



MICHIGAN 4-H SCIENCE EXPO

DATE & TIME:

Saturday August 26, 2017
Registration 8:00 a.m.
Contests begin 8:30 a.m.
Awards Ceremony 3:30 p.m.

LOCATION:

Anthony Hall
Michigan State University
474 S Shaw Lane
East Lansing, MI 48823

REGISTRATION FEE: \$15

Optional lunch \$10.50

Science Expo Contests

Animal and Veterinary Science
Biology
Environmental and Earth science
Forestry
Health and Food Science
Physical science
Plant Science
Robotics
Technology & Engineering
Wildlife Habitat Education Program



WHO SHOULD ATTEND:

Michigan 4-H members enrolled in science projects, ages 9-19

DESCRIPTION:

The Michigan 4-H Science Expo is an educational contest for 4-H members engaged in a wide range of science project areas to showcase their skills in exploration, discovery, problem solving, and research.

HOW TO REGISTER

Register online by July 31, 2017 _____

CONTACT:

Betty Jo Krosnicki
nashbett@msu.edu or 810-648-2515

SPONSORS:

Michigan 4-H Youth Development Programs, which is part of Michigan State University Extension

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Michigan 4-H Science Expo continued

Michigan 4-H Science Expo includes state qualifying contests for national competitions for:

⇒ Forestry
⇒ Wildlife Habitat Education Program

The purpose of the Michigan 4-H Science Expo is for members to develop an understanding of the world around them and how they can use things like the process of science to answer questions and research ways to improve their world.



Through participation in the Michigan 4-H Science Expo, 4-H members will:

- ◆ Understand how their 4-H projects connect to the world of science
- ◆ Gain exposure to career pathways in science
- ◆ Have fun learning
- ◆ Build networks with other members and 4-H leaders across Michigan who are engaged in science projects and programs

Schedule of Events

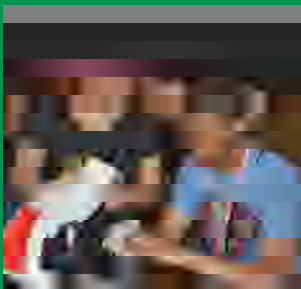
Saturday, August 26, 2017

- | | |
|----------------|--|
| 8:00 a.m. | Registration in lobby of Anthony Hall |
| 8:30 a.m.-noon | Contests begin: demonstrations, posters, exhibits
<i>please be sure that all of your entries are judged by noon</i> |
| 9 a.m.-noon | Michigan 4-H Forestry Contest |
| 9 a.m.-noon | Michigan 4-H Robotics Contest |
| 9:30 a.m.-noon | Michigan 4-H Wildlife Habitat Contest |

Lunch at Shaw Hall

- | | |
|---------------|--------------------------------------|
| 1 p.m.-3 p.m. | Science Challenge (all participants) |
| 3:30 p.m. | Awards Ceremony |

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Michigan 4-H Science Expo Contests

The goal of the Science Expo is for members to develop an understanding of the world around them and how they can use things like the scientific method to answer questions and research ways to improve their world.

4-H Science Expo contests will include:

- State 4-H Forestry Contest
- State 4-H Wildlife Habitat Education Program Contest
- State 4-H Robotics Challenge Contest
- 4-H Science Exploration Contest with range of content topics including:
 - Animal and Veterinary Science
 - Biological Science
 - Environmental and Earth Science
 - Health and Food Science
 - Physical Science
 - Plant Science
 - Technology and Engineering

General Rules & Regulations

Guidelines and rules for each contest are outlined in the following pages.

Age and Eligibility

1. Any 4-H member may participate in the State 4-H Science Expo.
2. Exhibitors must be Michigan 4-H members aged 9 to 19 as of January 1, 2017, to participate in the 4-H Science Expo.
3. Each contest will be divided by age. Forestry and Wildlife Habitat Contests will have Junior (9-13 years old) and Senior (14-19 years old) division. Robotics, Demonstration, Exhibit, and Poster contests will have a Junior (9-11 years old), Intermediate (12-14 years old), and Senior (15-19 years old) division. The age you enter on your entry will determine the divisions you will be entered in each contest.
4. Persons requiring special accommodations are encouraged to attend. Please indicate on your contest registration if there are special accommodations requested. Every effort will be made to meet accommodation requests.

Entry Procedures and Fees

5. All entries must be submitted on the MSU Extension Events Management System by **July 31, 2017**. Other forms will not be accepted.
6. Participants will not be allowed to add or change contest entries on the day of the event. Participants will only be allowed to drop contests.
7. Participants may enter only 1 of the following: Forestry, Robotics, and Wildlife Habitat Contests. These contest times overlap, and will each take at least 2 hours; participants will not be able to complete the activities of more than one in the allotted time. Participants in each of these contests may enter a Science Exploration contest, but will need to be certain to complete the judging for Science Exploration prior to the start time of their other contest.

8. There is a \$15 per person participant fee for all State 4-H Science Expo participants. All entry fees must be paid prior to the event date. Payment may be made on the registration system at the time of entry via credit card or paid by cash or check at your county MSU Extension Office. Entries without payment by the date of the event will be disqualified. There will be no refunds given.
9. All participants must have a completed Media/Medical release on file in the 4-H Online enrollment system.

Team Registration

10. The following contest areas will include the opportunity for team participation: Robotics Challenge.
11. Counties may enter 1 or more teams per age division for each contest.
12. Teams may consist of participants from more than one county.
13. Participants will have the opportunity to identify their team of 3-5 members for this contest on the entry form. All participants are welcome to enter these contest areas, regardless if you do not have teammates identified; but it is encouraged to enter with an established team if possible.
14. Participants entering a team contest with less than 3 members on their team will be matched up with other participants to create a complete team.
15. All Science Expo participants must submit an individual entry form. On the entry form, the participant should identify any contests they are entering as a team.

Judging Procedures and Awards

16. The 8:30- 9:30 judging time slots in the Science Exploration contests will be reserved for participants entered in Forestry, WHEP, and Robotics contests in order to ensure they are completed before their other contests begin.
17. Each contest will be judged based on the rubric for the specific contest.
18. Forestry and WHEP contests will be judged on accumulation of points from each portion of the contests.
19. Robotics Challenge Contest will be judged on the ability of the robot to accomplish the assigned challenge. Points accumulated based on the ability of the robot to accomplish the assigned challenge.
20. Science Exploration contests will be judged based on use of the process of science in their research or experiment and their presentation of their findings.
21. All participants will receive ribbons for each contest in which they participate. Medals will be awarded for 1-5 place in each age division of each contest.

Sportsmanship, Fair Play and Humane Treatment of Animals

22. Exhibitors and guests shall at all times conduct themselves with honesty and good sportsmanship.
23. Exhibitors are required to present and care for animals in a human and ethical manner.
24. Any misuse of MSU property will result in the eviction of the exhibitor and his or her exhibits from the showroom and the forfeit of all awards the person has won.
25. Judges' scores are final. Participants are welcome to receive further explanation from judges, but scores will not be changed. Argument with judges by participants, parents, volunteers, or guests will not be tolerated.

26. Any questions, complaints, or suggests not covered in the general rules or in specific contest rules should be discussed with the organizing committee. All decisions by the committee are final.

Helpers

27. Counties will be required to provide 1 helper/5 participants. These helpers will serve in various capacities for example helping youth navigate the contest format and scoring.

28. Entries will not be accepted from counties which do not provide helpers. Please be sure to indicate the names of your county helpers on the attached steward sheet.

Michigan 4-H Science Expo Planning Committee

Betty Jo Krosnicki
Dorothy Munn
Tracy D'Augustino
Kathy George
Lori Warchuck
Mary Taylor
Kristy Oosterhouse
Dixie Sandborn
Cady Wallace
Devyn Barnette
Kathy Fischer
Alexis Marsh

Michigan 4-H Forestry Contest

Do you believe that conservation and management of trees is important?
Do you enjoy spending time outside in the woods?
Do you have interest in learning how to identify and measure trees?
If so, the 4-H Forestry contest might be just the thing for you!



Who: Michigan 4-H Members; Junior division 9-13 years old, Seniors division 14-19 year old

What: Michigan 4-H Forestry Contest

When: Saturday, August 26, 2017 9 a.m.-12pm during the Michigan 4-H Science Expo

Where: Michigan State University's Anthony Hall and Baker Woodlot

Why: Develop leadership skills; appreciate the need and importance of conserving natural resources; learn about career opportunities in the science, technology, engineering and math (STEM) fields while developing practical forestry skills; demonstrate forestry contest skills. Top scoring individuals may be invited to represent Michigan 4-H at future National 4-H Forestry Invitational Contests.



Michigan 4-H Forestry Contest Activities

- Tree Identification
 - Identify 25 trees and be judged on the accuracy of the identification and spelling of common names. Scientific names will not be required.
- Tree Measurement
 - Identify 15 trees and estimate their diameters, merchantable heights and volumes (diameters will be estimated to the nearest even-number & heights will be estimated to the nearest full half-log).
- Compass & Pacing
 - Estimate ground distances by the pacing method and determine the direction of travel using a compass. Each youth will measure a course of five lines.
- Insect/Disease Identification
 - Identify 20 insect, disease or damage specimens. Accuracy of identification and the spelling of common names will be used in judging.

Resources

To prepare for the Michigan 4-H Forestry Contest, participants should study the [National 4-H Forestry Handbook](#)

(<http://4hforestryinvitational.org/training/training/N4HFI%20Handbook%202016.pdf>).

Additional training materials can be found on the National 4-H Forestry Invitational website at: <http://4hforestryinvitational.org/training>.

Equipment

Forestry tools and hard hats will be provided.

Please bring

The contest will be held rain or shine, so dress according to the weather and be prepared to be outdoors. Wear closed-toed shoes, bring safety glasses and long pants. Sunscreen, rain gear, insect repellent are advisable. Contestants will walk from the building to the contest site (about ¼ mile); please wear shoes for walking.

Electronic devices including cell phones, calculators or computer watches are not allowed.

Questions

Contact Dorothy Munn munnnd@msu.edu or Tracy D'Augustino daugustt@msu.edu



Michigan 4-H Wildlife Habitat Education Program Contest

Are you interested in learning more about wildlife?

Do you believe that conservation is important provide wildlife habitat?

Do you enjoy spending time in nature?

Do you have interest in learning about careers working with fisheries and wildlife?

If so, the 4-H Wildlife Habitat Education Program contest might be just the thing for you!



Who: Michigan 4-H Members; Junior division 9-13 years old, Seniors division 14-19 year old

What: Michigan 4-H Wildlife Habitat Education Program Contest

When: Saturday, August 26, 2017 9:30 a.m.-12pm during the Michigan 4-H Science Expo

Where: Michigan State University's Anthony Hall and Baker Woodlot

Why: The WHEP program fosters relationships between youth and people who have careers working in wildlife management fields such as wildlife and fisheries biologists, MSU Extension professionals as well as volunteers. Youth will learn more about wildlife, habitats and habitat practices while being coached by 4-H leaders.

Contest participants will have an opportunity to develop leadership; appreciate the need and importance of conserving natural resources; learn about career opportunities in the science, technology, engineering and math (STEM) fields; develop practical wildlife management skills. Top scoring individuals may be invited to represent Michigan 4-H at future National 4-H WHEP Contests.



Michigan 4-H Wildlife Habitat Education Program Contest Activities

Demonstrate skills by participating in the following contests focused on the Eastern Deciduous Forest Region:

- Wildlife Identification
 - Answer questions about the wildlife found in this region. Scientific names will not be required.
- Wildlife Management Practices
 - Juniors will work as a team to identify wildlife management practices which benefit selected wildlife species.
 - Seniors work individually to evaluate habitat & recommend wildlife management practices for selected wildlife species at a designated management site.
- Wildlife Challenge
 - Youth will be presented with a photo or other visual clue for responding to a management concepts, terms or habitat questions. Questions can be multiple-choice, true/false, matching or fill-in-the-blank.

Resources

To prepare for the Michigan 4-H Wildlife Habitat Education Program Contest, participants should study the [National WHEP Manual](http://www.whep.org/National_WHEP_Manual.html) (http://www.whep.org/National_WHEP_Manual.html). Additional training materials can be found on the National 4-H WHEP website at: <http://www.whep.org/>.

Equipment

Clipboards, pencils, and hard hats will be provided.

Please bring

The contest will be held rain or shine, so dress according to the weather and be prepared to be outdoors. Wear closed-toed shoes, bring safety glasses and long pants. Sunscreen, rain gear, insect repellent are advisable. Contestants will walk from the building to the contest site (about ¼ mile); please wear shoes for walking.

Electronic devices including cell phones, calculators or computer watches are not allowed.

Questions

Contact Dorothy Munn munnnd@msu.edu or Tracy D'Augustino daugustt@msu.edu



Michigan 4-H Robotics Challenge Contest

This event is an opportunity for youth who have been learning about robotics to demonstrate their learning, celebrate accomplishments, and interact with others who share an interest in robotics. The most important thing is to have fun.



Who: Michigan 4-H Members ages 9-19 years old; contestants will participate in a team of 3-5 youth in the same age division

What: Michigan 4-H Robotics Challenge Contest

When: Saturday, August 26, 2017 9:00 a.m.-12pm during the Michigan 4-H Science Expo

Where: Michigan State University's Anthony Hall

How: The 4-H Robotics Challenge will be a real time challenge. This means that teams and their coaches/chaperones will not know in advance of the event day what the challenges are. After check-in and set-up, the teams will gather together for the Challenge Release for their specific Challenge. Everyone will receive the details of the tasks their robots must accomplish at the same time. Time has been allotted for questions and clarification. After the challenge release, each team returns to their pit area to design, build, and program their robots that can complete the tasks outlined in the challenges. At the end of the work time, teams will demonstrate their engineering skills in the Challenge Events. The Challenge Events will take place near the pit areas for each division.



Michigan 4-H Robotics Challenges

There will be one challenge for each of the divisions. Team members will have to decide how to divide their time between designing, building, and programming to accomplish their division challenge.

LEGO Mindstorms Senior Division (teams of 15-19 year olds)

Uses the LEGO Mindstorms EV3 brick. It does NOT use the FLL or FTC playing field or any of its missions. The Challenge requires a team to design and build a robot that can accomplish a specific set of tasks. Points will be awarded based on how much of the challenge the robot

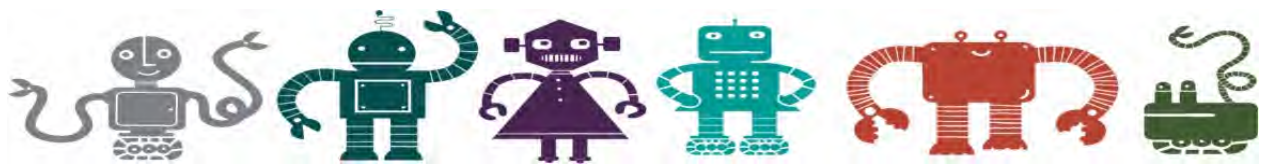
accomplishes. During the Challenge Release each team will receive a sheet detailing the tasks and providing a point breakdown. The 4-H program will check-out one LEGO Mindstorms EV3 robotics kit including all necessary pieces, along with a laptop for programming with the EV3 software, to each team. *You may NOT bring your own robot or laptop or use any of your own LEGO pieces.* We recommend that all teams spend time working with sensors before the event. The advanced division challenge will require the use of sensors.

LEGO Mindstorms Intermediate Division (teams of 12-14 year olds)

Uses either the LEGO Mindstorms EV3 or NXT brick depending on availability. It does NOT use the FLL or FTC playing field or any of its missions. The Challenge requires a team to design and build a robot that can accomplish a specific set of tasks. Points will be awarded based on how much of the challenge the robot accomplishes. During the Challenge Release each team will receive a sheet detailing the tasks and providing a point breakdown. The 4-H program will check-out one LEGO Mindstorms EV3 or NXT robotics kit including all necessary pieces, along with a laptop for programming with the EV3 or NXT software, to each team. *You may NOT bring your own robot or laptop or use any of your own LEGO pieces.* We recommend that all teams spend time working with sensors before the event; however, the Intermediate Division challenge can be accomplished without the use of sensors (although it may be easier to use sensors).

Junk Drawer Division (teams of 9-11 year olds)

Does NOT use the LEGO platform. This challenge will test your team’s engineering and teamwork skills by providing a situation and common materials to work with. Each team will be given a drawer full of materials (examples include rubber bands, cardboard, paperclips). These materials will be used to build a robot capable of accomplishing a specified task. Points will be awarded based on how much of the challenge the robot accomplishes. During the Challenge Release, each team will receive a sheet detailing the tasks and providing a point breakdown. The 4-H program will provide all the “junk” you need to build your robot. You may ONLY use materials provided in the drawer.



Event Schedule (subject to change)

8:30 a.m. Robotics teams can begin check-in, set-up pit area, check out equipment

Junk Drawer Challenge	Intermediate LEGO Challenge	Advanced LEGO Challenge
9:00 a.m. Challenge Release	9:15 a.m. Challenge Release	9:30 a.m. Challenge Release
9:15 a.m. – 11:15 a.m. Work on Challenge	9:30 a.m. – 11:30 a.m. Work on Challenge	9:45 a.m. – 11:45 a.m. Work on Challenge
11:15 a.m. Begin Judging	11:30 a.m. Begin Judging	11:45 a.m. Begin Judging

Immediately following judging: Teardown, clean up pit areas, neatly arrange equipment and return it

Eligibility

1. Team registration is taken on a first come first serve basis through July 31, 2017. The first 20 teams to register for the LEGO Mindstorms divisions will be able to participate. All other teams will be placed on a waiting list. There is no team limit for the Junk Drawer Challenge.
2. All team members must be between the ages of 9-19 as of January 1, 2017.
3. All 4-H Science Expo participants (including robotics teams) must be enrolled 4-H members and registered in the 4-H Online Enrollment system.
4. Teams must have no fewer than 3, and no more than 5, members participating.
5. Team members who are participating in the LEGO Mindstorms divisions need to be proficient with the LEGO Mindstorms NXT or EV3 platform before the event begins.
6. All teams need to have one adult coach/chaperone that is 18 years of age or older and not participating as a team member.



Scoring Overview

Each division will have its own scoring sheet which teams will receive when the challenges are released. Each division has its own challenge (LEGO Advanced, LEGO Intermediate, Junk Drawer). Upon check-in, each team will be designated a number and receive a schedule detailing when their team's robot will be run. Judges will record points during each team's run. Each division is scored separately and awards are assigned separately. There will be one champion in each division.

Equipment

Building materials and laptops will be provided. **Please do not bring your own LEGO kits, laptops, or extra junk drawer supplies.**

Supplies Check out – Teams will be required to check out a kit of supplies for their respective challenge and a laptop for the LEGO challenge teams. After the event, teams will be required to disassemble their LEGO robots and Junk Drawer robots, put every piece back in the proper compartment, and return them to the equipment check-out station. Volunteers will verify that the equipment is sorted properly. If not, the team will be instructed to take the kit back and finish sorting it. ***TEAMS MAY NOT LEAVE UNTIL ROBOTICS CHALLENGE STAFF HAVE SIGNED OFF ON THEIR EQUIPMENT CHECK OUT AGREEMENT.*** Please plan sufficient time at the end of the event to clean up and return equipment before leaving.

Please bring

1. Team display (optional)—to decorate your pit area (table) and showcase the great things you're doing and learning in 4-H. This display can take any form team members choose. It could be a tri-fold display with pictures and text, but it need not be. Other possibilities could include ribbons and pictures of achievements to display on pit walls and tables, a slide show

with captions, a video, materials produced for robotics research if you have done any, or any other creative ideas you come up with.

2. Robot garages—It will happen. Someone will drop their robot and watch the parts explode in a million directions. It's not pretty. Please bring a plastic container large enough to carry your robot during the event. If it drops, you have a better chance of collecting all the parts and reassembling the robot.
3. Knowledge of how to build and program for your specified division. You will not have time to learn how to build and program the LEGO robots at the event and having some prior experience with engineering or putting “junk” items together will help for the Junk Drawer Division. We will have limited technical advisors available who can help team members think through troubleshooting problems.
4. Your teamwork and engineering skills—this is your chance to show them off, be innovative, creative, collaborative, and demonstrate your ingenuity.
5. A great 4-H attitude!

Role of the adult coach/chaperone

This is the kids' event! Thank you for all the hard work you do to make these amazing experiences and learning opportunities available to 4-Hers. Now is the time to watch with pride as they pull it all together and show their stuff. You are here to supervise and provide guidance and encouragement. If you, the adult, find the prospect of designing, building, or programming robots simply too enticing to resist, you will receive a warning from event staff. If you still cannot resist the temptation to be overly involved in the process, you will be asked to leave the pit area and watch from the spectator area while an event volunteer takes over your role of providing adult supervision. Such a request is non-negotiable and failure to follow it will result in disqualification of your team. Removal of a team coach in no way disadvantages the kids who are supposed to be building their robots on their own anyway.



Resources

At the event: we will have a limited number of technical advisors to offer limited assistance with computer, programming, or component problems. Volunteers and 4-H staff will also be available to answer questions about and clarify the challenges. We want you to have fun, learn something, and discover the amazing things you can do. We will do everything possible to make this a fun and educational experience while keeping the playing field level. So if you have a question, ask!

Questions

Contact: Kristy Oosterhouse at oosterh6@anr.msu.edu or 517-543-2310.

Michigan 4-H Science Exploration Contest

The 4-H Science Expo Contest is an educational contest for 4-H members engaged in a wide range of science project areas to showcase their skills in exploration, discovery, problem solving, and research. The purpose of this contest is for members to develop an understanding of the world around them and how they can use the process of science to answer questions and research ways to improve their world.



Who: Michigan 4-H Members ages 9-19 years old; junior division (9-11 years old), intermediate division (12-14 years old), senior division (15-19 years old)

What: Michigan 4-H Science Exploration Contest

When: Saturday, August 26, 2017 8:30 a.m.-12pm during the Michigan 4-H Science Expo

Where: Michigan State University's Anthony Hall

How: 4-H members will share their exploration of a science related problem or question through a poster, demonstration, or display/exhibit. The 4-H Science Exploration Contest will be divided by content topics:

- Animal and Veterinary Science
- Biological Science
- Environmental and Earth Science
- Health and Food Science
- Physical Science
- Plant Science
- Technology and Engineering



Animal and Veterinary Science

The Animal Science project provides an opportunity to share what 4-H members have learned about an animal and its care and management. Participant does not need to own an animal to enter an exhibit in this content area. **No live animals to be brought to contest.** The Veterinary Science project allows 4-H'ers to share specifics they have learned within the broad scope of Veterinary Medicine including learning about basic animal anatomy, physiology, sanitation and causes of diseases and immunology. Participants can showcase what they have learned of the discipline and art of prevention, cure or alleviation of disease and injury of animals.

Biological Science

Biological Science projects provide opportunities for 4-H members to learn about the living world. Participants can explore topics such as aquatic and marine science, entomology and beekeeping, and embryology. Exhibits can showcase what was learned of the life cycle, how genetics are transferred through DNA, or the benefits of some insects.

Environmental and Earth Science

Environmental and Earth Science projects provide opportunities for 4-H members to learn about natural resources, fisheries and wildlife, soils, and outdoor recreation. Participants can explore topics such as bioenergy, the relationship of people to the environment, water and wetlands, geology and minerals, recycling, forestry. Outdoor recreation projects may include fishing, hiking, backpacking, canoeing, kayaking, and orienteering.



Health and Food Nutrition Science

Health and Food Nutrition Science projects provide opportunities for 4-H members to learn about fitness, safety, and cooking. Participants can explore topics such as food preservation, emergency preparedness, and preparing healthy food. Exhibits could showcase what was learned of the consequences of unhealthy behaviors, science of human diseases, the effects of ingredient choices in a recipe.

Physical Science

Physical Science projects provide opportunities for 4-H members to learn about the natural laws that relate to nonliving objects. Physical Science includes chemistry, physics, astronomy, electricity, and energy. Exhibits could showcase what was learned of the action of shooting a gun, discovering the science of creating art, and how the properties of different items interact with each other.

Plant Science

Plant Science projects provide opportunities for 4-H members to learn about crops, vegetables, horticulture, and gardening. Participants can explore topics such as weeds, flowers, house plants, agronomy, fruits and vegetables. Exhibits can showcase what was learned about pest control, soils, plant varieties, equipment.

Technology and Engineering

Technology and engineering projects provide an opportunity for 4-H members to explore the broad scope of how and why things work. Participants learn how to question, invent, design, create, and operate objects. They can explore topics such as aerospace, computer and digital technologies, engines, transportation, global positioning systems, geographical information systems, mechanics, robotics and electronics. Participants can showcase what they have learned of designing and constructing an object. Internet sites must have a sample of the printouts of the web pages with the complete URL addresses. The website should be fully functional and accessible during judging.

Science Exploration Contest Entries

Participants may have a maximum of 10 entries in the Science Exploration Contest in any combination of project areas and presentations. Participants must present/interview with the judge for each entry in order to be scored.

Please be mindful if you are entering the Forestry, WHEP, or Robotics Challenge Contests that these contest times overlap with judging for Science Exploration Contests. There will be a limited number of judging slots in the Science Exploration Contest set aside first thing in the morning for participants entered in one of the other contests to complete judging in Science Exploration before the other contests begin.

	Poster	Demonstration	Display/Exhibit
Animal and Veterinary Science	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds
Biological Science	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds
Environmental and Earth Science	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds
Health and Food Science	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds
Physical Science	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds
Plant Science	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds
Technology and Engineering	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds	9-11 year olds 12-14 year olds 15-19 year olds



Science Exploration Contest Guidelines

All entries in the Science Exploration Contest will include an interview with the judge. Participants will use either a poster, demonstration, or exhibit an item they have created to showcase what they have learned. All Science Exploration Contest entries should include these elements of the process of science:

- Exploration and discovery—asking questions, developing hypothesis, making observations, sharing observations and ideas, and research and learning on topic
- Testing ideas—experimenting, recording

observations, interpreting observations, explaining what observations make me think, and how have observations made me change what I think

- Benefits and outcomes-questions answers, curiosities satisfied, reflection on your experience, and additional learning you wish to explore
- Community analysis and feedback-talking about your idea, listening to other's ideas, having others repeat your investigation, and coming up with new questions or ideas

For additional information on the using the process of science, review these resources:

➤ *Understanding Science* at www.understandingscience.org.

Understanding Science. 2017. University of California Museum of Paleontology. 10 March 2017 <<http://www.understandingscience.org>>.

➤ Next Generation Science Standards at: <https://tinyurl.com/gkwltad>.

Additional items to address in your presentation of your project through a poster, demonstration, or item you have created:

- Include an explanation showing the steps used in designing the project or experiment, including a list of supplies and materials. Be sure to explain any variables in your experiment.
- Discuss evolution of your project from initial question through revisions of experiment or design through research and testing. How many times did you test your experiment or design?
- Explain the purpose that the project or solution to the question can serve. What conclusions did you reach?
- A list of resources used for the project. Be sure to use proper citation when referencing other people's work.



Presenting your Science Exploration Project

- All posters should be either 14"x22" or 22"x28".
- If displaying an exhibit you have created, engineered, or built be sure your display is no larger than 4 feet wide, 3 feet deep, and 6 feet tall. These parameters are the maximum size; your project can be any size as long as it does not exceed the maximum. Participant is responsible for transporting and moving own exhibit. Examples of projects you may wish to exhibit; this is not an exclusive list, use your imagination: a birdhouse you have designed and built, a container garden, a robot (not associated with the robotics challenge), an entomology collection, or an assembled skeleton of an animal.
- Demonstrations should be presented in front of the judges using proper lab safety procedures, and should not last any longer than 10-minutes. There must be a report of the demonstration explaining how the demonstration was performed and what was learned from the demonstration, pictures are encouraged. Materials from the demonstration should be displayed in the exhibit area after the conclusion of the demonstration.
- A computer/projector will be available to use in judging room should you choose to present your project through this avenue. You may bring your media on a flash drive. You may bring our own electronic devices to judging if you prefer.
- It is recommended that all presentations be printed out on a hard copy should there be a malfunction of hardware or software.

2017 State 4-H Science Expo Evaluation Form

Participant's Name _____ County _____

Project Area _____ Age Division _____

Application Section	Excellent 5	4	3	2	Needs Improvement 1
Process of Science Is there evidence that the participant used scientific processes to question, research, and investigate their topic? Does the participant provide details of the processes and procedures used?					
Conclusions Does the participant provide facts, research, results from experimentation, or other proof to justify any conclusions they have reached? Are the stated conclusions reasonable based on the results?					
Validity of Information Does the participant provide citation of their research sources? Is the participant able to communicate how they determined the credibility of their sources?					
Creativity and Innovation Has the participant conducted original research? Have they reached a new solution to a problem? Do they seek ways to creatively learn?					
Communicating Results How well did the participant present their project? Did they provide clear explanations? Did they use appropriate voice projection and body movements?					

Score (Total scores from above) _____

Reviewer's Comments:

Strengths

Areas to Improve

VOLUNTEERS (ADULT AND/OR YOUTH)

Many volunteers are needed to help during the State 4-H Science Expo. Each county is required to provide one helper for every five youth participants entered from the county. Experience is not required. All Volunteers are to report to the registration table before the contests begin.

**To be completed and returned to Betty Jo Krosnicki by your county 4-H office by August 1.
Registrations received with no Volunteers registered will not be accepted.**

COUNTY: _____

VOLUNTEER'S NAME: _____

ADDRESS: _____

CITY, STATE ZIPCODE: _____

PHONE NUMBER: _____

EMAIL ADDRESS: _____

ADULT OR TEEN: _____

VOLUNTEER'S NAME: _____

ADDRESS: _____

CITY, STATE ZIPCODE: _____

PHONE NUMBER: _____

EMAIL ADDRESS: _____

ADULT OR TEEN: _____