



Exploring the World of Science

**San Joaquin County
Elementary Division
2024-2025**

REVISED 9/27/24



**SAN JOAQUIN COUNTY
OFFICE OF EDUCATION**

Please refer to the Clarification Page for updates



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Science Olympiad Division A Rulebook

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Welcome to the 2025 Science Olympiad Division A

Registration information is due November 20, 2024 (or when we reach 50 teams)

Register online at: <https://forms.gle/udPHNcQvRgKztwvGA>

The School Permission Form and Team Roster are due February 7, 2025

Team Size

Each team will consist of up to 18 students. Each team may have no more than 7 sixth grade students.

Alternates

Teams may have alternate students, but they will not be registered on the “Official Team Member” list. They will be listed on the “Alternates” section. These students may be placed on the official team member list up to the day of the events or by 8:45am on competition day. If a student needs to be replaced on the team, the teacher coach should go to the check-in table on the day of competition.

Code of Ethics

Student participants are expected to compete in tournament events with honest effort to follow the rules and the spirit of the competition. Team members are expected to be the builders of all the devices used in the events. The goal of competition is to give one’s best effort while displaying honesty, integrity, and sportsmanship. Students, coaches, parents, and guests are expected to display courtesy and respect toward Science Olympiad staff, volunteers, other teams, and guests of the Science Olympiad. Failure to show honesty, and/or courtesy by a participant, coach or guest of the team may result in the disqualification of the team from the event, the entire tournament or future tournaments.



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Scheduling

Check the schedule of events carefully. Do not over-commit any one child. Although Event Managers can be flexible in allowing students to switch schedules, this is not guaranteed or required. If two teams are competing from the same school, both teams will be put in the same section. The two teams do not work or collaborate together.

Event Supervising

Each participating team is required to run one event. Events will be chosen on a first-come, first-served basis. The Event Manager will be required to:

- Understanding rules and procedures for event:
 - Impound rules
 - Scoring/Tie Breaker in place
 - Turn-in scores as soon as possible
- Create and Provide:
 - Materials, handouts, tests, etc.
- Supervision:
 - Arrange for adequate supervision for your team during your event
 - Arrange for additional support, if needed, to run your event
 - Stay with your event until completion
- Communication with coaches and SJCOE staff

Impound

Impound is the period of time, before the start of competition, when teams must submit their constructed devices to Event Managers to be stored in secure locations.

- This will ensure that teams cannot modify their devices after the competition has begun, thus promoting fair competition.
- Any member of the team may “drop off” their build for impound, However, coaches and parents are NOT allowed.
- Impound for each event will be held in the same location as that event.



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A is for Anatomy

Description: This event will test students on their knowledge of both structure and function of the following systems: Respiratory, Circulatory, Endocrine, and Urinary.

A Team Of Up To: 2 **Approximate Time:** 50 min

Impound: No **Visitors:** No

Teams: Each team may bring in only **one** 8.5 X 11" two-sided page of information, in any form, from any source.

Event Managers: Event Managers will provide writing instruments.

The Competition: The test may include various formats such as: slides, stations, written answers, scantrons, multiple choice, etc. Students should be familiar with the **4 identified systems**.

Respiratory System

Circulatory System

Endocrine System

Urinary System

Scoring: Each team will be given one answer sheet or scantron. High score wins, selected tie breaker questions and/or quality of free-response answers will be used to break ties. Selected tie breaker questions will be identified for students.

Possible Question/Station:

- Identify (from a picture) the three labeled organs in the respiratory system
- Name 2 functions of the kidneys

Resources/Notes from EM:

B/C connection: Anatomy and Physiology



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Astronomy

Description: Students will learn about star and galaxies.

A Team of Up To: 2 **Approximate Time:** 50 min

Impound: No **Visitors:** No

Teams: Students may bring in one 8.5" x 11" double-sided page for the team with information from any source. Recommended that each participant bring in his/her own #2 pencil.

Event Managers: will provide all equipment, pictures, and diagrams needed.

The Competition: Participants will be presented with one or more tasks requiring their knowledge and understanding of stars and galaxies. Event will be a station to station timed test. Each station will have one or more answer sheets to be collected at each station. Information includes but is not limited to:

- a. Types of Stars
- b. Life Cycle of Stars
- c. Population 1 and Population 2 Stars
- d. Absolute vs Apparent Brightness
- e. Hipparchus catalogue of Stars
- f. Hertzsprung- Russel Diagram
- g. Energy Production in Stars
- h. Nucleosynthesis
- i. Gravity
- j. Cosmic Distance Ladder
- k. Types of Galaxies
- l. Organization of galaxies- Local Group, Supercluster.etc
- m. Special Emphasis on the Milky Way Galaxy

Representative tasks:

1. Students will be given pictures of galaxies and identify the type
2. Students will determine the location of a star on the Hertzsprung-Russel diagram
3. Students will be able to put pictures of a star in order of its life cycle

Scoring: High score wins. Points will be awarded for the quality and accuracy of responses. Ties will be broken by the accuracy and quality of answers to pre-selected questions.



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Bridge-a-Roni

Description: The objective of this event is to design and build the lightest bridge, constructed only of pasta and glue, with the greatest structural efficiency, capable of supporting a load of up to 5 kg. Each team may bring and enter only one pasta bridge.

A Team of Up To: 2 **Approximate Time:** 10 min

Impound: No **Visitors:** Yes

Eye Protection: Teams must bring safety goggles

EVENT PARAMETERS:

- a. Each team is allowed to enter only one pre-built Pasta Bridge built prior to the competition.
- b. Team members must wear proper eye protection during the set-up and testing of the bridge. Teams without eye protection must not test and must be ranked in Tier 2.
- c. The Event Manager must provide all assessment devices, testing apparatus (4), two bucket stabilization sticks, and clean, dry sand or similar dry, free-flowing material (hereafter "sand").

CONSTRUCTION PARAMETERS:

- a. The Bridge must span a horizontal opening of 35.0 cm.
- b. Bridge Dimensions: The bridge shall not exceed 55.0 cm in length, 15.0 cm in width. Minimum height is 10.0 cm (there is no maximum height).
- c. No portion of the bridge may extend below the top surface of the Test Base prior to testing.
- d. The bridge is to be a single structure constructed of ONLY pasta, multi-purpose glue, and/or hot glue. Multipurpose glue must be labeled safe and non-toxic (e.g. Elmer's). Other materials are not allowed, including paint, rubber bands, twist ties, other types of glue, etc.
- e. The bridge must support, at the center of its span, the loading block and chain assembly described in {Testing Apparatus (b.)}. The bridge must have an adequately sized opening at its center that allows the bolt and chain to pass through the bridge and hang below the bridge. The loading block assembly must rest freely on the bridge and cannot be rigidly attached to the bridge.
- f. If the bridge has multiple levels, the team may decide which level to place the loading block on, as long as it remains at the center of the span.

TESTING APPARATUS: Supplied by the Event Manager

- a. The Test Base must be a solid and level surface as follows:
 - i. Must be at least 55.0 cm long x 32.0 cm wide.
 - ii. Must have a smooth, hard surface (e.g., hardwood, metal, or high pressure plastic laminate) and be stiff enough so it does not bend noticeably when loaded.

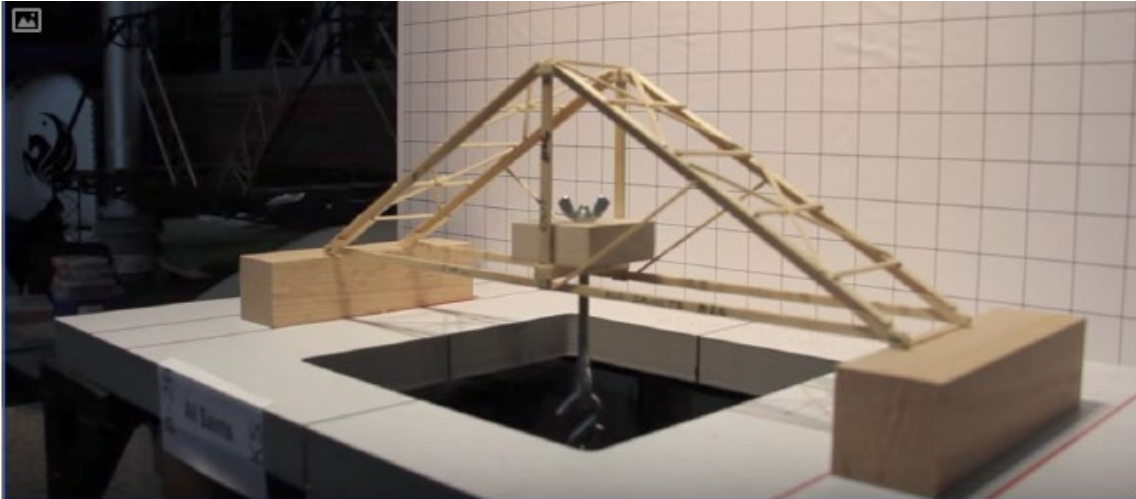


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Bridge-A-Roni Cont.

- iii. Must have an opening approximately at its center approximately 20.0 cm x 20.0 cm.
- b. The Loading Block Assembly must consist of:
 - i. Loading Block: a square block measuring 5.0 cm x 5.0 cm x approximately 2.0 cm high with a hole no larger than 8 mm diameter drilled perpendicular to and centered on the 5.0 cm x 5.0 cm faces for a ¼" threaded eyebolt.
 - ii. A ¼" threaded eyebolt (1" nominal eye outside diameter), no longer than 3" and a ¼" wing nut.



- c. A chain and S-hooks that are suspended from the Loading Block Assembly.
- d. An approximately five-gallon plastic bucket with a handle to be suspended from the chain and hook.
- e. The Event Manager must verify the combined mass of the Loading Block Assembly, chain, hooks, bucket, and sand is at least 15.100 kg but no more than 15.300 kg prior to testing.
- f. Youtube resource: Please note that your students' bridge will be constructed using pasta.

THE COMPETITION:

- a. Check-in
 - i. Team members must place their bridge on the scale for the Event Manager to determine its mass in grams to the nearest 0.01 grams.
 - ii. No alterations, substitutions, storage, or repairs may be made to the bridge after check-in. Once teams enter the event area to compete, they must not leave, receive outside assistance, materials, or communication.



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Bridge-A-Roni Cont.

- b. Testing
 - i. Teams must have a maximum of 6 mins. to set up and test their Bridge to the max. load or to failure.
 - ii. Team members must set the bridge on the 2.0 cm x 5.0 cm faces so that it spans the open space.
 - iii. The Event Manager will check the height of the bridge at the Clear Span Line of the Bearing Zone where the bridge directly touches the Test Base to assure it does not exceed 2.0 cm.
 - iv. Team members will place the Loading Block approximately at the center of the test base opening.
 - v. Team members must assemble the Loading Block Assembly, eyebolt, chain and S-hooks, and hang the bucket to load the Bridge. Team members may disassemble the Loading Block Assembly to set up the test. The bucket must be mounted to allow enough clearance above the floor to allow for bridge deflection.
 - vi. Team members must be allowed to adjust the Bridge until they start loading sand. No adjustment may be made after sand loading has begun.
 - vii. Team members must load the sand into the bucket and be allowed to safely and effectively stabilize the bucket from movement caused by sand loading. Direct contact with the bucket by team members is not allowed. Teams choosing to stabilize the bucket must use the bucket stabilization sticks provided by the Event Supervisor. Only the tip of the stabilization stick may touch the bucket.
 - viii. Bridges that fail before supporting 15.000 kg must be scored according to the actual load supported at time of failure, measured to the nearest gram or best precision available. Failure is defined as the inability of the bridge to carry any additional load, any part of the bridge touching the test base outside of the Bearing Zone, any contact of the bridge with the Bearing Zone at the end supported by the Test Support, or any part of the load supported by anything other than the Bridge. Incidental contact between the chain/eyebolt and the device is not failure. Incidental pieces falling off the bridge is not failure.
 - ix. Loading must stop immediately when a failure occurs or when time expires. The Event Manager must remove any parts of the Bridge that fell into the bucket and sand added after time has expired or failure

SCORING

- a. The best structural efficiency (highest number) wins, determined by the following equation:
 - i. $\text{Score} = \text{Load Supported (g)} / \text{Mass of Bridge (g)}$
 - ii. Ties are broken by this sequence: 1. Lowest Bridge Mass; 2. Widest Bridge, measured at the widest point of the Bridge prior to loading.

SCORING EXAMPLE:

- a. Load Supported = 500 g, Bridge Mass = 14.27 g, Score = 35.03



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Can Race

Description: In the event teams will construct a vehicle made from a can which will travel 3 meters in the shortest amount of time and in the straightest possible path.

A Team of Up To: 2

Approximate Time: 5 min

Impound: No

Visitors: Yes

Teams: Will make and bring one rubber band powered can racer to test.

Competition: Any type of can may be used (irrespective of size or material). Clearly mark the center of your can racer (the point will be at the top of the can, in the center, where it will cut the cylinder in half). Racer surfaces may not be modified by the addition of any substance (e.g. rubber bands at the can edges). Make sure the can racer is clearly labeled with your school's name and team number. The racers will be run on a course approximately three meters long and one meter wide. The start line, finish line, and center line will be marked by painters tape or something similar. Teams will be given up to two runs of the raceway. The better of the two runs will then count as the official time/distance measurement. A maximum of five minutes will be allowed to complete the two runs. Adjustments by the team members will be allowed between runs. No parent or coach may intervene during the 5-minute race time. This includes providing verbal advice. Racers will be released on a center line by contestants without any assisting push and may not be touched by anyone until they stop rolling. Students will count down "3-2-1 Launch" at which point the Event Supervisor will begin their timer. As the racer passes the 3-meter line/finish line, the timer will be stopped. The stopping location will be measured from the center-point of the centerline of the can. (i.e., in essence, the point will be at the top of the can, in the center, where it will cut the cylinder in half).

Scoring: Will be based upon the time it takes for the can to cross the 3-meter line (finish line). The shortest/quickest time will be awarded first place. Tiebreaker: the distance from the center of the finish line to the center-point of the centerline of the can.



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Color Wheel

Description: Each student will use tempera paint to make secondary and tertiary colors on the color wheel.

A Team of Up To: 2

Approximate Time: 45 min

Impound: No

Visitors: No

Competition:

1. Students will be given a blank color wheel for their template as well as a color wheel for their reference.
2. Paint, paintbrush, water cup and paper towels will be provided.
3. ONLY Red, Yellow and Blue paint will be made available for participants to create their color wheel.
4. Students will mix their primary colors to accurately replicate the color wheel sample given.

Scoring:

The scoring of the event will be based on the accuracy of their paint matching to the color wheel sample.

- 2 points for exact match
- 1 point for close match/attempt
- 0 points for non attempt or wrong color

TIEBREAKER: Based on fastest time completed with closest color accuracy.

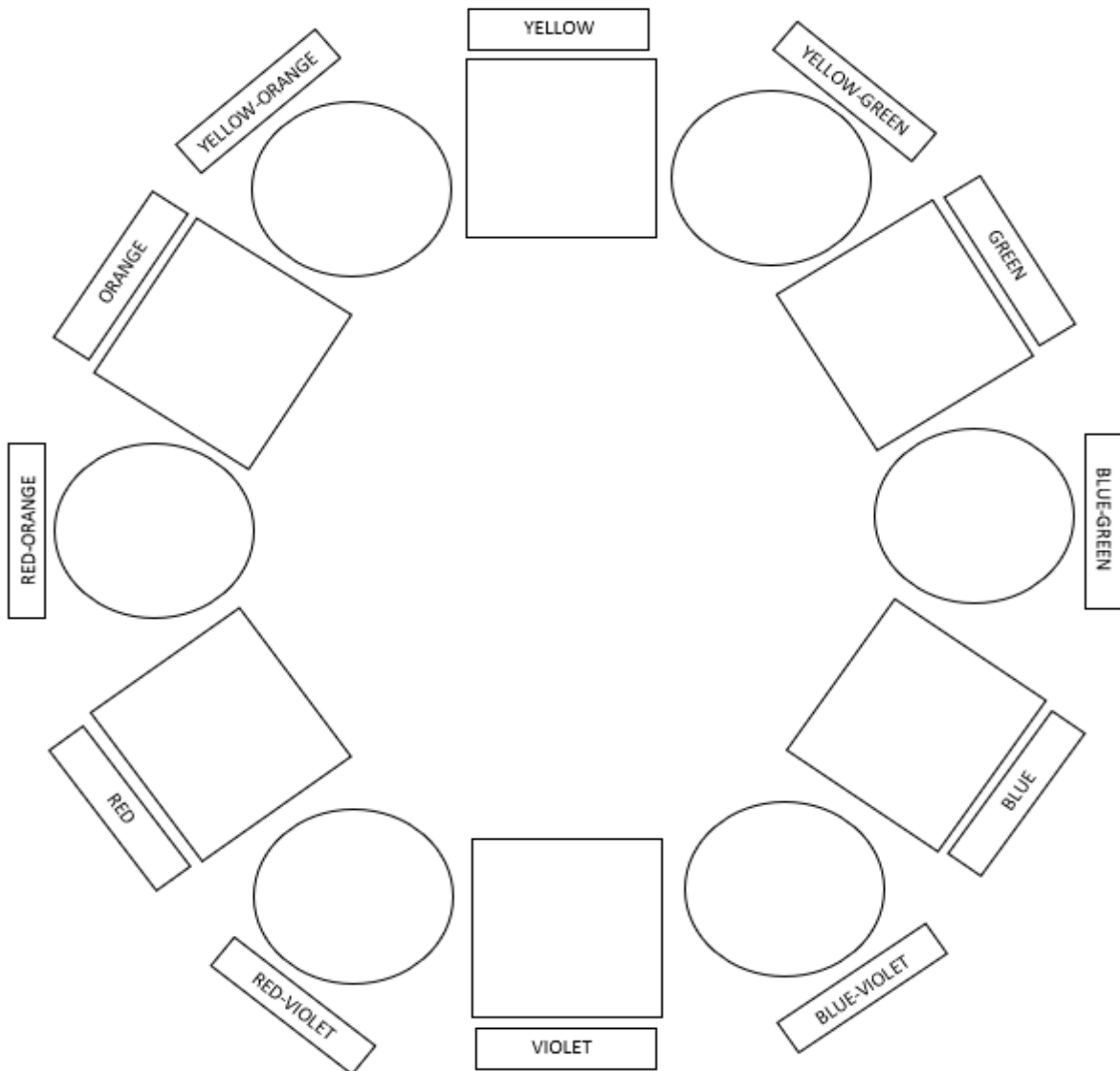


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Color Wheel Cont.

COLOR WHEEL





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Deep Blue Sea

Description: This event will test students' knowledge about oceanography.

A Team of Up To: 2 **Approximate Time:** 50 min

Impound: No **Visitors:** No

Teams: Must bring in a sharpened #2 pencil and backup pencil. Teams may bring in one 8.5 X 11" two-sided page of information, in any form, handwritten or typed.

Event Managers: Will provide all necessary items, objects, materials, questions and response sheets for participants to complete stations.

The Competition: This event will be run in station format. Teams will rotate through stations with questions, models, pictures, diagrams, and maps that assess oceanography. Students may not go back to previous stations.

Topics may include but are not limited to:

- Physical and Chemical Properties of water, Ice and Saltwater

- Ocean flora (algae, kelp, etc.)

- Ocean fauna (mammals, mollusks, etc.)

- Ocean vessels and equipment used in exploring (diving bells, submersibles, diving gear, etc.)

- Physical features (trenches, seamounts, etc.)

- Phenomena (tidal waves, currents, wave characteristics, etc.)

- Geography (location and identification of oceans, seas, major bays, etc.)

- Vocabulary (relating to any of the above topics)

Scoring: High score wins. Points will be awarded for accuracy and quality of responses. Ties will be broken with predetermined questions and/or accuracy.

Possible Question/Station:

- Identify a picture of algae

- Match the definition to the word Pelagic Zone

Resources/Notes from EM:

- Have students practice taking timed tests

- Physiographic Map of Ocean Floor

- Oceanography Books

- On-line power points on oceanography topics

- Quizlet



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Don't Bug Me

Description: In this event teams will distinguish from non-insects, identify various body parts, characteristics, habitats, ecological significance, life cycles, and major classes and orders of arthropods.

A Team of Up To: 2

Approximate Time: 30 min

Impound: No

Visitors: No

Teams: may bring notes (no books, manuals, or guides) to aid them in the identification process, and to aid in answering questions. Handwritten charts/notes to the competition is limited to one 8 ½ x 11 inch sheets of paper. Both sides of the page may be utilized.

Event Manager: will supply all needed materials.

The Competition: Each team will be given a set of questions and/or move through stations. Questions can include the major classes of arthropods and orders of insects.

- i. Classes: Arachnida, Chilopoda, Crustacea, Diploda, Insecta (Hexapoda)
- ii. Orders: Thysanura, Orthoptera, Isoptera, Neuroptera, Ephemrida, Odonata, Mallophaga, Anoplura, Hemiptera, Homoptera, Dermaptera, Coleoptera, Trichoptera, Lepidoptera, Diptera, Siphonaptera, Hynmenoptera.

Scoring: Points will be awarded for correct answers/responses. The top score wins. The event will include a tiebreaker.



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Dynamic Planet

Description: Students will learn about glaciers and glacial processes.

A Team of Up To: 2

Approximate Time: 50 min

Impound: No

Visitors: No

Event Manager: will provide all equipment, pictures, and diagrams needed.

The Competition:

Participants will be presented with one or more tasks requiring their knowledge and understanding of the Earth's glaciers and history of Earth's glaciation.

Information includes but is not limited to:

- A. Formation of glacial ice
- B. Formation of glaciers
- C. Glacial movement
- D. Anatomy of a glacier
- E. Types of glaciers
- F. Glacial hydrology and glacial lakes
- G. Erosion and erosional features
- H. Deposition and depositional features
- I. Sea Ice
- J. History of Earth's glaciation
- K. Proxy data
- L. Milankovitch Cycles
- M. Paraglacial and periglacial processes and features

Representative tasks:

Given a diagram of a glacier, label the parts

Describe the formation of a glacier

Be able to identify whether a valley was formed by a glacier or a river

Be able to identify and explain glacial deposits vs. river deposits

Scoring: Scoring: High score wins. Points will be awarded for the quality and accuracy of responses. Ties will be broken by the accuracy and quality of answers to pre-selected questions.



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Fossils

Description: In this event, the participants will identify and answer questions about fossils.

A Team of Up To: 2 **Approximate Time:** 50 min
Impound: No **Visitors:** No

Teams: One 8.5" x 11" sheet of paper with information on both sides from any source and in any format. Placing the sheet of paper in a sheet protector, or laminating it, is fine as long as the sheet protector is sealed by tape. There can be nothing attached to the sheet of paper. Pen or pencil are allowed

Event Managers: Will provide all necessary items, objects, materials, questions and response sheets for participants to complete the event.

The Competition: The room should be set-up with 10 to 15 stations where each station features between 6 and 8 questions about a particular fossil along with models, slides, pictures, or information that relates to fossils and helps the participants answer the questions.

Working quietly with their partner, the Participants will:

- i. Start at the station assigned by the Event Manager and answer the questions located there.
- ii. Have between 3 and 5 minutes, depending upon the number of stations, to analyze the information provided and answer the questions asked.
- iii. Rotate to a new station designated by the Event Manager and answer the questions found there, upon a signal from the Event Manager.
- iv. Leave the station as they found it when they rotate to a new station.
- v. Not be able to return to any stations after they rotate to another station.

Brachiopod	Fossil Fern	Dinosaur(Triceratops)
Crinoid ("Sea Lily")	Stromatolite	Dinosaur (Parasaurolophus)
Ammonite	Gastropod (snail)	Bird (Archaeopteryx)
Bivalve (clam, scallop, or oyster)	Bony Fish	Mammal (Saber Toothed Cat)
Horn Coral	Cartilaginous Fish (shark)	Mammal (Mammoth)
Bryozoan	Mosasauro (sea reptile)	Mammal (Mastodon)
Echinoid	Pterosaur (flying reptile)	Mammal (Horse)
(sand dollar, sea urchin)	Mammal-like Reptile (Dimetrodon)	Trace Fossil (Footprint)
	Dinosaur (Tyrannosaurus)	Trace Fossil (Coprolite)
	Dinosaur (Apatosaurus)	Other Material: Amber
		Other Material: Petrified Wood



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Fossils Cont.

For this event, participants will need to learn about the following fossils:

b. For each fossil, Participants will need to know:

- i. The identity of the fossil, its appearance, and characteristics of the Group to which it belongs
- ii. The type of rock in which the fossil is preserved
- iii. The time period or range in years when fossil lived
- iv. What the fossil tells us about the animal or plant from which it was created

(1) How the fossil lived

- (a) Attached to sea floor
- (b) Crawled/walked on the bottom of sea floor
- (c) Lived in mud
- (d) Swam in oceans/seas
- (e) Walked on land
- (f) Flew in the air
- (g) Grew in forests

(2) How the fossil formed

- (a) Cast
- (b) Mold
- (c) Imprint
- (d) Mineral replacement/petrified
- (e) Trapped in amber

(3) Environment fossil lived in

- (a) Ocean
- (b) Land
- (c) Swamp
- (d) Lake

(4) If the fossil is of an animal, how did it obtain food:

- (a) Predator
- (b) Herbivore
- (c) Filter feeder
- (d) Scavenger

Event Scoring:

- a. Participants will be awarded points for each correct answer they provide
- b. The highest number of points wins
- c. The following will be used as Tiebreakers:
 - i. Correct spelling of the answers
 - ii. Select questions identified at the start of the event
- d. Teams found to have repeatedly left stations messy or have damaged items provided at the discretion of the Event Manager, may have up to 20% of their score deducted as a penalty.



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Gummi Bear Long Jump

Description: In this event teams will build their own free-standing (not handheld) catapult that must be capable of “lobbing” a Gummi Bear at a target placed between 2 and 4 meters.

A Team of Up To: 2 **Approximate Time:** 8 min

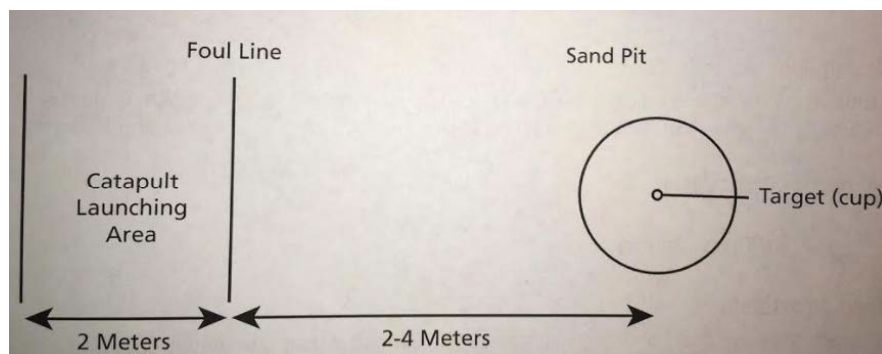
Impound: No **Visitors:** Yes

Teams: Each team will bring their catapult and possibly a protractor

Event Managers: Will provide Gummi Bears

The Competition: At arrival, teams will be told the official distance of the target. Using your pre-collected data, teams will set up their device. Each device should be designed and built by the students (adult construction assistance is okay). If an event manager deems the catapult unsafe, the device will be disqualified. The device will sit on a level area of ground and fire at a target area that will also be at ground level. The target area, at minimum, will be a printed target on an 8.5 x 11 sheet of paper with a marker designating the center of the target. When instructed by the event manager, teams will place their devices in the launch area, ensuring that the device is behind the foul line. Teams will have 8 minutes to compete one practice shot, and two additional shots that will be used for scoring.

Scoring: Each team will have a one-shot practice round after which they will each shoot at the target two times. The distance from the initial impact to the center target will be measured and recorded after each shot. After each launch, the distance will be announced to the team to allow them to make adjustments based upon their data chart. No Gummi Bear should be shot before or during the catapult event except during the specified practice round or actual competition. A violation of this rule can result in disqualification. The team whose Gummi Bear lands closest to the target wins. In the event of a tie, the distance of both launches will be added. The team with the lower cumulative score will receive the better ranking.





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Hot Air Balloon

Description: In this event teams will construct a hot air balloon made from tissue paper. The balloon must be pre-built and brought to the competition

A Team of Up To: 3 **Approximate Time:** 8 min

Impound: Yes **Visitors:** Yes

Teams: All team members are required to wear protective gloves. It is recommended teams bring their own gloves to make sure they fit (no mittens). Teams are required to bring balloons in a box labeled with school name and color to impound. Each student is also required to impound their own journal, documenting trials, errors, photos, lessons learned in the process of building device.

Event Managers: Will provide extra protective gloves if needed and launching devices.

The Construction:

- a. Each team is required to construct a balloon using tissue paper and glue-no tape allowed (avoid using tissue paper with foil)
- b. Teams may use a rigid wire in the air intake part of the balloon to keep the opening from collapsing.
- c. The balloons should be designed to allow hot air (up to 750F) to inflate the balloon without scorching. This is most easily accomplished by allowing an unrestricted path for hot air. The event manager will closely monitor the balloon during inflation and may cancel the launch due to safety concerns.
- d. The heating device will be a popcorn machine (see: Amazon, Presto Hot Air Popper). The opening of the balloon (mouth) must fit over the machine.

The Competition:

- a. The event manager will inspect the balloons prior to the event and find their mass.
- b. Teams will have 8 minutes to compete up to 2 separate launches.
- c. Each team will be given up to 90 seconds to inflate their balloon.
- d. When the team is ready to release their balloon they must inform the event manager and provide a countdown: "3-2-1 RELEASE".
- e. No additional launch assist devices may be used such as poles, hooks, chairs, etc. Balloons must float using only their buoyancy, No pushing.
- f. No device may be used to close the mouth of the balloon (ex. Aluminum foil) before or during the launch. Any attempt will result in disqualification.
- g. Each balloon will be heated using a popcorn machine provided by the event manager.



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Hot Air Balloon Cont.

- h. Should the balloon get stuck/caught in the ceiling or wall equipment, 20 seconds will be given before the flight is deemed over.
- i. No repair kits will be allowed, nor will time for repairs.

Scoring:

- a. Flight time will be recorded. As soon as any part of the balloon touches the ground, the timer will be stopped.
- b. The team with the greatest flight time will win.
- c. Tiebreaker: mass will be used as a tiebreaker.



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Mystery Architecture

Description: Students will be given a bag of materials to build a freestanding tower as high as they can. The tower should be constructed to support a ping pong ball at its top.

A Team of Up To: 2 **Approximate Time:** 50 min
Impound: No **Visitors:** No

Teams: May bring in scissors and a ruler to use as tools while building the tower. No other resources are allowed.

Event Managers: Will supply a bag for each team. Each team will receive exactly the same materials. Materials are unknown until the competition.

The Competition:

1. Students will have 20 minutes to construct a tower to support a ping pong ball at its highest point. The top of the ping pong ball must be higher than any part of the structure.
2. Only those materials supplied in the bag, and the bag itself, may be used to construct the tower. No other materials or adhesives may be part of the finished tower.
3. Examples of materials that may be provided include, but are not limited to: straight pins, paper cups, drinking straws, paper clips, tape, string, paper, etc.
4. Each team may bring their own ping pong ball to use while building their tower, however, all towers will be measured using the same ping pong ball provided by event manager.
5. The students are to inform the judges when they finish their tower. They will place the ping pong ball provided by the event manager on the top of their tower. The tower must remain standing long enough for the height and base to be measured.
6. The tower must be free standing. It cannot be attached to the tabletop, floor, wall or ceiling.

Scoring:

1. The height of the tower and width of its base will be measured as precisely as possible by the judges. Since no building materials are to extend above the ping pong ball, the ping pong ball will be considered the highest point of the tower. The width of the tower will be measured at its base. The largest diameter of the base will be recorded.
2. All towers that support the ping pong ball will be ranked above those that do not.
3. The towers in each group will be ranked according to their height. Tallest tower first, the shortest tower last.
4. In the event of a tie, the winner will be the tower with the smallest base measurement.



SAN JOAQUIN COUNTY
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Science Olympiad Division A Rulebook

Mystery Powder

Description: Students will be asked to use properties of substances to identify individual substances and mixtures of common white household powders.

A Team of Up To: 2 **Approximate Time:** 40 min
Impound: No **Visitors:** No

Teams: Teams are allowed to bring in **one** 8.5" x 11" resource sheet. No other materials will be allowed.

Event Managers: Will supply all required materials.

The Competition: The following substances will be used during testing: sugar, baking soda, flour, salt, plaster of Paris, and corn starch. Students will get a small sample of each of the white powders. There will be one sample that is a mixture of two of the powders. Students will be supplied with the following materials to aid in the identification of the powders: vinegar, water, aluminum foil, iodine solution, magnifying lens, black paper, plastic reaction plates, and toothpicks. Students will be given 40 minutes to correctly identify as many powders as possible. No tasting or touching of powders will be allowed.

Scoring: The team with the greatest correct number of powders identified in the shortest period of time will be declared the winner. For example, if several teams identify six powders correctly, the team with the shortest time will be the winner even if another team finishes ten minutes earlier but identifies only five powders correctly. In case of ties, the team with the most complete data table/chart will be declared the winner.



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Science Olympiad Division A Rulebook

Mystery Powder Cont.

Powder	Observations	Water Test Results	Vinegar Test Results	Iodine Test Results



SAN JOAQUIN COUNTY
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Science Olympiad Division A Rulebook

Name the Scientist

Description: Students will be required to identify prominent scientists and their contributions to their field(s).

A Team of Up To: 2 **Approximate Time:** 50 min

Impound: No **Visitors:** No

Teams: No outside resources will be allowed.

Event Manager: will provide all materials needed.

The Competition: The competition will be in two parts. Part 1: students will play a concentration game in a group of four that consists of matching the scientist to their invention, discovery or contribution. Part II: is a quiz on some of the scientists' contributions to science. For example, Name the French chemist _____ who discovered a method for processing milk to reduce the bacteria content.

Scoring: In the concentration game each team will receive one point for each successful match. 6 x 6 matrix is used for concentration game. (18 scientist cards + 18 contribution cards). In the quiz each correct answer will be one point. High score wins.

Sample List of Scientists and/or Inventors:

Benjamin Franklin
Galileo
Wilbur Wright
Thomas Edison
Alexander Graham Bell
Edwin Powell Hubble
Carolus Linnaeus
George Washington Carver
Sally Ride
Sir Henry Cavendish
Robert Fulton
Joseph Priestly
Linus Pauling
Albert Einstein
Johann Kepler
Michael Faraday
Edward Jenner

Madame Curie
William Harvey
Andre Ampere
Sir Isaac Newton
Anton Van Leeuwenhoek
Eli Whitney
Edward Teller
Robert Goddard
Wilhelm Rontgen
John James Audubon
Louis Pasteur
James Watt
Sir Humphrey Davy
Gregor Mendel

Charles Darwin
Jonas Salk
Neil Armstrong
Antoine Lavoisier
John Dalton
Samuel F.B. Morse
Rachel Carson
Robert Koch
Robert Bunsen



SAN JOAQUIN COUNTY
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Science Olympiad Division A Rulebook

Optics

Description: In this event, the participants will answer questions and complete small tasks about the light and its properties.

A Team of Up To: 2 **Approximate Time:** 30 min

Impound: No **Visitors:** No

Teams: Teams are allowed to bring in a pencil.

Event Managers: Will provide the models, slides, pictures, information, and questions found at each station as well as an answer sheet for participants to record their answers.

Competition: The room should be set-up with 10 to 15 stations where each station features between 6 and 8 questions about light or one small activity associated with light (i.e., creating a color, splitting light with a prism, reflecting light around a barrier) for the team to complete or analyze. Working quietly with their partners, the participants will start at the station assigned by the Event Manager and answer the questions located there. Have between 2 and 3 minutes, depending upon the number of stations, to analyze the information provided and answer the questions asked or complete the task. Rotate to a new station designated by the Event Manager, upon a signal from the Event Manager, and answer the questions found there. Leave the station as they found it when they rotate to a new station. Students will not be allowed to return to any stations after they have rotated to another station.

- a. For this event, participants need to learn about the following concepts associated with light:
 - i. Electromagnetic Spectrum
 - ii. Wave Properties (i.e., Wavelength, Frequency, Speed, the Speed of Light, Energy)
 - iii. Visible Light (i.e., Transparent, Translucent, Opaque, Light Sources, Candles/Lumens Measurements)
 - iv. Reflection and Refraction (i.e., Laws, Mirrors, Lenses)
 - v. Color (i.e., the Spectrum, Primary and Complementary Colors, Colored Materials)

- b. For this event, Participants may be expected to complete simple activities such as:
 - i. Bend a ray of light around an obstacle using mirrors
 - ii. Create complementary colors from primary colors
 - iii. Create a reflection using a concave or convex mirror
 - iv. Make a spectrum
 - v. Use filters to change the color of a light source



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Science Olympiad Division A Rulebook

Optics Cont.

Scoring:

- a. Participants will be awarded points for each correct answer they provide or activity they complete
- b. The highest number of points wins
- c. The following will be used as Tiebreakers:
 - i. Correct spelling of the answers
 - ii. Select questions identified at the start of the event
- d. Teams found to have repeatedly left stations messy or have damaged items provided at the discretion of the Event Supervisor, may have up to 20% of their score deducted as a penalty.



SAN JOAQUIN COUNTY
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Science Olympiad Division A Rulebook

Paddle Boat

Description: In this event, teams will design, build, and bring to the competition a paddle boat whose main propulsion is produced by up to two #64 rubber bands (3.5" x .25")

A Team of Up To: 2

Impound: Yes

Visitors: Yes

Test time (per team): 5 minutes (timing starts at the winding of rubber band)

Construction:

1. Each team will bring a homemade paddle boat to the competition. Each device should be designed and built by the students. Adult construction assistance is OK when using power equipment or sharp tools. No kits.
2. The final construction paddle boat must fit inside a 20cm by 10cm by 5cm box. (an assembled paddle can be dismantled from the assembled boat to fit within the box. Paddle cannot be disassembled).
3. The dimensions of the water trough are 20cm(width) x 3.66m(length)x 12.5cm (depth)
4. The only materials permitted in the design of the paddle boat are:
 - a. Any wood
 - b. Any glue
 - c. Nails
 - d. Two #64 rubber bands (supplied by the event supervisor)
 - e. Paint

The Competition:

1. Devices will be measured in impound to determine whether they meet construction requirements. They will remain in the impound area until the assigned race time.
2. Teams will be given two runs in the water trough. The better of the two runs will count as the official distance measurement. A maximum of five minutes will be given to complete the two runs. Adjustments will be allowed between the runs.
3. The rubber bands, which will be supplied at the time of the competition, must be installed at that time.
4. Each rubber band can be twisted no more that twenty times (One twist is defined as a 360 degree rotation of the rubber band. The paddle will have an X marked on one side to keep track of the rotations).



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Science Olympiad Division A Rulebook

Paddle Boat Cont.

5. The competition will take place as follows:
 - a. The boat must stay in contact with the water at all times.
 - b. The boat will be released by the contestant from the designated starting position in the water.
 - c. The distance traveled shall be recorded in centimeters.
 - d. Contestants will not be able to touch the paddleboat once it is released in the water.

Scoring: The team that goes the farthest will be the winner. In the event of a tie, it will be the paddle boat that goes the farthest and has the fastest time.



SAN JOAQUIN COUNTY
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Science Olympiad Division A Rulebook

Pentathlon

Description: Teams, consisting of 4 members, will compete in an event in with five stations. There will be four stations for individual team members to answer a science question and complete a physical task. The fifth station will be a cooperative activity completed by all 4 members.

A Team Of: 4 **Approximate Time:** 5 min
Impound: No **Visitors:** Yes

Teams: Teams must have 4 students. Students should wear athletic clothing and close toed shoes for completing physical task.

Event Managers: Will supply all materials to complete each station.

The Competition:

1. The course will be run as a relay for the first four obstacles and a cooperative team activity for the last obstacle.
2. Each obstacle must be completed before moving on. An example of a physical task is dribbling a basketball around a series of cones.
3. Each station will have multiple choice questions from one of the four study areas:
Physical Science: Periodic Table, Chemical Reactions, and Properties and States of Matter
(no other information will be given prior to the event)
Multiple choice questions will be shown and read in decreasing difficulty until one is answered correctly or after 5 missed questions. (see scoring below)
4. The event manager will tell the team what topics are at each station before team starts.
5. Once a team member completes both portions of the station, they must tag the next team member to continue.
6. When the four team members have completed their obstacles, they will join together at the fifth station to complete the cooperative-physical team activity.
7. Coaches and parents will not be allowed to enter the competition area.
8. This event may be held outdoors.



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Science Olympiad Division A Rulebook

Pentathlon Cont.

Scoring: The shortest time will determine the winning team. Time will be determined by the amount of time to complete the course added to the following time penalties for missing questions at each station.

At a station, if a student:

- | | |
|---|------------------|
| -answers their first question correct: | no time is added |
| -answers their second question correctly: | 2 seconds added |
| -answers their third question correctly: | 4 seconds added |
| -answers their fourth question correctly: | 6 seconds added |
| -answers their fifth question correctly: | 10 seconds added |
| -misses all 5 questions: | 15 seconds added |

Possible Question/Station:

- make a basket in the basketball hoop
- do 10 jumping jacks



SAN JOAQUIN COUNTY
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Science Olympiad Division A Rulebook

Robo Lab: Clean Up-2024

Description: This event will test students' skills in computer science and engineering.

A Team of Up To: 3 **Approximate Time:** 50 min

Impound: No **Visitors:** No

Teams: Must bring in one 8.5 X 11" two sided page of information, typed.

Event Managers: Students can prepare an engineering notebook beforehand. It may only be one page typed, no smaller than 10 point font, explaining your progress and decisions in building your robot.

Sign Up: There will be a sign-up link for this event. Please follow your section number for specific sign-up times.

The Competition: This event will have tables at which teams may build their robot. They must bring it to the testing zone to attempt the challenge.

Challenge:

Students will have 45 seconds for a robot to run autonomously from a starting point outside of the black line to move 5 blocks from the blue box to inside of the orange box.

Link to purchase kit: <https://education.lego.com/en-us/products/lego-education-spike-prime-set/45678/>

Scoring: Robot Performance Points:

10 Points will be award for each block inside of the orange box when the bell dings.

-3 Points will be taken for any block touching a line

10 extra points for any one block stacked on a second block.

20 extra points for any block stacked on top of two blocks.

-10 points lost if LEGOs not put back in order after competition

Engineering Notebook Points:

5 Points, a sketch of your idea

5 Points, two photos of other attempts

3 Points, clear explanation of how you improved

2 Points, listing of team responsibilities

5 Points, timeline of team progress



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Science Olympiad Division A Rulebook

Save the Ice

Description: In this event, students will construct a container, from a variety of provided materials that will prevent an ice cube from melting.

A Team of Up To: 2 **Approximate Time:** 50 min.

Impound: No **Visitors:** Yes

Teams: No outside resources will be allowed.

Event Managers: Will provide masking tape, a "Sharpie" marker, ice cubes of the same approximate shape and size, small plastic "Ziploc" bag (i.e., Snack Size), insulating materials (i.e., Styrofoam cups, Styrofoam chips, metal cans, plastic cups, newspaper, and fabric scraps.) In addition, the Event Manager needs to provide equipment to measure the water released from the melting ice cube (i.e., 10 mL Graduated Cylinder, 30 mL Graduated Cylinder, electronic balance, paper towels).

Competition: Participants will work together to place their ice cube in the provided "Ziploc" plastic bag. Construct an insulating container to limit the amount an ice cube melts over 30 minutes, using only the materials provided by the Event Manager. Seal the plastic bag containing the ice cube inside of their container and label it with their team name and number before their 15 minutes of construction time ends. Teams will wait 30 minutes, then upon the Event Supervisor's instruction they will bring their container to the Event Supervisor to be measured. Teams will remove the plastic bag and its contents from the container after the entire assembly has been weighed by the Event Supervisor. Carefully remove the ice cube from the plastic bag and pour the accumulated water into the measuring device provided by the Event Supervisor.

For this event, participants need to learn about the following topics:

- i. Basics of Thermodynamics (e.g., insulation, heat, energy, energy transfer)
- ii. Basic Chemistry (e.g., States of Matter, Temperature, Material Properties, Conservation of Energy)

For this event, Participants will need to practice using the engineering design process and a variety of materials to create an insulating container prior to attending the tournament.



SAN JOAQUIN COUNTY
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Science Olympiad Division A Rulebook

Save the Ice Cont.

Event Scoring:

- a. The lowest number of total points wins
- b. Participants will be awarded points based on:
 - i. the amount of water found in the plastic bag after 30 minutes x 50 points
 - ii. the total mass of the container x 50 points
- c. The Tiebreakers for this event will be the team with the lower efficiency rating for the container.
 - i. Amount of Water in the Bag/Total Mass of the Container Assembly
- d. Teams found to have repeatedly left stations messy or have damaged items provided at the discretion of the Event Supervisor may have up to 20% of their score added as a penalty.



SAN JOAQUIN COUNTY
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Science Olympiad Division A Rulebook

Simple Machines

Description: Participants will be asked to identify, use and answer questions about simple machines.

A Team of Up To: 2 **Approximate Time:** 50 min.

Impound: No **Visitors:** Yes

Competition: Each participant will move from one station to another for up to 15 stations. Each station will contain a picture or example of a simple machine. The student will be asked to identify the machine and answer a question about it, or use equipment to measure some variable such as length, force or weight.

The Simple Machines used are:

1. Lever
2. Inclined Plane
3. Pulley
4. Screw
5. Wheel and Axle
6. Wedge

Students **MUST** move at the indicated time to ensure that all teams have equal opportunity to use the equipment at each station (2 minutes per station). Answer sheets will be provided for participants.

Scoring: The scoring of the event will be based on the number of correct answers.

Sample Questions:

There is a drawing or a sample of a lever at a station. The student will be asked:

1. What simple machine is being used?
2. The point of support on this simple machine called _____?
3. What is the length of the effort arm in centimeters? _____

There is a setup of an inclined plane with a mass on it and a meter stick available.

1. What simple machine is being used?
2. Calculate a problem knowing that work equals force times distance.



SAN JOAQUIN COUNTY
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Science Olympiad Division A Rulebook

Straw Egg Drop

Description: Each pair of students will make a device of straws and masking tape, supplied on-site by the event supervisor, to hold a raw, large, grade-A egg. The device containing the egg will be dropped from a fixed height to a target.

A Team Of Up To: 2 **Approximate Time:** 45 min

Impound: No. **Visitors:** Yes

Teams: Teams may not bring in any supplies or materials.

Event Managers: Will supply:

20 plastic, non-flexible straws (brand will not be share before the event)

One meter of 1" masking tape

Scissors

Raw egg

The Competition:

1. Students will have 20 minutes to construct a device to cushion the egg and prevent it from cracking or breaking. They will have 10 minutes to drop the device from a height of 2-8 meters onto a target. No tape may be attached to the egg.
2. There will be ONE drop per team from the prescribed height.
3. Plumb lines will not be allowed during the competition.
4. This event may be held outdoors.

Scoring:

1. Teams whose egg is unbroken after the drop will be ranked ahead of all teams whose egg is broken.
2. Teams whose egg is broken during the drop will be ranked after all teams whose egg is unbroken.
3. Teams whose egg is broken before the official drop will drop the empty container and be ranked after all teams whose egg is broken during the drop.
4. Teams in each of the three groups above will be ranked by the distance measured from the center of the bulls-eye to the farthest edge of the container or the farthest edge of any parts thrown from the container (not the egg.)
5. The winning team will be the team whose egg does not crack or break AND is the closest to the target. In the event of a tie, construction time for building the containers will be the deciding factor.



SAN JOAQUIN COUNTY
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Science Olympiad Division A Rulebook

Water Rockets

Description: Prior to the competition, teams will construct (up to) two rockets designed to stay aloft for the greatest amount of time.

A Team of Up To: 3 **Approximate Time:** 10 min.

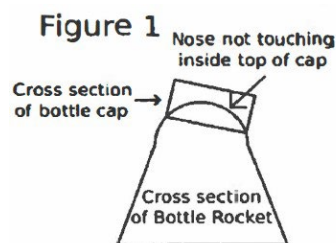
Impound: No **Visitors:** Yes

Teams: Must bring own eye protection. Students may bring repair kits containing tools, spare parts and extra parachutes. Teams from the same school may share a repair kit, but they may not share the same rocket or parachutes. Students should keep rockets labeled and stored with them in a safe container. Students will bring their rockets, repair kits and journals at assigned time. Each student is also required to turn in their own journal, documenting trials, errors, photos, lessons learned in the process of building device.

Event Managers: Will provide water rocket launcher, water and timers.

Construction:

1. Rockets must be made from a standard 2 liter soda bottle which is used to hold water and air pressure that propels the rocket when released. The structural integrity of the pressure vessel must not be altered in any way. This includes but is not limited to: physical, thermal, or chemical damage (holes, scratches, increasing the volume, restricting the bottle's opening, cutting, sanding, aluminum tape, using hot or super glues.) No glues of any type are allowed on the pressure vessel, but glue may be used on other parts of the rocket.
2. Only tape may be used to attach fins or other items to the pressure vessel. If the pressure vessel is covered in tape, paper or other material you may use glue to attach items to the covering as long as it doesn't distort or weaken the pressure vessel.
3. Commercially made rocket components, sharp/pointed objects, parts made from glass and metal are not allowed. (Note: a small metal swivel may be used for the parachute attachment.)
4. The nose of the rocket must be rounded at the tip and designed such that when a standard 2-liter bottle cap is placed on top of the nose, no portion of the nose touches the inside top of the bottle cap (see Figure 1). **Tip must be made of a softer material that is easily compressible by hand.**
*** CANNOT USE CAP END OF A BOTTLE AS A NOSE.**
5. Event managers will assess the integrity of the pressure vessel by looking for discoloration, bubbles, thinning or cuts in the walls of bottle. Alteration to the structural integrity of the pressure vessel is a safety violation of the rocket and it must not be launched as this is a safety issue.
6. Fins, parachutes and other items may be added to the outside of the bottle to increase the time aloft.





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Science Olympiad Division A Rulebook

Water Rockets Cont.

7. No solid weights like batteries, fishing weights or hard rigid items can be used.
8. Energy to propel the rocket must come only from the water and air pressure in the bottle. Other sources of potential or kinetic energy are not allowed. Only plain tap water may be used in the rocket. No other materials of any type may be put in the bottle or added to the water. A water level line may be marked on the bottle to aid in adding water.
9. Parts of the rocket may separate during flight, but they must remain attached by string or lanyard.
10. The rocket must be identified with the school and team name.

The competition:

1. Any parts found to be dangerous (glass or metal), illegal (commercially made rocket parts) or that prevent a rocket fitting on the launch pad must be removed before the rocket can be launched. Rockets that are changed to meet the construction requirements will not be penalized. Rockets that cannot be made to fit on the launcher or those that in the event manager's judgment are unsafe will not be launched.
2. A Pitsco launcher will be used.
3. Two launches will be allowed. Different rockets may be used for each launch. Students must use the water, launch pad and source of pressure provided by the event manager. The students will add the desired amount of water to the rocket before each flight and may make alterations or repairs to rockets between launches. **Outside assistance/coaching from the sidelines is not permitted and will be grounds for disqualification.**
4. The judges will pressurize the rocket to 75 psi. Anyone within 10 meters of a pressurized rocket must wear eye protection. Contestants may not hold their rocket during pressurization. Please do not exceed this pressure when practicing. Only coaches should pressurize the rocket.
5. Once a rocket has been pressurized it must be launched. **In case of high wind, rocket needs to be launched as quickly as possible.** It will be the supervisor's decision whether the flight should be considered as unofficial due to the weather conditions.
6. Have parachutes packed and rocket ready before placing on the launcher.
7. Students must not catch rocket on its descent. Catching the rocket will be means for disqualification.

Scoring:

1. Judges will measure and record the time aloft for each flight. Time starts when the rocket is launched and stops when any part of the rocket touches the ground, or any object in contact with the ground (tree or building.) Teams will be scored using only the flight that will produce the better score/rank.
2. Flights of rockets whose parts do not remain attached together during the entire flight or that cannot be changed to meet the construction requirements will be ranked by their time aloft, behind all flights of rockets without construction violations and whose parts remain attached.



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Science Olympiad Division A Rulebook

Water Rockets Cont.

3. Teams whose rockets cannot be launched for any reason will receive participation points only.
4. The longest time aloft wins. Ties will be broken using the team's lesser flights times. Teams with two flights will win ties over teams with only one flight.

Please note: Do not use parts of rockets from previous years. Judges may ask students how rocket was built. The students must have built the rocket.

Resources/Notes from EM: We suggest removing plastic ring near the opening so rockets fit on launch easier.
B/C connection: Bottle Rockets



SAN JOAQUIN COUNTY
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Science Olympiad Division A Rulebook

Wind Turbine

Description: Students will engineer (design/plan, create, test, improve) a wind turbine, specifically the blades of the turbine.

A Team of Up To: 2 **Approximate Time:** 8 min.

Impound: No **Visitors:** No

Teams: Will bring in pre-built device.

Construction:

- a. Students will attach 3 wooden skewers (12") to a cork
- b. This will then be attached to a sharpened wooden dowel (1/4" diameter)



- c. A wooden spool will be attached to the wooden dowel, about 4 cm behind the cork.
- d. The free end of the wooden dowel will be inserted into a straw that has been taped to a table.
- e. String: one end of a piece of string will be taped to the wooden dowel. The other end will reach the floor where it will be attached to a small container.
- f. A fan, such as a box fan, will be placed in front of the device.
- g. Students will create 3 blades that attaches to the skewers (1 blade per skewer). You may use any type of adhesive to attach the blades.
- h. Goal: to design blades that cause the turbine to spin when the fan is turned on. The turbine must lift the container.
 - i. The container will be filled with pennies.
 - ii. The more pennies lifted to the top, the better your score.

Wind Turbine Cont.



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Science Olympiad Division A Rulebook

The Competition:

- a. On the day of the competition, bring only your pre-built device (cork, skewers, blades). You do not need the wooden dowel or spool.
- b. You will be given 8 minutes to complete up to 2 Trials.
 - i. To begin, you must insert your device into the provided straw taped to a student desk and arrange the pedestal fan.
 - ii. You may adjust the height, angle, and distance of the fan.
 - iii. The pedestal fan must be at least 50 cm from the student desk.
- c. You will add your predetermined number of pennies to the container. As you add one penny at a time, you will count out loud so the event supervisor can monitor.
- d. You will then turn the fan to its highest setting.
- e. Trial 1 is complete.
- f. You may attempt a second trial if time permits.

Scoring:

- a. The number of pennies lifted to the spool equals your score.
 - i. The best trial will be used
- b. Tiebreaker: the weight of your device (cork, skewers, blades)
 - i. The lighter the wind turbine will break the tie.

Resource: (Youtube video): <https://www.youtube.com/shorts/WHa1qorbp88>

- a. Sample Score Sheet

Trial	Was the container lifted to the top?		Number of Pennies Lifted to the Top
	Yes	No	
1			
2			

Mass of the device (cork, skewers, blades) _____ gram



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Science Olympiad Division A Rulebook

Write It/Do It

Description: Technical writing skills are an important part of an engineer or scientist's abilities to communicate precisely and clearly. This event will test a team's ability to effectively communicate by having one team member write a description of how to build a device and having his or her partner re-construct the device from raw materials.

A Team of Up To: 2 **Approximate Time:** 50 min.

Impound: No **Visitors:** No

Teams: Teams must bring a writing instrument. No other resources are allowed.

Event Manger: Will provide paper and all necessary materials.

The Competition:

1. This event will occur in two rooms so that the builders are held while the describers are writing.
2. One team member (the writer) is shown an object (which may be abstract) built from, but not limited to science materials, inexpensive materials (straws, push pins, Styrofoam balls, paper cups, popsicle sticks, etc.) or commercial sets (K'nex, Tinker Toys, Lego, Lincoln Logs, etc.)
3. The "object" will be the same for all teams.
4. A maximum of 20 pieces will be used.
5. No extra pieces will be added to the "do" portion.
6. The writer has 25 minutes to write a description of the object and how to build it. There will be no advantage to finishing early.
7. Only words and numbers may be used. Pictures, symbols, drawings and diagrams are not allowed, with the exception of common punctuation and editing symbols. Punctuation marks and/or editing symbols that can be produced on a keyboard by pressing a single key or a single key along with the shift key may be used as long as it is used in their normal context and not as symbols to form a key or code.
8. All abbreviations must be defined either at the beginning or when the abbreviation is first used.
9. The event leader will pass the description to the other team member (the doer) who will use the description to re-create the original object in twenty (20) minutes.

Scoring:

1. The team that builds the object most like the original object and has properly written instructions wins.
2. Points will be given for each piece of material placed in the proper connection and location compared to the model.
3. Time for the construction phase will be used as a tiebreaker.