

The Winston School Presents



Winston Science 2017

Winston Science combines the very best motivating factors, including challenging competitions focusing on creativity and team problem solving.

THE WINSTON SCIENCE PHILOSOPHY...

Our goal is to reach out to students throughout the greater Dallas area and motivate them to participate in Science, Art, and Creative Problem Solving activities. Winston Science has something for everyone, and everyone can be successful! We want to encourage creative minds to think critically, and choose competitions that excite students to learn. Winston Science was founded on the principle that science should be fun, and that all students should have the opportunity for a great learning experience.

COMPETITIONS

Competitions are separated into categories and will be judged by grade level groups. Teams with contestants from different grades are allowed, but will be judged at the highest-grade level represented in the group. Contestants are generally assigned specific times to compete or to present their entry (check specific competitions for more details). A contestant who fails to appear at the proper time may not be eligible for placement in the competitions. For this reason, contestants are encouraged to arrive a few minutes early for their events. Contestants who do not follow the guidelines for all events with a **September 29th deadline will not qualify for an award**. All entries must comply with good taste and generally accepted community standards. Any entry that goes beyond this rule will be disqualified.

By participating, contestants agree to allow photos of themselves and their entries to be used in Winston Science booklets or the website.

By participating, teachers and/or parents agree to accept responsibility for their students and to properly supervise them before, during, and after the events. In order to conserve space and maximize usage of our facility, parents will not be allowed in competitions other than those held in the gym. Parents are welcome to mingle in the Winston cafeteria where snacks and drinks will be offered for sale.

CONTESTANT DEFINED

A contestant is defined as an individual or team not to exceed four people, except where specifically provided in certain competitions.

GRADE GROUPS

Grade groups are specifically listed at the top of each competition. A contestant may compete up a grade level, but not down.

Advance preparation is required for ALL competitions. Specific details and requirements are listed for each competition.



REGISTRATION

All contestants must complete an online registration form, accompanied by \$5.00 for each competition each student is participating in. Competitions are held on October 14 & 21, 2017.

September 22 is the registration deadline for all events. You MUST register and pay for competitions online. To register, please go to <http://gg.gg/winstonsci>. REGISTRATION FORMS ARE AVAILABLE ONLINE FOR EACH SESSION. Also make sure to check the schedule of competitions so your student doesn't register for two competitions on the same day at the same time!

Registration for specific activities and competitions is required, as space is limited. For most competitions, participants may choose to compete as an individual or as part of a team. **Detailed instructions and competition rules for each event are listed.**

COMPETITION DAY

Snacks & Lunch will be available for purchase each Saturday of competitions:

Breakfast 8:00-11:00 by the Winston student government in the cafeteria.

Lunch 11:30-2:00 by Easy Slider food truck in the parking lot.

Snacks in the afternoon by the Winston student government in cafeteria.

Our own Winston students have designed Winston Science T-Shirts! They are on sale online for \$15 each. These T-Shirts are high quality, but are 100% cotton and may shrink when washed.

AWARDS

Awards will be given at the end of each competition day for that day's events. All contestants are encouraged to stay for the awards ceremony at the end of the day. The contestant, or at least one member of the contestant's team, must be present to receive the award.



PHOTOGRAPHY COMPETITION Drop Off Only

SUBMISSION WINDOW: September 25TH-29th, 4:00 pm The Winston School

PHOTOGRAPHS MUST BE RECEIVED BY THIS DEADLINE TO BE EVALUATED

- Grade Groups: 3rd-5th, 6th-8th and 9th-12th
- Individual ONLY

•AWARDS: 5:00 pm, Saturday, October 21, The Winston School

GENERAL REQUIREMENTS

1. The contestant will submit a digital photograph showing one of the following NATURE categories:
 - Colors Animals Wear (patterns, color schemes)
 - Faces in Places (find a face in something, do not manipulate the environment to make the face)
 - Micro or Macro (using a microscope or macro lens)
2. The entry must be an 8" x 10" photograph mounted or matted on matte board for display. NO FRAMES. Each photo must have the following information printed on the back of the matte board:
 - Name of contestant
 - Home phone number of contestant
 - School attending and grade level
 - Photography category entered (Students must use the correct category name as set out in Rule One above.)
 - Identify the object photographed and state when and where it was taken.
 - Artist Statement – short paragraph telling about the image)
 - Signed declaration (see Rule 3 below)
3. Each photo must have the following declaration written on the back:

I have taken this picture between January 2017 and September 2017.

Student Signature
4. Photographs submitted without all the required information, improperly mounted, or late will be disqualified.
5. A contestant may enter more than one photograph. Each photograph must be accompanied by a separate registration form and \$5.00 entry fee.
6. Photographs must be received at The Winston School no later than 4:00pm, September 29, 2017.
7. After the photographs are judged, the finalists will be posted on The Winston School web site and the awards will be given on Saturday, October 21, 4:30pm.
8. Contestants may reclaim their photos no later than November 19, 2017. Photos not reclaimed by this date will be donated or recycled.

EVALUATION

The judges will use the following criteria to evaluate the photographs

Basic Criteria:

- Was the photograph properly mounted or matted on matte board?
- Did the photograph have all the proper information on the back of the photo?

If the photograph meets both of the criteria set out above, the judges will move on to the following criteria for evaluation

Specific Criteria:

- Was the photograph in focus?
- Did the photograph capture the essence of the category?
- Did the photograph have impact (i.e. did it leave a lasting impression on the judges)?

AWARDING OF PRIZES

Judges may award more than one first place, second place, third place or honorable mention.



RECYCLING TRASH TO TREASURES Drop Off Only

SUBMISSION WINDOW: September 25TH-29th 4:00 pm The Winston School

PROJECTS MUST BE RECEIVED BY THIS DEADLINE TO BE EVALUATED

- Grade Groups: 3rd-5th, 6th-8th and 9th-12th
- Individual ONLY

•AWARDS: 5:00 pm, Saturday, October 21, The Winston School

The Competition

Do you have items that you don't know what to do with? For example, discarded drink pouches from a local camp? Wood scraps from a municipal project? Nylon from tents that didn't pass inspection on the production line? There are so many great materials that can be used to bring designs to life instead of dumping in a landfill. It doesn't matter what you make as long as its composed by recycling materials, is aesthetically pleasing, and functional! If it is made with a material someone else would have considered garbage, submit it!

Rules

- Any material which is considered garbage can be used to create a new item.
- The finished piece must be smaller than 80cm x 80cm x 200 cm (height).
- Each submission must include a completed project information sheet which includes:
 - Name of contestant
 - Phone number of contestant
 - School currently attending and grade level
 - Title of piece
 - Function of the new item
 - **ALL** Materials used
 - Description of the piece
 - Declaration: "I have produced this piece between January 2017 and October 2017"
 - Student Signature
- Art submitted without all the required information, or improperly sized, or late will be disqualified.
- A contestant may enter more than one piece. Each piece must be accompanied by a separate registration form and \$5.00 entry fee.
- Art pieces must be received at The Winston School no later than 4:00pm, September 29, 2017.
- After the pieces are judged, the finalists will be posted on The Winston School website and the awards will be given on Saturday, October 21, 5:00pm.
- Contestants may reclaim their art no later than November 19, 2017. Pieces not reclaimed by this date will be donated or recycled.

EVALUATION

The judges will use the following criteria to evaluate art pieces

Basic Criteria:

- Is the item composed of only recycled materials?
- Does the item fit the size requirement?
- Does the item have a completed project information sheet?

If the item meets both of the criteria set out above, the judges will move on to the following criteria for evaluation

Specific Criteria:

- Workmanship
- Originality/Creativity
- Visual Appeal
- Functionality (must be used for a purpose, not just art)

AWARDING OF PRIZES

Judges may award more than one first place, second place, third place or honorable mention.



MINECRAFT Drop Off Only

SUBMISSION WINDOW: September 25TH-29th 2017, 4:00 pm The Winston School

PROJECTS MUST BE RECEIVED BY THIS DEADLINE TO BE EVALUATED

- Grade Groups: 3rd-5th, 6th-8th
- Individual ONLY

•AWARDS: 5:00 pm, Saturday, October 21, The Winston School

GENERAL REQUIREMENTS

The contestant will submit a printed photograph showing ONE of the following categories:

- **Recreate an iconic world landmark using Minecraft as your medium.**
- **Recreate a great work of art using Minecraft as your medium.**

Competition & Rules:

- Minecraft World Landmark - Recreate an iconic world landmark. Maybe you are in awe of the architecture of the Burj Khalifa or you love Paris and the Eiffel Tower. Use your imagination to create an iconic world landmark in Minecraft.
 - Minecraft Great Works Recreation - Recreate a famous piece of art. What inspires you? Is it a painting like The Mona Lisa? Maybe it's a sculpture like David by Michelangelo? Use your imagination to display the inspirational aspects of this great work of art in Minecraft.
1. Photo must be in **color**, and no **smaller than 7" X 7" and no larger than 8.5" X 11"**
 2. The entry must be a printed photograph. Each photo must have the following information on the back:
 - Name of contestant
 - Home phone number of contestant
 - School attending and grade level
 - Minecraft category entered
 - Identify either the landmark or art work you have attempted to recreate
 - Artist statement (few sentences).
 - Great Works Recreation - Let us know about the original art and what you have done in Minecraft to remake the masterpiece.
 - Landmark Recreation – Let us know a brief history of the original landmark and what you've done in Minecraft to remake it.
 - Signed declaration "I have designed this picture between January 2017 and October 2017."
 - Student Signature
 3. **Photographs submitted without all the required information or late will be disqualified.**
 4. A contestant may enter more than one photograph. Each photograph must be accompanied by a separate registration form and \$5.00 entry fee.
 5. Photographs must be received at The Winston School no later than 4:00pm, September 29, 2017.
 6. After the photographs are judged, the finalists will be posted on The Winston School web site and the awards will be given on Saturday, October 21, 4:30 pm.
 7. Contestants may reclaim their photos no later than November 19, 2017. Photos not reclaimed by this date will be donated or recycled.

EVALUATION

- Color & size accuracy
- Did the photograph have all the proper information on the back?
- Was the photograph in - focus?
- Workmanship (non-artistic elements such as tool bar, etc., should not appear in photo)
- Originality/Creativity
- Likeness to original piece

AWARDING OF PRIZES

Judges may award more than one first place, second place, third place or honorable mention.

NEWTON'S LAW CONTRAPTION Drop Off Only
SUBMISSION WINDOW: September 25TH-29th 2017, 4:00 pm The Winston School
CONTRAPTIONS MUST BE RECEIVED BY THIS DEADLINE TO BE EVALUATED

- Grade Groups: 6th-8th and 9th-12th
- Individual ONLY

- AWARDS: 5:00pm, Saturday, October 21, The Winston School

Competition

Contestants will create a unique contraption that demonstrates one of Newton's Three Laws. Students may use wood, metal, or ceramics to create their contraption.

Rules

- The finished contraption can be no larger than 5ft x 5ft x 5ft (Height, Length, and Width).
- Each submission must include a completed project information sheet which includes:
 - Name of contestant
 - Home phone number of contestant
 - School attending and grade level
 - Which of Newton's Laws their contraption demonstrates
 - Typed, two paragraph explanation describing how the contraption demonstrates Newton's Law
 - Declaration: " I have created this contraption between January 2017 and October 2017"
 - Student Signature
- Contestants may also elect to create a project board with descriptions and photographs of their process. While not required, it may add points in the judging process.
- Contraptions submitted without all the required information, improperly sized, or late will be disqualified.
- Contraptions must be received at The Winston School no later than 4:00pm, September 29, 2017
- After the contraptions are judged, the finalists will be posted on The Winston School web site and the awards will be given on Saturday, October 21, 5:00pm.
- Contestants may reclaim their contraptions no later than November 19, 2017. Contraptions not reclaimed by this date will be donated or recycled.

EVALUATION

The judges will use the following criteria to evaluate contraptions

Basic Criteria:

- Does the contraption fit the size requirement?
- Does the contraption have a completed project information sheet?

If the contraption meets both of the criteria set out above, the judges will move on to the following criteria for evaluation

Specific Criteria:

- Workmanship
- Originality/Creativity
- Visual Appeal
- Typed Explanation

AWARDING OF PRIZES

Judges may award more than one first place, second place, third place or honorable mention.

SCIENCE FICTION WRITING Drop Off Only

SUBMISSION WINDOW: September 25TH-29th 2017 4:00 pm The Winston School

WRITING MUST BE RECEIVED BY THIS DEADLINE TO BE EVALUATED

- Grade Groups: 3rd-5th, 6th-8th, and 9th-12th
- Individual ONLY

•AWARDS: 5:00pm, October 21, The Winston School

Science Fiction Short Story

1. Contestants must submit a properly formatted hard copy of their short story for judging no later than 4:00pm, September 29, 2017, at The Winston School. Stories received after this deadline will not be evaluated.
2. This is not a group project. Each short story submission must have a single author. Multiple submissions by the same author are permissible.
3. The Topic for the 2017 Science Fiction Short Story Competition is **“Weird Science”**
4. Stories will be judged based on originality, imagination, creativity, and adherence to the theme. Stories will be judged by grade group levels.
5. Students must follow the minimum word count listed for their appropriate grade level. There is no maximum word count limit.
 - 3rd-5th – minimum 150 words
 - 6th-8th – minimum 350 words
 - 9th-12th – minimum 550 wordsStories that do not meet the minimum word count by grade level group will be disqualified.
6. The short story must be submitted on 8.5” x 11” white paper. Stories must be typed and double-spaced, using a plain manuscript font such as Times New Roman, Arial, or Calibri. Cursive fonts are not acceptable.
7. The short story must have the following information placed on the back of the last page of the story:
 - Title
 - Name of Contestant & grade level
 - Home phone of Contestant
 - School name
8. After the stories are judged, finalists will be posted on The Winston School web site and the awards will be given on Saturday, October 21, 2017.
9. Contestants may reclaim their short stories no later than November 19, 2017. Short stories not reclaimed by this date will be recycled.
10. Stories submitted without all the required information, in improper format, or late, will be disqualified.

AWARDING OF PRIZES

Judges may award more than one first place, second place, third place or honorable mention.

MUSIC VIDEO Drop Off Only

SUBMISSION WINDOW: September 25TH-29th 2017, 4:00 pm The Winston School

VIDEOS MUST BE RECEIVED BY THIS DEADLINE TO BE EVALUATED

- Grade Groups: 6th-8th, and 9th-12th
- Individual or Team (up to four)

•AWARDS: 5:00pm, Saturday, October 21, The Winston School

Competition:

Do you like to sing? Dance? Write song lyrics? Well, it's time to transform a science concept into a song! Choose a song and find its karaoke version. Write the new lyrics of the song explaining the science concept. An example can be found at <http://gg.gg/scivideo>.

Rules:

- Science instructional content is included and is **CORRECT**
- All group members have to sing **AND** be seen in the video
- Video is between 3-5 minutes (excluding credits and bloopers)
- Demonstrate the science concept using acting, posters, pictures, inserted video segments, etc.
- Typed entries must be submitted with the following information clearly visible:
 - Title
 - Name of Team Captain and grade level
 - All other team members names and grade levels
 - Home phone of Team Captain
 - School name
 - Video weblink (i.e. YouTube)
- Creativity and Video Editing is evident.
- Lyrics scrolling at the bottom of the video as song is being played is not required but may add points in the judging,
- You can invite family/friends to be in the video, but make sure the team members are the main focus of the video. All participants must be credited at the end of the video.
- Everyone involved follows his or her school's dress code.
- No foul language or sexually explicit material will be allowed. Any video containing these will be disqualified.
- **Videos must be uploaded to youtube.com and the website address will be submitted for judging.**
- Web address must be received at The Winston School no later than 4:00pm, September 29, 2017
- After the videos are judged, the finalists will be posted on The Winston School web site and the awards will be given on Saturday, October 21, 2017.
- Videos submitted without all the required information, in improper format, or late will be disqualified.

EVALUATION

The judges will use the following criteria to evaluate music videos:

- Does the video meet time requirement?
- Science instructional content is included and accurate.
- All members are seen and heard, participation of members is equal.
- Getting the science concept across with posters, pictures, acting, etc.
- Creativity of lyrics
- Creativity of visual appearance
- Video editing
- Originality

AWARDING OF PRIZES

Judges may award more than one first place, second place, third place or honorable mention.

EARTHQUAKE!

Competition Date: Saturday, October 14, 2017, 1:00 pm The Winston School

- Grade Groups: 3rd-5th, 6th-8th
- Individual or Team (up to four)

•AWARDS: 5:00 pm, Saturday, October 14, The Winston School

Competition:

Design and construct a model building which will be experimentally tested with simulated earthquakes on a Winston Science Earthquake simulation shake table. Your building will need to support itself, as well as pennies (just like a house would have furniture, or a library would hold books). Do some research on what makes a building able to withstand EARTHQUAKES!!!! You may consider practicing at home by setting your constructed building on top of your washing machine while it's on the spin cycle.

Rules:

- Materials allowed: paper, wood, and glue
- Minimum of 30cm high
- Minimum of 3 stories
- No central post (the central area of each story must allow for the placement of standard pennies for weight)
- Cannot weigh more than **10 grams** (lots of wood will make your building strong, but will also add weight!)
- Once your structure is placed on the shake table you will be given an unlimited number of weights (pennies) to place on your structure. Your team decides how many weights to place, **however the weights must be evenly distributed between the three stories.**
- Your structure will undergo three simulated earthquakes, each with progressively greater amplitude. Between each earthquake your team can choose to add or remove weights provided the total weight remaining is evenly distributed between the three stories. The contestant may not repair or alter the structure between rounds. Keep in mind while designing your structure that any weights that fall out of the structure during the quake will not be counted for scoring.
- Each earthquake will last 30 seconds.
- Buildings submitted outside of the parameters set will be allowed to compete but will be disqualified from placing in the competition.
- If a single story collapses or similarly fails, the entire structure would receive a score of 0 as that story is considered to be unable to hold any weight.

Evaluation:

The judges will use the following criteria to evaluate the buildings:

- Building constructed out of allowable materials and within the height and weight?
- Building has no central post and minimum of 3 stories?
- Number of weights (pennies) held in each off the three earthquakes.
- Construction quality

AWARDING OF PRIZES

Judges may award more than one first place, second place, third place in the event of a tie.



HUMAN ANATOMY BUFFET

Competition Date: Saturday, October 21, 2017, 1:00 pm The Winston School

- Grade Groups: 6th-8th, 9th-12th
- Individual or Team (up to four)

AWARDS: 5:00pm, Saturday, October 21, The Winston School

Competition:

The human body is a well-studied and yet mysterious specimen of the Animal Kingdom. According to the American Association of Anatomists, there are currently over 7,500 named parts of the human body and eleven body systems. The eleven systems of the body are Circulatory, Digestive, Endocrine, Immune, Lymphatic, Muscular, Skeletal, Nervous, Reproductive, Respiratory, and Urinary. In this competition you will choose one of the following systems to recreate out of food, then label **as many different anatomy terms** as you can.

Rules:

- Select **one** of the following systems to recreate: **MUSCULAR, RESPIRATORY, CIRCULATORY**
- The entire body system, and labels, is made out of food. Food can be raw or cooked/prepared, but all items used must be primarily food for humans. (Example: while Elmer's glue is not toxic – it's primary use is glue, not food and as such would be a violation of the rules).
- The system can be entered resting on a cardboard or wood board
- Dimensions of the display can be no larger than 36in X 36in, and no smaller than 11in X 17in.
- Only scientific names will be counted for labels points
- Each submission must include a **typed**, completed project information sheet which includes:
 - Name of contestant
 - Home phone number of contestant
 - School attending and grade level
 - Name of the system attempted to recreate
- **9th-12th grade must also submit a detailed item list that gives quantity and estimated calories of each food item used.**
- Projects submitted outside of the parameters set, late, or without project information sheet will be allowed to compete but will be disqualified from placing in the competition.

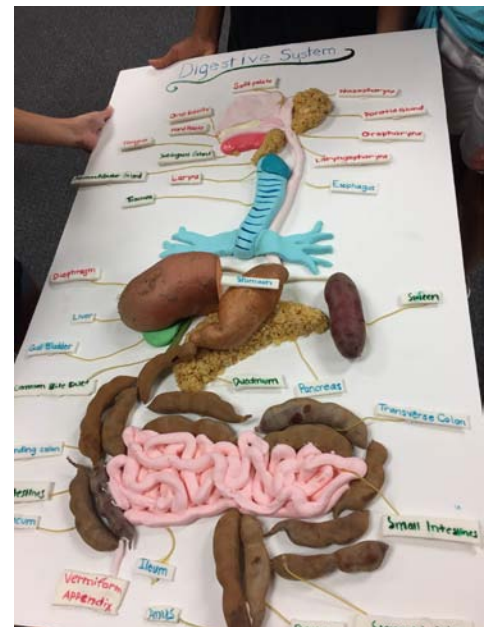
Evaluation:

The judges will use the following criteria to evaluate the systems:

- Systems constructed out of allowable materials and within the dimensions?
- Location, shape, size, & texture of the foods selected truly represent the parts of the system they claim to be.
- Labels 2 points each: are they in the correct location?
Are labels scientific names?
- 9th-12th grade included item list
- Construction quality

AWARDING OF PRIZES

Judges may award more than one first place, second place, third place in the event of a tie.



EDIBLE CAR

Competition Date: Saturday, October 14, 2017, 9:00am/10:30am The Winston School

- Grade Groups: 3rd-5th, 6th– 8th
- Individual or Team (up to four)

AWARDS: 5:00 pm, Saturday, October 14, The Winston School

Competition:

Prior to the competition, contestants will use the engineering design process to construct an edible car. Students will design and build a car using only food materials (food can be raw or cooked/prepared, but all items used must be primarily food for humans. Example: while Elmer's glue is not toxic – its primary use is glue, not food and as such would be a violation of the rules). Cars will be measured according to dimension requirements. Teams will place their car at the beginning of the "Winston Ramp". Judges will remove the start gate, and the car must travel down the ramp on its own (no team member may touch the car at any point). The car's race down the ramp will be timed. At the end of the ramp, cars will exit onto the "Winston Road". The distance each car travels on the "Winston Road" will be measured and recorded.

Rules:

- The final car must look like a car and must not exceed the following dimensions:
 - 4 inches wide (including wheels and hub caps)
 - 4 inches tall (including windshield, car roof, people, etc.)
 - 12 inches long (including front and rear bumpers and any other extensions)
- The car must operate on three or four rotating "wheels" and roll successfully down a ramp that is 8 to 10 feet in length and is inclined at approximately 20 degrees.
- **Each student may be on only one team. Each team may submit only one car.**
- Cars submitted outside of the parameters set will be allowed to compete but will be disqualified from placing in the competition. If a student's car is outside of the parameters, but they can modify the car to correct dimensions before the last contestant has finished competing, they will be allowed to compete.
- **6th-8th grade must also submit a detailed item list that gives quantity and estimated calories of each food item used.**
- If at any point on the ramp or on the "Winston Road" a part of the car falls off, deductions to the car will occur.

Evaluation:

The judges will use the following criteria to evaluate each car:

- Car constructed out of allowable materials and within the dimensions?
- Did any car part fall off during the trip going down the ramp or on the "Winston Road?"
- 6th-8th grade included item list

This competition has 2 different award categories.

1. Fastest – will be awarded to the car that has the **shortest time** going down the "Winston Ramp." If any car part falls off, a 3 second penalty will be added to the time.
2. Longest – awarded to the car that travels the **greatest distance** on the "Winston Road" after exiting the "Winston Ramp." If any car part falls off, a 3 inch deduction will be taken from the distance.

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.

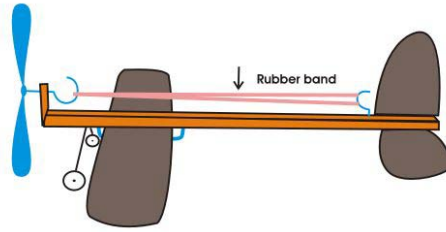


RUBBER BAND AIRPLANE

Competition Date: Saturday, October 14, 2017, 9:00am/10:30am The Winston School

- Grade Groups: 3rd-5th, 6th-8th
- Individual or Team (up to four)

AWARDS: 5:00 pm, Saturday, October 14, The Winston School



Competition:

In advance of this competition you can experiment making rubber band powered airplanes out of everyday objects found around your house (e.g. paper, rubber bands) to see what designs work best. The general rule is you twist the propeller to wind the rubber band, so that when you release it, the rubber band unwinds and powers the airplane. The day of the competition you will bring your BEST design to fly at the Winston Flight School! Students will have one practice flight and three flights that will be judged. The average of the distance in the three judged flights will be the airplane's overall score for distance.

Rules:

- Length of the body must be at least 30 cm long and no more than 50 cm long (measured from the front to the tail).
- Your plane must have a minimum of two major wings with a main body. (There is no maximum number of wings). The length of the two major wings must be at least $\frac{2}{3}$ of the main body. (Example: if the length of the body is 30cm, the sum of the two major wings must be at least 20cm in length from one side to the other)
- No Rocket designs will be accepted.
- No Kits will be allowed.
- You may use as few or as many supplies in your plane design as you wish, BUT a **RUBBERBAND must be the main power source for flight.**
- **Each student may be on only one team. Each team may submit only one airplane.**
- Airplanes submitted outside of the parameters set will be allowed to compete but will be disqualified from placing in the competition. If a student's airplane is outside of the parameters, but they can modify the airplane to the correct dimensions before the last contestant has finished flying, they will be allowed to compete.
- If at any point during your airplanes' flight a part falls off, a 5ft deduction to the plane's distance will occur.

Evaluation:

The judges will use the following criteria to evaluate each airplane:

- Airplane fits dimension parameters and contains a rubber band as power source.
- Did any airplane part fall off during the 3 trips in Winston Flight School?

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



ELEMENTARY CATAPULT COMPETITION

Competition Date: Saturday, October 14, 2017, 9:00 am The Winston School

- Grade Groups: 3rd-5th
- Individual or Team (up to four)

AWARDS: 5:00 pm, Saturday, October 14, The Winston School

Competition:

The contestant must build a catapult that will propel a Hershey's Chocolate Kiss 3 meters to a bullseye target. The catapult will be set on the floor, 3 meters away from the bullseye (the target is also on the floor). The Hershey's Chocolate Kiss will be supplied by the judges. Sling-shot type devices are not defined as a "catapult" within the confines of this competition. For the purposes of this competition, a catapult is a device where a main arm throws the payload.

Contestants will have a Practice Site that will be separate but relatively similar to the Contest Site. The Practice Site will be used for making adjustments to a contestant's catapult. The Contest site will **only** be used for the competition. Only the contestants are allowed in the practice, adjustment and competition areas. Contestants may make a reasonable number of launches at the Practice Site, based on the time available before the competition. However, it is recommended that the student practices their catapult at home, prior to the competition as there are usually lots of students entered in this competition. Contestants must supply their own Hershey's Chocolate Kisses for the practice shots. Non competitors must stay in the viewing area. Contestants will be supervised by a Winston Science Staff Member.

Rules:

- The entire catapult, when prepared and cocked for launch, must fit into a cube no larger than 1/2 meter per side.
- Materials allowed to be used:
 - A bottle top can be added to the catapult for launching the Hershey Chocolate Kiss.
 - Popsicle stick is defined as a wooden stick (no longer than 11.5cm, no wider than 1.0cm, no thicker than 0.3cm.
 - Any glue will be allowed
 - To power the arm: any office supply rubber band may be used. **(springs, elastic devices, pistons, counterweights or motors may not be used)**
- Contestants will be allowed to place their catapults precisely at the edge of the launch line but not on top of the launch line.
- Contestants will be allowed to make two launches. Misfires, as determined by the judges, will not constitute a "launch".
- No rockets or explosives for power. No laser or electronic sighting can be used.
- Catapults submitted outside of the parameters set will be allowed to compete but will be disqualified from placing in the competition. If a student's catapult is outside of the parameters, but they can modify the catapult to the correct dimensions before the last contestant has finished launching, then they will be allowed to compete.

Evaluation:

The judges will use the following criteria to evaluate each catapult:

- Catapult fits dimension parameters and is constructed with allowable materials.
- The judges will measure the distance from the bullseye to the Hershey's Chocolate Kiss' first point of contact with the floor.
- A contestant will make two launches. The sum of the distance from both launches will constitute the contestant's score.
- The winner will be the contestant with the lowest score, assuming that the contestant has met all the other competition requirements.

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



SECONDARY CATAPULT COMPETITION

Competition Date: Saturday, October 14, 2017, 11:00 am The Winston School

- Grade Groups: 6th-8th, 9th-12th
- Individual or Team (up to four)

AWARDS: 5:00 pm, Saturday, October 14, The Winston School

COMPETITION

The emphasis in this event is placed on the contestant's construction of a catapult that can precisely aim and propel a tennis ball exactly 15 meters. The target will be a bull's eye placed flat on the floor. The center of the target will be exactly 15 meters from the launch line. Contestants will be allowed to place their catapults precisely at the edge of the launch line, but not on top of the launch line. Contestants will be allowed to make two launches. Misfires, as determined by the judges, will not constitute a "launch." Contestants will have a Practice Site that will be separate but relatively identical to the Contest Site. The Practice Site will be used for making adjustments to a contestant's catapult. The Contest Site will only be used for the competition.

RULES

1. The catapult when "cocked" and ready for launch must fit within a cube, one meter on each side.
2. Only simple tube sights and pin sights are allowed.
3. The safety of the contestant and the audience is our primary concern. The judges prior to the competition will disqualify any catapult that appears unsafe or uncontrollable. No launch will be made from an unsafe device. Except for carrying the catapult into The Winston School, no non-competitors (child or adult) may be in the competition area.
4. Sling-shot-type devices are not defined as a "catapult" within the confines of this competition. For the purposes of this competition, a catapult is a device where a main arm throws the payload. Springs, elastic devices, pistons, counter-weights, or motors can power the catapult arm. No rockets or explosives can be used.
5. The catapult should provide some leeway to accommodate the size of a standard tennis ball, & you must bring your own tennis ball.
6. The catapult should be of sufficient mass to ensure that it remains behind the launch line after the projectile has been launched. The catapult will be disqualified if it crosses or moves into or across the launch line.

Evaluation:

The judges will use the following criteria to evaluate each catapult:

- Catapult fits dimension parameters and is constructed with allowable materials.
- The judges will measure the distance from the bull's eye to where the tennis ball's first point of contact with the floor is.
- A contestant will make two launches. The sum of the distance from both launches will constitute the contestant's score.
- The winner will be the contestant with the lowest score, assuming that the contestant has met all the other competition requirements.

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



ADVENTURES IN DUCT TAPE

Competition Date: Saturday, October 21, 2017, 9:00am (Elementary) 10:30am (Secondary)

The Winston School

- Grade Groups: 3rd-5th, 6th-8th, 9th-12th
- Team ONLY (up to four)
- Advance practice is recommended for this competition*

AWARDS: 5:00 pm, Saturday, October 21, The Winston School

COMPETITION

How long can you defy gravity with duct tape? Do you understand adhesion with duct tape? Your team will attempt to suspend one team member to the wall with duct tape! You'll have 90 seconds to get your team member taped to the wall, and then we will see who can defy gravity the longest.

RULES

1. Teams will be provided with one large roll of duct tape. It will NOT be classified as "heavy duty" such as Gorilla brand tape.
2. Teams will have 90 seconds to tape one of their team members to the wall. Special care must be used to not suspend the member in any way that would be detrimental to the health of the student.
3. Teams will be supplied with a small stool to help support the team member being taped to the wall. Students are prohibited from standing on the backs of other students during the competition.
4. The judges will tell teams when to begin.
5. You will be notified when you have 60 seconds left, 30 seconds left, 15 seconds left, 10, then 5-4-3-2-. When time runs out, you will be told to freeze and to step away from the wall. At this point, your suspension time begins.
6. The moment any part of the team member's body touches the ground, time will stop.
7. Interference by observers or anyone else may cause a team to be disqualified.
8. The winners will be announced at the end of the competition.

Evaluation:

- The team whose team member remains suspended from the wall for the longest period of time will be declared the winner.

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



ANGELA JAMISON DESIGNER DUCT TAPE

Competition Date: Saturday, October 21, 2017, 1:00 pm The Winston School

- Grade Groups: 6th-8th, 9th-12th
- Individual ONLY

AWARDS: 5:00 pm, Saturday, October 21, The Winston School

COMPETITION

Contestant will design and create an original product made from only Duct Tape. NO OTHER MATERIALS ALLOWED. Contestant will come to the competition with design completed and ready to set up their display. Contestant must be able to discuss (for 30-60 seconds) their design and creation with the judges and demonstrate the function of their design and explain their workmanship. If a set or group of projects is brought in as one entry, only 1 will be judged.

EVALUATION

The judges will use the following criteria to evaluate each submission:

- Originality/Creativity
- Functionality – Does it do what you say it will?
- Use of Color
- Workmanship
- Student Description/Demonstration (30-60 seconds)

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



CARDBOARD ARMOR

Competition Date: Saturday, October 14, 2017, 1:00pm/2:30pm The Winston School

- Grade Groups: 3rd-5th, 6th-8th
- Team ONLY (up to four)

AWARDS: 5:00pm, Saturday, October 14, The Winston School

COMPETITION

The purpose of this competition is to simulate the engineering used by medieval craftsman to build suits of armor. On arrival at The Winston School, one member of the team will put on the cardboard suit of armor, assisted by the other team member(s). All team members must be present. The cardboard knight will be asked to perform certain tasks to test the flexibility and durability of the armor. Tasks will include:

- Reaching down to the ground to pick up an object, such as a ball, cup or coin.
- Twisting and turning at the waist to reach an object.
- Raising arms over the head.
- Kneeling to be “knighted”.

RULES

1. Teams will build their suite of armor prior to arriving at the competition.
2. Teams are limited to the use of cardboard, string and duct tape to build their armor. The cardboard may be decorated or painted with designs to enhance the effect.
3. Teams should attempt to craft a full suit of armor that will allow the wearer to move as freely as possible, while protecting as much of the body as possible.
4. Teams will not be allowed to make or bring a weapon of any kind.

EVALUATION

The judges will use the following criteria to evaluate each submission:

- Protection of vital organs
- Protection of limbs
- Quality of construction
- Freedom of movement
- Ability to accomplish tasks
- Creativity

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



EGG DROP

Competition Date: Saturday, October 14, 2017, The Winston School

- Grade Groups: Kinder-2nd, 3rd-5th, 6th-8th, 9th-12th
- 9:00 am Kinder-5th
- 10:30 am 6th-8th
- 12:00 pm 9th-12th
- Individual ONLY

AWARDS: 5:00pm, Saturday, October 14, The Winston School

COMPETITION

How are your engineering skills? Design and build a package that will protect an uncooked egg from breaking when it is dropped. The egg package must be the sole work of the contestant. Contestants must submit their own entry. Other students, family, or teachers are not allowed to submit the egg package. Upon arrival, judges will evaluate the packages per the parameters set below in the rules. After evaluation, students will be required to place an egg (supplied by Winston Science) in the package and seal it. Students must supply their own sealant. Contestants will then fill out a tag and attach that tag on the egg package. The tag must identify the student, their school, telephone number, and grade level. Judges will hold the tag when dropping the egg package.

RULES

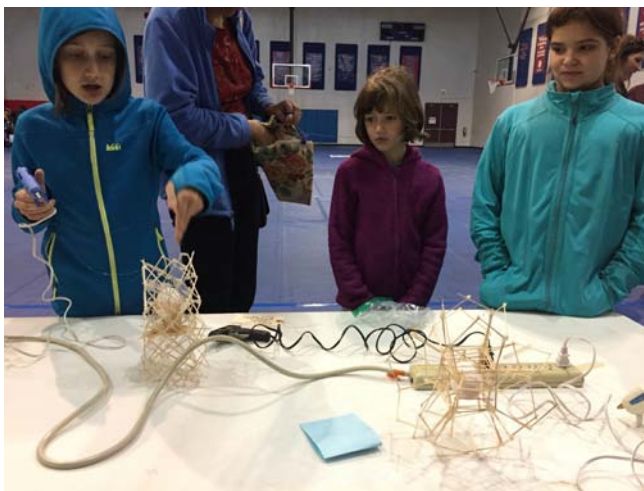
1. The package must be built only of toothpicks and glue. "Glue" means a bonding agent such as Elmer's white glue, Super Glue, or hot glue. It does not mean tape. All glue must be dry when submitted for qualification.
2. The total egg package can weigh **no more than 40 grams**, excluding the weight of the egg.
3. The egg package cannot exceed a length of **50 cm** on any side.
4. The egg must be easily visible to the judges.
5. **Eggs cannot be completely encased in glue.**
6. Packages submitted outside of the parameters set will be allowed to compete but will be disqualified from placing in the competition. If a student's package is outside of the parameters, but they can modify it to the correct dimensions before the last package has been checked in, they will be allowed to compete and place.
7. **DROPPING HEIGHTS:**
 - Grades 9th-12th 5 meters
 - Grades 6th-8th 3 meters
 - Grades K-5th 1 meter

EVALUATION

The winner will be the contestant who designs a package that will safely protect the egg during the fall, and arrives on the ground in the shortest period of time.

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



CONSTRUCTIVE ENGINEERING (MIDDLE SCHOOL)

Competition Date: Saturday, October 21, 2017, 9:00 am The Winston School

- Grade Groups: 6th-8th
- Individual ONLY

AWARDS: 5:00 pm, Saturday, October 21, The Winston School

COMPETITION

You are testing out your design skills by creating a 1,400 - 1,500 square foot home to a ¼ inch scale. Grades 6-8 will submit their design as a drawing.

RULES

1. Design your house on paper of your choice. The home will be 1,400 - 1,500 square feet drawn to a ¼ inch scale. (This means ¼ in equals 1 ft)
2. NO computer programs like The Sims, will be allowed. This is a hand-drawn home.
3. All sides need to be labeled with measurements.
4. The house **must include:**
 - A master bedroom with closet
 - 2 secondary bedrooms with one closet each
 - A three piece master bathroom (bathtub, sink, and toilet)
 - An additional three piece bathroom (bathtub, sink, and toilet)
 - Living room with fireplace
 - Entry coat closet
 - Kitchen (includes refrigerator space, sink, stove/oven space, dishwasher space and pantry)
 - Dining room
 - Laundry room
 - 2 car garage
 - Minimum of 8 windows
 - Front & back entry
5. Each room must be labeled.
6. Any “extras” that are designed in your house will be awarded extra points. Extras could include: built-in shelving/desk area, extra amenities to kitchen or bathrooms (dual sinks, separate shower/tub, kitchen island), covered front or back porch, linen closets, etc.
7. Each submission must include a completed project information sheet which includes:
 - Name of contestant
 - Home phone number of contestant
 - School attending and grade level
 - Declaration: “I have produced this drawing between January 2017 and October 2017”
 - Student Signature
 - Total Square footage by room. (e.g.: Living Room, total square feet)

EVALUATION

Judges will use the following criteria to evaluate the home:

- Is the drawing to scale, and totals between 1,400-1,500 sq ft?
- Perimeter sides labeled with measurements
- Rooms labeled with name
- Are all of the “must-haves” included?
- Are there any “extras” included in the design?
- Visual Appeal

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.

CONSTRUCTIVE ENGINEERING (HIGH SCHOOL)

Competition Date: Saturday, October 21, 2017, 10:30 am The Winston School

•Grade Groups: 9th-12th

•Individual ONLY

AWARDS: 5:00 pm, Saturday, October 21, The Winston School

COMPETITION

You are testing out your design skills by creating a 1,400 - 1,500 square foot home to a ¼ inch scale. Grades 9-12 will submit their design as a **3D building**.

RULES

1. Design your house and **build it out of the wood material of your choice**. Balsa wood, popsicle sticks, tongue depressors are all okay.
2. The home will be 1,400 - 1,500 square feet built to a ¼ inch scale. (This means ¼ in equals 1 ft)
3. All sides need to be labeled with measurements.
4. The house **must include:**
 - A master bedroom with closet
 - 2 secondary bedrooms with one closet each
 - A three piece master bathroom (bathtub, sink, and toilet)
 - An additional three piece bathroom (bathtub, sink, and toilet)
 - Living room with fireplace
 - Entry coat closet
 - Kitchen (includes refrigerator space, sink, stove/oven space, dishwasher space and pantry)
 - Dining room
 - Laundry room
 - 2 car garage
 - Minimum of 8 windows
 - Front & back entry
5. Each room must be labeled.
6. **No roof** will be on the house so that the judges can see the interior.
7. Any “extras” that are designed in your house will be awarded extra points. Extras could include: built in shelving/desk area, extra amenities to kitchen or bathrooms (dual sinks, separate shower/tub, kitchen island), covered front or back porch, linen closets, etc.
8. Each submission must include a completed project information sheet which includes:
 - Name of contestant
 - Home phone number of contestant
 - School attending and grade level
 - Declaration: “I have produced this building between January 2017 and October 2017”
 - Student Signature
 - Total Square footage by room. (e.g.: Living Room, total square feet)

EVALUATION

Judges will use the following criteria to evaluate the home:

- Is the building to scale, and totals between 1,400-1,500 sq ft?
- Perimeter sides labeled with measurements
- Rooms labeled with name
- Are all of the “must-haves” included?
- Are there any “extras” included in the design?
- Visual Appeal

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.

SUSPENSION BRIDGE

Competition Date: Saturday, October 21, 2017, 11:00 am The Winston School

- Grade Groups: 6th-8th, 9th-12th
- Individual or Team (up to four)

AWARDS: 5:00 pm, Saturday, October 21, The Winston School

COMPETITION

The purpose of this competition is to give students a Civil Engineering experience through the construction of a Popsicle stick suspension bridge. The winner of the event will be the contestant that builds the longest central span, and complies with all other requirements. Check out this link on how suspension bridges work <http://science.howstuffworks.com/engineering/civil/bridge6.htm> Suspension bridges by definition are flexible and able to give and sway with the elements. Therefore, your bridge should not be glued rigidly solid.

RULES

1. Materials allowed:
 - a. Popsicle sticks (*Popsicle stick is defined as a wooden stick no longer than 11.5 cm, no wider than 1.0 cm, and no thicker than .3 cm*). **No tongue depressors can be used**
 - b. Any type of glue. **No Tape**
 - c. String (*String is defined as cotton thread or twine. No hemp or manmade fibers can be used*)
 - d. Cement blocks **MUST** be used as weights
2. The central span of the bridge must be at least 100 cm wide (measured from the inside of each support pier), and the road bed of this span must be actually supported by the string. Bridges with a span less than 100cm will be disqualified.
3. A “suspension bridge” is defined (for this competition) as a San Francisco Golden Gate-type bridge. The suspension bridge can have only two supporting piers (like the Golden Gate Bridge).
4. The suspension bridge must have a level, seamlessly constructed roadway that will allow a small test car to easily roll from one end of the bridge to the other. The width of the roadbed will be the length of a “regular” Popsicle stick.
5. Please build your bridge in a way that will facilitate transportation, although we understand that the bridge will have to be adjusted at the site. After competition, participants must remove their bridges from The Winston School. This implies that the bridges will either be taken home or disposed of properly.

EVALUATION

Judges will use the following criteria to evaluate the bridges:

- A bridge must comply with all of the construction guidelines to qualify for evaluation in this competition. Bridges submitted outside of the parameters set will be allowed to compete but will be disqualified from placing in the competition. If a student’s bridge is outside of the parameters, but they can modify it to the correct dimensions before the last bridge has been judged, they will be allowed to compete.
- Prior to evaluating the bridge, the student must demonstrate that the road bed (between the two bridge piers) is actually supported by the cables. The student will be asked to raise and lower the cables demonstrating that the road bed will actually rise and fall.
- Length of the central span measured from the inside of each supporting pier
- Quality of construction
- Visual appeal of the bridge

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



GLADIATOR CAR

Competition Date: Saturday, October 21, 2017, The Winston School

- Grade Groups: 3rd-5th, 6th-8th, 9th-12th
- 9:00 am 3rd-5th
- 10:30 am 6th-8th
- 12:00 pm 9th-12th
- Individual or Team (up to four)

AWARDS: 5:00 pm, Saturday, October 21, The Winston School

COMPETITION

Build a gladiator car and bring it to the arena! Cars will be set in a single elimination bracket style tournament. The car that is still drivable at the end of the tournament wins!

RULES

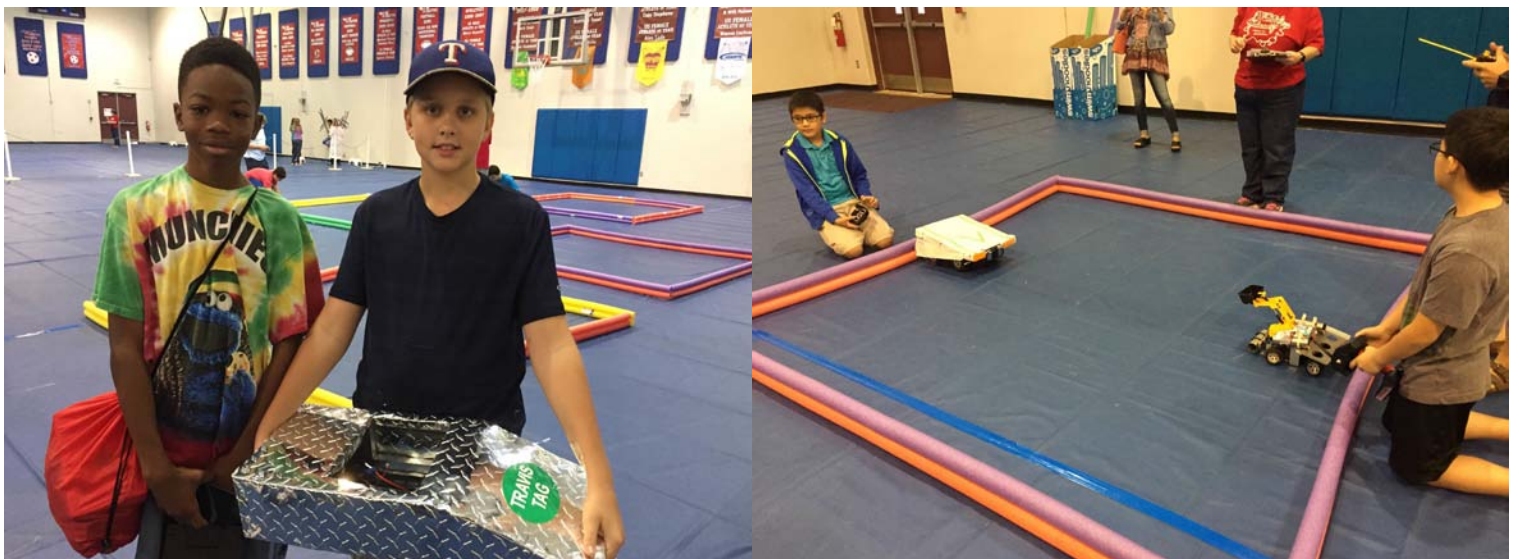
- The cars must operate on a 49 and/or 27 MHz battery
- Contestants are required to have driving skills with the remote control device.
- Contestants are responsible for bringing their own batteries.
- The matches are 3 minutes long, unless the official declares a winner prior.
- Numbers and brackets will be assigned at random, prior to check-in.
- To begin competition, cars will be placed on opposite sides of the arena, facing each other.
- On the official's "go" command, the contestants must engage the car and proceed to attack the opponent.
- The winning car will pin or wedge their opponent's car on the bumper wall or part of the arena.
- If a car is turned over, the batteries die during the match, or the car is unable to move then the player forfeits.
- If a car loses parts during the battle but is able to move, the play continues.
- The official is in charge, and may alter the arena as he or she sees fit.
- Cars may contain "weapons," however; the floor and bumper walls of the arena must NOT be damaged.
- The winning car moves forward in bracket play. Contestants may make repairs to their cars in the time they have between finishing their battle and moving to the next battle.
- In the event of a tie at the end of 3 minutes, an overtime of 1 minute will begin. If neither car has been pinned or "died" by the end of overtime, the official will make the discretionary call as to whom the winner will be.
- Good sportsmanship is REQUIRED.

EVALUATION

Surviving cars will move forward in the bracket. The car left drivable at the end will be declared the winner.

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



RUBE GOLDBERG

Competition Date: Saturday, October 21, 2017, 2:00 pm The Winston School

- Grade Groups: 6th-8th, 9th-12th
- Individual ONLY or group of up to four

AWARDS: 5:00 pm, Saturday, October 21, The Winston School

COMPETITION

A Rube Goldberg machine is an overly complex contraption, designed with humor and a narrative, that accomplishes a simple task. Check out the real Rube Goldberg at rubegoldberg.com. The purpose of this competition is to allow the contestants the opportunity to let their creativity and imagination go wild. Contestants are challenged to build an innovative, multi-sensory machine that accomplishes a simple task. Construct a machine using any materials desired. The machine can move, give off light, make noise, produce odors, or vibrate.

RULES

- The machine should be mounted on a plywood base no larger than 80cm x 80cm.
- The dimensions of the machine may not be larger than 80cm x 80cm x 200cm (height). No part of the machine may extend beyond this boundary.
- A minimum of 5 steps is required.
- Contestants must be present with their machine to provide a demonstration and an explanation for the judges.
- Grade groups do apply in this competition.

EVALUATION

Judges will use the following criteria to evaluate the machines:

- Complies with size limit
- Contestants description of the machine and its function
- Does the machine complete a simple task?
- Sight (color/sparkle/lights)
- Sound
- How many steps or processes are involved with the complicated machine?
- Does the machine have any unique features?
- Construction quality

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



SPAGHETTI BRIDGE

Competition Date: Saturday, October 21, 2017, 9:00 am The Winston School

•Grade Groups: 6th-8th, 9th-12th

•Individual or Team (up to four)

AWARDS: 5:00 pm, Saturday, October 21, The Winston School

COMPETITION

The object of this competition is to construct a spaghetti/glue bridge that will carry the heaviest load while still meeting specifications. Bridges will be loaded until they fail.

RULES

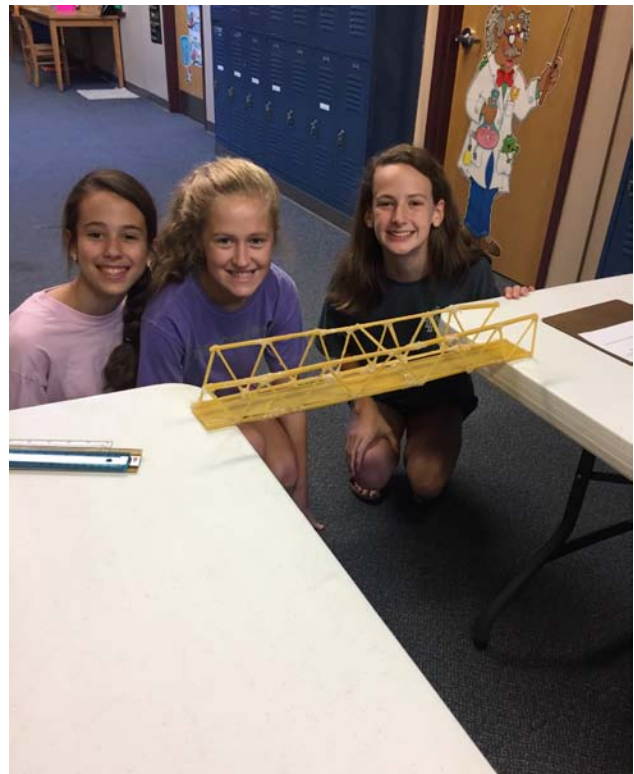
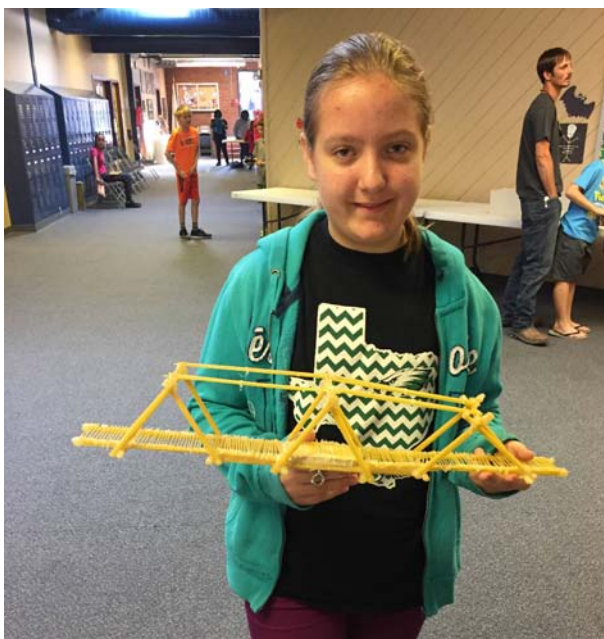
- The bridge is to be built from spaghetti pasta (cylindrical forms of pasta, no other pasta is allowed) and any form of glue.
- The bridge shall be free-standing and must span past two level surfaces which are a half-meter apart.
- The support for the bridge shall be from the top of the level surfaces. The edges of the level surfaces cannot be used in any way for support.
- The bridge must include a decking of spaghetti to provide a suitable road surface that is at least 5cm wide across the full span of the bridge. Three conditions must be met:
 - gaps in the bridge deck are not to exceed 2 mm
 - a block of wood (5 cm x 5cm x 10 cm) representing a car must be able to move along the length of the decking unobstructed from end to end
 - the deck of the bridge must not be more than 5 cm above or below the ends of the bridge at any point along its length.
- The maximum vertical height of the bridge, from the highest point in its structure to the lowest cannot exceed 25 cm.
- You must incorporate a “loading platform” consisting of an eye-bolt secured to a piece of plywood (0.7 cm x 5 cm x 10 cm). **The platform and eyebolt must face down below the bridge.** This platform is to be attached at the center of the bridge such that the bottom of the eyebolt is no more than 5 cm from the top of the bridge decking. All loads will be suspended from this eye-bolt, and there must be a clear space directly below it to allow loads to be attached. Loads will be attached using an S-hook, and, if necessary, a 10 mm diameter metal rod extension. If during loading, the bridge twists in such a way as to cause the bridge to touch the rod at any point other than the eye-bolt, thus lending additional support, the bridge will be disqualified.
- The maximum weight of the bridge **including** the loading platform must not exceed 250 grams

EVALUATION

The contestant's bridge that holds the greatest amount of weight without violating the specifications set out above will be declared the winner.

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



BUILD A TOWER

Competition Date: Saturday, October 14, 2017, 12:00pm (Elementary) and 1:30pm (Secondary)

The Winston School

•Grade Groups: Kinder-2nd, 3rd-5th, 6th-8th, 9th-12th

•Team **ONLY** (up to four)

AWARDS: 5:00 pm, Saturday, October 14, The Winston School

COMPETITION

In the Tower Competition, students in groups up to four will construct a tower made of only 100 grams of 8½" x 11" copy paper and a 300-inch roll of scotch tape. Materials will be provided by Winston Science.

RULES

- Students will have 20 minutes to build their tower.
- Students are not allowed to physically help support the tower with their bodies.
- Only paper and scotch tape can be used to build and support the tower.
- All towers will be judged at the same time: at the end of the 20-minute time period.
- Students wasting materials during the competition will be disqualified.
- Students conducting themselves in a less-than-serious manner will be asked to leave the competition floor.
- Observers will not be allowed to come closer than 10 meters to contestants to reduce air drafts.

EVALUATION:

Judges will use the following criteria to evaluate the towers:

- Staff will measure the height of the tower in centimeters.
- Judges will then record the tower height in the official record.
- The tallest tower still standing at the end of the 20-minute time period will be declared the winner.

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



MAGIC MARBLE MACHINE

Competition Date: Saturday, October 21, 2017, 2:00 pm The Winston School

- Grade Groups: 6th-8th, 9th-12th
- Individual or Team (up to four)

AWARDS: 5:00 pm, Saturday, October 21, The Winston School

COMPETITION

Can you build a machine that will allow a marble to roll freely and continuously for **2 minutes**? You may use any type of simple machines to help incorporate the marble's movement without stopping.

RULES

- The entire machine must be attached to a plywood base no larger than 80 cm x 80 cm.
- The machine and base must fit within the following dimensions: Length 80 cm, Width 80 cm, Height 100 cm. No part of the machine can extend beyond this boundary.
- **Winston Science will supply a standard 1.5 cm diameter glass marble for competition time.**
- The contestants name(s) and school must be prominently displayed on the plywood base.
- **The marble machine must be powered solely by the force of gravity;** however, the builder may incorporate other simple machines to either speedup or slowdown the motion of the ball. **(No electricity or battery allowed.)**
- The marble must roll in a prepared track that has a definite beginning and a definite ending point. The end of the track must stop the forward motion of the marble.
- The marble must be visible to the judges at all times.
- The track may wind freely within the above stated dimensions. (Length 80 cm, Width 80 cm, Height 100 cm)
- No machine or device (positioned along or at the end of the track) may be used to re-start the motion of the marble. No device can pick up or reposition the marble once it is in motion.
- Contestants must be positioned at the marble machine at the time of the judging. The contestant, not the judge, is responsible for starting the marble's motion. Once the marble is set in motion, the marble machine cannot be touched until the marble stops.
- No oils, sand, or other viscous solutions may be used in this competition.

EVALUATION:

Judges will use the following criteria to evaluate the machines:

- Each contestant will have two chances to demonstrate their machine. The best time of the two chances will be recorded.
- **The winner of the event will be the contestant that builds a machine that allows a marble to roll freely and continuously for two minutes. Two minutes is defined as the time closest to the two-minute time frame, either above the two-minute mark or below the two-minute mark. For example, 2 minutes and .01 seconds is closer to the "2 minute mark" than 1 minute and 59 seconds.** Time will be measured to the hundredths of a second.
- Contestants are encouraged to develop a theme. In the event of a tie, the contestant with the most creative theme will be declared the winner.

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



SCIENCE FAIR

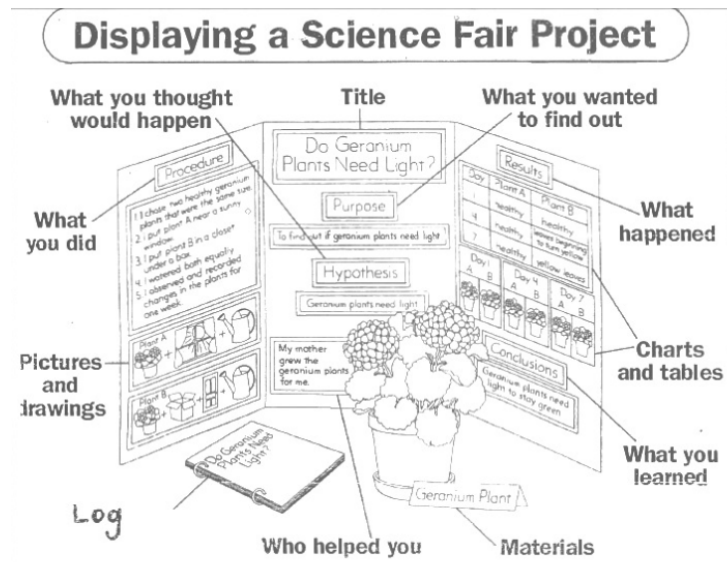
Competition Date: Saturday, October 14, 2017, 2:00 pm The Winston School

- Grade Groups: Kinder-2nd
- Individual or Team (up to two)

AWARDS: 5:00 pm, Saturday, October 14, The Winston School

COMPETITION

Students will compete in a traditional science fair, showcasing their projects on a tri-fold presentation board.



RULES

- First, pose a question.
- Next, decide the reason you want to know this. This is the purpose.
- Then make a prediction about what you think the results will be. This is your hypothesis.
- After that, collect information by testing your hypothesis. Decide what changes need to be made and what materials you need in order to find out the results. Make sure you keep a log of what happens over time and take pictures as you go. Judges love when information is charted or graphed as well. List the steps you used in order to test your hypothesis; this is called the procedure.
- Decide if your hypothesis was supported or not. These are your results.
- Establish a conclusion to your question that you started with. This explains what you learned from this experiment and what you may do differently next time. This is called your conclusion.
- Last, place all of your information on a tri-fold board in the six sections (**question, hypothesis, procedure, experiment, results, conclusion**). Make it attractive and include a bold title. If you can, use a computer and paper cutter to make it extra neat. Include pictures, charts, and graphs. Living things, glass objects, and liquids are not allowed in the science fair; please take pictures of these items instead!

EVALUATION:

Judges will use the following criteria to evaluate each submission:

- Creative Ability (catchy title, unique idea, effort put into display of the project)
- Scientific Thought (scientific method used correctly and organized on the board into specific sections: title, purpose, hypothesis, procedure, results, conclusion)
- Thoroughness (charts, graphs, log books, pictures, etc.)
- Skill (knowledge of material and results in presentation are evident in students' own words)
- Clarity (presentation makes sense, is easily understood, information is neat and organized)

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.

SOLAR POWERED CAR

Competition Date: Saturday, October 14, 2017, 1:30 pm The Winston School

IN THE EVENT OF INCLEMENT WEATHER, THE COMPETITION WILL BE MOVED TO OCTOBER 21.

- Grade Groups: 6th-8th, 9th-12th
- Individual or Team (up to four)

AWARDS: 5:00 pm, Saturday, October 14, The Winston School

COMPETITION

The Solar Car competition is designed to motivate students in Science, Engineering, and Alternative Energy. Students will design, build, and then race their Solar car.

RULES

- Cars must not exceed 45cm long, 20cm wide and 20cm tall. Measurements will be to the widest point of the car.
- Cars must run on solar power only, no controllers. These are Solar cars, so also **no batteries are allowed.**
- **Each student may be on only one team. Each team may submit only one car.**
- Cars submitted outside of the parameters set will be allowed to compete but will be disqualified from placing in the competition. If a student's car is outside of the parameters, but they can modify the car to correct dimensions before the last contestant has finished competing, they will be allowed to compete.
- Contestants will have two attempts to race their car down a 15 meter track. The race will be individual to avoid collisions.
- Both attempts will be timed, and the fastest time will be the scored time.
- The car with the fastest 15 meter run will be declared the winner.
- If any part of the car falls off during the race, a 5 second penalty will be added to the contestants' time.

EVALUATION:

Judges will use the following criteria to evaluate each car:

- Does the car meet size parameters set above in the rules?
- Did any part of the car fall off during the race?
- The car with the fastest time will be declared the winner.

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.



SOUND OFF! BUILD AN INSTRUMENT

Competition Date: Saturday, October 14, 2017, 9:00 am The Winston School

- Grade Groups: 6th-8th, 9th-12th
- Individual ONLY

AWARDS: 5:00 pm, Saturday, October 14, The Winston School

COMPETITION

Use what you know about the physics of sound to design and make an instrument that you can play a recognizable song on, and explain the physics behind your instrument.

RULES

- You must design and build a **musical instrument**. The instrument could fit into the wind, brass, or string category. Parts from “real” instruments may be used (such as real guitar strings), but your instrument *may not be made from a kit*.
- The instrument will be **presented to the judges**. Each presentation should include:
 - **A verbal report and demonstration of each instrument.**
 - What type of instrument is it based on, how do you play it, and a demonstration of all 8 notes
 - **A performance of a recognizable piece of music.**
 - Examples include Twinkle, Twinkle Little Star, Happy Birthday, Mary Had a Little Lamb, etc. *Hot Cross Buns may NOT be played for your performance.*
- **A verbal report** that explains the physics behind your instrument will be given to the judge. You can expect judges to ask you any (and possibly all) of the following questions. You may not use notes or other forms of assistance, so prepare your answers to these prior to competition. *You will probably need to do some research in order to fully answer these questions.*
 - How was the instrument built? Why did you choose the materials you chose?
 - How is it played?
 - How is the sound created (what is vibrating)? What type of wave transmits the sound?
 - How is it tuned?
 - What real instrument is it based upon? What genre of instruments does it fit into (string, wind/brass, percussion)?
 - How do you make different pitches? (*looking for answers involving correct usage of vocabulary like wavelength and frequency.*)
 - What does the body of the instrument do to amplify or resonate the sound?
 - Is it possible to change the volume of sound that comes from your instrument?
 - Are there ways that your instrument could be improved?
- The instrument must be able to play a complete, simple diatonic scale of **eight notes**. The different tones must be **CLEARLY different pitches**, and must be loud enough that judges can hear the instrument from at least 5 feet away.
- There is a “quality of construction” part to this project – an instrument that is poorly made or that was clearly made in very little time will not receive the same amount of points as one that clearly had time spent on it.
- **The following instruments are prohibited (if you make one of these, you will be disqualified):**
 - **Percussion:** No chimes, no “drum kits”, no water filled bottles, no “Boomwhackers”
 - **Wind/Brass:** Do NOT cut 8 straws to different lengths and tape them together (i.e. pan pipes)
 - **String:** Do NOT stretch rubber bands around a box; in fact, do NOT use rubber bands at all for the strings of your instrument.

EVALUATION:

Judges will use the following criteria to evaluate each instrument:

- Construction of instrument
- Pitch
- Volume
- Recognizable song
- Verbal report and demonstration
- Contestant’s understanding of the physics behind the instrument

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.

WHAT'S COOKING? SOLAR OVEN

Competition Date: Saturday, October 14, 2017, 3:00 pm The Winston School

IN THE EVENT OF INCLEMENT WEATHER, THE COMPETITION WILL BE MOVED TO OCTOBER 21.

- Grade Groups: 6th-8th, 9th-12th
- Individual or Team (up to four)

AWARDS: 5:00 pm, Saturday, October 14, The Winston School

COMPETITION

In a world of limited resources, scientists are always looking for more efficient ways to handle basic daily tasks. Cooking in some countries means cutting down trees for firewood. In an effort to help conserve forests, you will be designing a solar oven that can cook a hotdog. Solar ovens built with the most conservative use of materials will achieve higher scores.

RULES

- No glass or manufactured lenses may be used in the solar oven.
- When not in use, the solar oven must be NO larger than ½ meter on any side, and weigh no more than 2.2 pounds (1,000g or 1Kg).
- A hot dog will be provided by Winston Science for you to cook in the solar oven.
- Judges will measure and record the temperature of the hotdog before cooking begins. You will have 30 minutes to cook the hot dog. At the end of the time, judges will measure and record the final cooking temperature.
- Documentation must be provided by the contestant. Documentation includes ALL of the following:
 - Design Plans - drawn picture depicting how the design enables the cooking process.
 - Instruction Manual - instructions on how to use the solar cooker, including diagrams.
 - Written Explanation - explain how the solar cooker will help the environment in a detailed paragraph.

EVALUATION:

Judges will use the following criteria to evaluate each solar cooker:

- Were any parts used that are not allowed?
- Does the solar cooker meet size parameters set above in the rules?
- Does documentation include design plans, instruction manual, and written explanation?
- Difference in hotdog temperature before and after cooking.

AWARDING OF PRIZES

Judges may award more than one first place, second place, and third place in the event of a tie.