule/Deadlines
- FAQs
- Help
- Photo/Video Archives
- History
- Terms & Agreements

CLICK - See how we Pour A Bowl of Cereal

Registration is open NOW!

2018 CONTEST TASK: POUR A BOWL OF CEREAL

LIVE CONTESTS ONLINE CONTESTS

2018 Rube Goldberg Machine Contest is Open! Online Team registration is open.

Register A Team Find A Host Host A Contest Live Contest Results Register A Team Prize List Online Contest Results Vote Peoples Choice

Rube Goldberg has an annual competition, and registration opens in September!

If you are interested, please let Dr. Barbara Shaw (barbara.shaw@colostate.edu) know that you want to participate in the 2018-19 Rube Goldberg Machine Contest.

There are two kinds of competitions:

- For the online competition, you design and build your machine, videotape it, and send your tape to the judges.
- For the live competition, you design and build your machine, transport it and you to the judges.

In the meantime, check these out:

- <https://www.rubegoldberg.com/contest/>
 - Click on one of the competitions. That will open another page with all the entries. They are identified as 1st, 2nd, 3rd, and People's Choice. The other entries are also great.
- <http://coolmaterial.com/roundup/rube-goldberg-machines/> (Page turner is perfect for someone who isn't a morning person!)
- <https://www.youtube.com/watch?v=7UdzAaw-H0o> (America's Got Talent—Wow!)
- <https://www.youtube.com/watch?v=QmOxqhEuBUM> (especially for photographers!)
- <https://www.youtube.com/watch?v=23Hzq8BG2YE> (10 Rube Goldberg Machines in the movies)

Enjoy!