Science, Engineering, Technology - SET

ELECTRICITY

Each exhibit piece must be labeled with the member's name, county and class number. If more than one article is contained in the exhibit each article must be labeled with the member's name, county and class number and number items 1 of 2, 2of 2, etc. This may be done with masking tape, by attaching an index card, or writing directly on the back with a marker. All the articles that comprise the exhibit must be attached to each other or contained in a zip-closure bag.

To qualify for judging an *Electric Energy Explanation Sheet (862-02 Revised 9/2016)* must be attached to the exhibit. Forms are available at the county Extension offices and at the State 4-H website: http://oregon.4h.oregonstate.edu/special-events/state-fair/cm-set

In addition, intermediates and seniors must include a schematic or circuit diagram of the electricity project. Refer to the 4-H Electric Series Level 2 book Investigating Electricity and the interactive e-learning modules for Activities 5 and 6 and Activities 7-9 posted at **http://oregon.4h.oregonstate.edu/projects/sci-tech-eng/electricty.** The Level 4 book Entering Electronics will also be a useful reference for this requirement.

The exhibit may be a poster or a three-dimensional display. Individual exhibits are **limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high.**

862 100 1 _ _ Electricity, Level 1
862 100 2 _ _ Electricity, Level 2
862 100 3 _ _ Electricity, Level 3
862 100 4 _ _ Electricity, Level 4

862 101 1 _ _ Education Poster - Electricity, Level 1
862 101 2 _ _ Education Poster - Electricity, Level 2
862 101 3 _ _ Education Poster - Electricity, Level 3
862 101 4 _ _ Education Poster - Electricity, Level 4

Note: Fill in blank in class number (__) with one of the following numbers.
11 **Junior**, First year in this project area
21 **Other Junior**
12 **Intermediate**, First year in this project area
22 **Other Intermediate**
13 **Senior**, First year in this project area
23 **Other Senior**
34 **Club Exhibit**

862 100 1 _ _ Electricity, Level 1
An exhibit on any electricity topic youth learned about in Electric Excitement Level 1 Magic of Electricity addressing any of these themes: workings of an incandescent light bulb, workings of a switch, conductors, insulators, open/closed circuits, series or parallel circuit design, magnesium, workings of a compass, use of a galvanometer, workings of a motor.

862 100 2 _ _ Electricity, Level 2
An exhibit on any electricity topic youth learned about in Electric Excitement Level 2 Investigating Electricity addressing any of these themes: direct and alternating current, workings of a Volt-Ohn meter, Ohm's Law, conductors, insulators, wiring diagrams, measuring voltage, circuits, momentary switches, three-way switches, soldering, "build a burglar alarm."

862 100 3 _ _Electricity, Level 3
An exhibit on any electricity topic youth learned about in Electric Excitement Level 3 Wired for Power addressing any of these themes: electrical tools, electrical meter, identify wire and cable symbols, light bulbs, appliance nameplate information, electricity usage, receptacles, circuits, grounded and non-grounded outlets, an explanation of wall switch replacement.

862 100 4 _ _ Electricity, Level 4
An exhibit on any electricity topic youth learned about in Electric Excitement Level 4 Entering Electronics addressing any of these themes: identification of electronic parts, soldering and preparing a circuit assembly, demonstrate how a diode controls current flow, develop a circuit that shows the action of a transistor to regulate current flow, understand polarity and voltage limits of LEDs, use of a light sensitive semiconductor, assemble a circuit that gives a meter reading in response to light, show how a Silicon Controlled Rectifier (SCR) triggers an alarm, use an integrated circuit in an amplifier circuit.

862 101 1 _ _ Education Poster - Electricity, Level 1
An educational poster on any electricity topic youth learned about in Electric Excitement Level 1 Magic of Electricity addressing any of these themes: workings of an incandescent light bulb, workings of a switch, conductors, insulators, open/closed circuits, series or parallel circuit design, magnesium, workings of a compass, use of a galvanometer, workings of a motor.

The exhibit may be a poster or a three-panel two-fold display board. Posters may not exceed 22"x26". Individual exhibits are limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high. An Educational Display Explanation Card (000-01) must be attached.   Judging criteria are outlined on 4-H Educational Display Check Sheet (40-463). Both these documents are available at the county Extension Office or on the state 4-H website under Communications http://oregon.4h.oregonstate.edu/special-events/state-fair/cm-communication

862 101 2 _ _ Education Poster - Electricity, Level 2
An educational poster on any electricity topic youth learned about in Electric Excitement Level 2 Investigating Electricity addressing any of these themes: direct and alternating current, workings of a Volt-Ohn meter, Ohm's Law, conductors, insulators, wiring diagrams, measuring voltage, circuits, momentary switches, three-way switches, soldering, "build a burglar alarm."

The exhibit may be a poster or a three-panel two-fold display board. Posters may not exceed 22"x26". Individual exhibits are limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high. An Educational Display Explanation Card (000-01) must be attached.   Judging criteria are outlined on 4-H Educational Display Check Sheet (40-463). Both these documents are available at the county Extension Office or on the state 4-H website under Communications http://oregon.4h.oregonstate.edu/special-events/state-fair/cm-communication

862 101 3 _ _ Education Poster - Electricity, Level 3
An educational poster on any electricity topic youth learned about in Electric Excitement Level 3 Wired for Power addressing any of these themes: electrical tools, electrical meter, identify wire and cable symbols, light bulbs, appliance nameplate information, electricity usage, receptacles, circuits, grounded and non-grounded outlets, an explanation of wall switch replacement.

The exhibit may be a poster or a three-panel two-fold display board. Posters may not exceed 22"x26". Individual exhibits are limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high. An Educational Display Explanation Card (000-01) must be attached.   Judging criteria are outlined on 4-H Educational Display Check Sheet (40-463). Both of these documents are available at the county Extension Office or on the state 4-H website under Communications http://oregon.4h.oregonstate.edu/special-events/state-fair/cm-communication

862 101 4 _ _ Education Poster - Electricity, Level 4
An educational poster on any electricity topic youth learned about in Electric Excitement Level 4 Entering Electronics addressing any of these themes: identification of electronic parts, soldering and preparing a circuit assembly, demonstrate how a diode controls current flow, develop a circuit that shows the action of a transistor to regulate current flow, understand polarity and voltage limits of LEDs, use of a light sensitive semiconductor, assemble a circuit that gives a meter reading in response to light, show how a Silicon Controlled Rectifier (SCR) triggers an alarm, use an integrated circuit in an amplifier circuit.

The exhibit may be a poster or a three-panel two-fold display board. Posters may not exceed 22"x26". Individual exhibits are limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high. An Educational Display Explanation Card (000-01) must be attached. Judging criteria are outlined on 4-H Educational Display Check Sheet (40-463). Both these documents are available at the county Extension Office or on the state 4-H website under Communications http://oregon.4h.oregonstate.edu/special-events/state-fair/cm-communication

OTHER ELECTRCITY EXHIBIT

Each exhibit piece must be labeled with the member's name, county and class number. Fill in the blank in class number (__) with corresponding number for Junior, Intermediate or Senior member.

862 200 00__ Other Electricity Exhibit

1 Junior
2 Intermediate
3 Senior
4 Club

Exhibit: An exhibit relating to electricity addressing a different theme or using a different combination of components from those addressed in 4-H Electricity Levels 1-4. The exhibit may NOT be a poster or a robot (see the exhibit classes for Junk Drawer Robotics). It may be made from a kit, from a pattern or plan not included in 4-H Electricity Levels 1-4, or an item designed by the member.

To qualify for judging an *Electric Energy Explanation Sheet (862-02 Revised 9/2016)* must be attached to the exhibit. Forms are available at the county Extension offices and at the State 4-H website: http://oregon.4h.oregonstate.edu/special-events/state-fair/cm-set

In addition, intermediates and seniors must include a schematic or circuit diagram of the electricity project. Refer to the 4-H Electric Series Level 2 book Investigating Electricity and the interactive e-learning modules for Activities 5 and 6 and Activities 7-9 posted at **http://oregon.4h.oregonstate.edu/projects/sci-tech-eng/electricty.** The Level 4 book Entering Electronics will also be a useful reference for this requirement

Science

Open to all 4-H members regardless of project enrollment. The exhibit may be a poster or a three-dimensional display. Individual three-dimensional exhibits are limited in size to 48" wide (measured when lying flat), 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high. Posters are limited in size to 30" by 24".

Exhibits may include pictures, models, diagrams and actual articles if they meet the safety standards listed below. Drawings or photos which are an essential part of the display should be firmly attached to the board. Loose materials like soil, bark or sand must be displayed in closed containers. **No books or notebooks will be accepted as part of the display. The following materials will not be allowed on the display for safety reasons:**
- **Living organisms- plants or animals**
- **Any liquids**
- **Aerosol bottles or other pressurized gases**
- **Glass**
- **Hazardous substances**
- **Sharp items**

Display (all parts) should be able to last the duration of the fair in good repair. An *Educational Display Exhibit Card* (000-01) must be attached to each exhibit. Judging criteria are outlined on the *4-H Science Investigation Display Evaluation Sheet* (840-100). Both are available from the county Extension Office or the state 4-H website at http://oregon.4h.oregonstate.edu/node/1853

Club exhibits are to be entered under the club name but must include the names of all members and leaders. This may be on a separate paper securely attached to the back of the exhibit. Club exhibit will receive one ribbon per exhibit.

Each piece of an exhibit must have name, county and class numbers securely attached to it. All parts of the display should be attached to one another in some way to keep the exhibit together as a unit. Single posters may be displayed by hanging or stapling to the wall. All other displays should be free standing. All information contained in the exhibit must be able to be viewed by the public by looking at the display.

840 100 001	**Junior Science Investigation Display**
840 100 002	**Intermediate Science Investigation Display**
840 100 003	**Senior Science Investigation Display**
840 100 004	**Club Science Investigation Display**

Description: The purpose of this type of exhibit is for members to communicate the processes and outcomes of a scientific investigation they design and conduct themselves. The display must include (1) a question or hypothesis, (2) an investigative procedure (What was done?), (3) the data collection or observation method (How was it collected/ observed), (4) a report of the data collected or observations made, (5) an analysis of the data collected or observations made (How do you interpret the data and evidence?), (6) a conclusion addressing the original question or hypothesis (Does the evidence support or refute your claim?). Intermediate and Senior Exhibits must include a data chart and a graph or other visual representation of the data.

~ Special 4-H Awards ~
SCIENCE PROJECTS

Outstanding S.E.T. Exhibit
(other 4-H areas competing)
Friend of 4-H

Aerospace

Each exhibit piece must be labeled with the member's name, county and class number. If more than one article is contained in the exhibit each article must be labeled with the member's name, county and class number. This may be done with masking tape, attaching an index card, or writing directly on the back with a marker. All the articles that comprise the exhibit must be attached to each other. The one exception to this is the Rocketry Engineering Journal, which must be included with the Rocket display, but is not required to be attached to it.

Each exhibit must include the current year's edition of the appropriate Project Description for the exhibit form filled out neatly and securely attached to the exhibit. *4-H Project Description* sheets are posted at http://oregon.4h.oregonstate.edu/node/1858. Be sure to use the newest version of the Project Descriptions for each technology exhibit. Exhibitors should answer the description page carefully and in full sentences. This is the exhibitor's opportunity to tell the judge about their project. Judging Evaluations can be found at: http://oregon.4h.oregonstate.edu/node/1858. These provide valuable information to youth on creating their project displays.

Aerospace
Stage 2
851 100 010 Rocketry
851 100 020 Educational Poster- Aerospace
Stage 3
851 101 010 Rocketry
851 101 020 Educational poster- Aerospace
Stage 4
851 102 010 Rocketry
851 102 020 Education poster- Aerospace

Stage 2, Lift-off (Stage 1 is for Grades 1-3)
851 100 010 Rocketry
Description: An exhibit of two parts: (1) a rocket made by the member from the Aerospace Adventures State 2 project kit, and (2) a Rocketry Engineering Journal. Rockets displayed in this class may only be made from the Estes Gnome ™, Wizard ™, or Mosquito ™ rocket kits. Rockets included in a static display MUST be shown without engines or igniters. All the parts of the rocket and their function should be identified. Rocket components which must be included and labeled are body tube, nose cone, engine hook, fins, recovery system (streamer or tumble method), launch lug, engine mount, and shock cord. On the display, list any items required to launch the rocket and their function such as the launch system, igniters and recovery wadding. List the appropriate engine size(s) for your rocket and your level of experience. The exhibit will be judged on neatness of labels and workmanship.

A Rocketry Engineering Journal is required. Include the date of each meeting, names of the persons present and a record of what was done. Include photos or illustrations. The information will be used to fill out the Aerospace-Rocketry Project Description sheet for fair. It is important that the member downloads the Aerospace-Rocketry Project Description sheet from *4-H Project Description* sheets posted at http://oregon.4h.oregonstate.edu/node/1858 to know what is required in the Build Report and the Launch and Flight Reports in the Journal.

See additional exhibit requirements for classes under Aerospace above. Evaluation: Use Aerospace- Rocketry Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

851 100 020 Educational Poster- Aerospace
An educational poster on any aerospace or aeronautics topic youth learned about in Aerospace Adventures, stage 2, except rockets. Display should demonstrate knowledge gained in one of these topics: space, kites, hot air balloons, weather or aerospace careers.

Individual exhibits are **limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high.** Posters must not exceed 22"x 28". Judging criteria are outlined on the *4-H Education Display Check Sheet* (40-463) available from the county Extension Office or the state 4-H website at http://oregon.4h.oregonstate.edu/node/1853

Stage 3, Reaching New Heights 851
101 010 Rocketry
Description: An exhibit of two parts: (1) a rocket made by the member from the Aerospace Adventures Stage 3 project kits, and (2) a Rocketry Engineering Journal.   In Stage 3 the Rocketry Engineering Journal must include a rocket launch and flight report. Rockets displayed in this class may only be made from the Estes Monarch ™, Alpha™, or Alpha III™ rocket kits. Rockets included in a static display MUST be shown without engines or igniters.   All the parts of the rocket and their function should be identified.
Rocket components which must be included and labeled are body tube, nose cone, engine hook, fins, recovery system (parachute), launch lug, engine mount, and shock cord. On the display, list any items required to launch the rocket and their function such as the launch system, igniters and recovery wadding. List the appropriate engine size(s) for your rocket and your level of experience. The exhibit will be judged on neatness of labels and workmanship.

A Rocketry Engineering Journal is required. Include the date of each meeting, names of the persons present and a record of what was done. Include photos or illustrations. The information will be used to fill out the Aerospace-Rocketry Project Description sheet for fair. It is important that the member downloads   the Aerospace-Rocketry Project Description sheet from *4-H Project Description* sheets posted at http://oregon.4h.oregonstate.edu/node/1858 to know what is required in the Build Report and the   Launch and Flight Reports in the Journal.

See additional exhibit requirements for classes under Aerospace above. Evaluation: Use Aerospace- Rocketry Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

851 101 020 Educational poster- Aerospace
An educational poster on any aerospace or aeronautics topic youth learned about in Aerospace Adventures, stage 3, except rockets. Display should demonstrate knowledge gained in one of these topics: rocket stabilization methods, airplanes, helicopters, gliders, pilot training, kites, or aerospace careers.
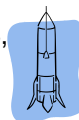
Individual exhibits are **limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high.** Posters must not exceed 22"x 28". Judging criteria are outlined on the *4-H Education Display Check Sheet* (40-463) available from the county Extension Office or the state 4-H website at http://oregon.4h.oregonstate.edu/node/1853

Stage 4, Pilot in Command 851 102 010 Rocketry
Description: An exhibit of two parts: (1) a rocket made by the member from the Aerospace Adventures Stage 4 project kits, and (2) a Rocketry Engineering Journal.   In Stage 4 the Rocketry Engineering Journal must include a rocket launch and flight report. Rockets displayed in this class may be made from   the Estes Viking™ rocket kit, or other skill level 1 rocket kit where the member designs, constructs and tests the fin configuration.   Rockets included in a static display MUST be shown without engines or igniters.   All the parts of the rocket and their function should be identified. Rocket components which must be included and labeled are body tube, nose cone, engine hook, fins, recovery system (parachute), launch lug, engine mount, and shock cord. On the display, list any items required to launch the rocket and their function such as the launch system, igniters and recovery wadding. List the appropriate engine size(s) for your rocket and your level of experience. The exhibit will be judged on neatness of labels and workmanship.

A Rocketry Engineering Journal is required. Include the date of each meeting, names of the persons present and a record of what was done. Include photos or illustrations. The information will be used to fill out the Aerospace-Rocketry Project Description sheet for fair. It is important that the member downloads   the Aerospace-Rocketry Project Description sheet from *4-H Project Description* sheets posted at http://oregon.4h.oregonstate.edu/node/1858 to know what is required in the Build Report and the   Launch and Flight Reports in the Journal.

See additional exhibit requirements for classes under Aerospace above. Evaluation: Use Aerospace- Rocketry Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

851 102 020 Education poster- Aerospace
An educational poster on any aerospace or aeronautics topic youth learned about in Aerospace Adventures, stage 4, except rockets. Display should demonstrate knowledge gained in one of these topics: construction and use of altitude tracker, pilot training requirements, aerospace science and technology, astronaut training, box kites, helicopters, or aerospace careers.

Individual exhibits are **limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high.** Posters must not exceed 22"x 28". Judging criteria are outlined on the *4-H Education Display Check Sheet* (40-463) available from the county Extension Office or the state 4-H website at http://oregon.4h.oregonstate.edu/node/1853

Geospatial Science - GPS/GIS

Each exhibit piece must be labeled with the member's name, county and class number. If more than one article is contained in the exhibit each article must be labeled with the member's name, county and class number. This may be done with masking tape, attaching an index card, or writing directly on the back with a marker. All the articles that comprise the exhibit must be attached to each other.

Each exhibit must include the current year's edition of the appropriate Project Description for the exhibit form filled out neatly and securely attached to the exhibit. *4-H Project Description* sheets are posted at http://oregon.4h.oregonstate.edu/node/1858 Be sure to use the newest version of the Project Descriptions for each technology exhibit. Exhibitors should answer the description page carefully and in full sentences. This is the exhibitor's opportunity to tell the judge about their project. Judging Evaluations can be found at: http://oregon.4h.oregonstate.edu/node/1858. These provide valuable information to youth on creating their project displays.

In some cases, the exhibit may be a poster or a three-dimensional display. Individual exhibits are **limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high.** Posters must not exceed 22"x 28".

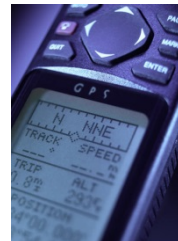**860 100 0_ _ GPS/GIS Exploring Spaces, Going Places 860 100 1_ _ GPS/GIS, Projects**
860 101 5_ _ GPS/GIS, Map

Note: Fill in blank in class number (__) with one of the following numbers.
11 **Junior**, First year in this project area 21
    Other Junior
12 **Intermediate**, First year in this project area 22
    Other Intermediate
13 **Senior**, First year in this project area
23 **Other Senior**
34 **Club Exhibit**

860 100 0_ _ GPS/GIS Exploring Spaces, Going Places
Open **ONLY** to Juniors, Intermediates or Seniors who are in their first year in this project area.
Description: Using the Level 1 "Take Me on a Tour" activity, create a map showing four to six tour sites, geo-tools used to create the map, positional data for the sites, and information about the selected site.

See additional exhibit requirements, above, for Geospatial classes. Evaluation: Use GPS/GIS Mapping Projects Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

860 100 1_ _, Geospatial Science Project
Description: GPS or GIS Projects. Exhibit may be an exhibit, binder or presentation on a disk, CD or thumb/travel drive. Computer presentations should follow requirements for similar exhibits found in the Computer Project exhibit classes. Examples of displays include creating a Community Atlas, geography project, or project reports presented to a community meeting. A project entry should contain two or more maps. Maps may be either be informational or directional. Maps that are not created by the member(s) may be included but the source of the map must be clearly shown. The exhibit should describe how the member's project addresses an issue or solves a problem.

See additional exhibit requirements, above, for Geospatial classes. Evaluation: Use GPS/GIS Mapping Projects Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

860 101 1_ _ GPS/GIS, Map
Description: Exhibit will be one map. A map is a single product of data gathering, manipulation and presentation skills. Maps may be either be informational or directional. Maps can be computer generated or hand drawn. Multiple maps should be entered as a Geospatial Science Project exhibit. See additional exhibit requirements, above, for Geospatial classes. Evaluation: Use Map Evaluation available at:
http://oregon.4h.oregonstate.edu/node/1858

Computer

Each exhibit piece must be labeled with the member's name, county and class number. If more than one article is contained in the exhibit each article must be labeled with the member's name, county and class number. This may be done with masking tape, attaching an index card, or writing directly on the back with a marker. All the articles that comprise the exhibit must be attached to each other.

Each exhibit must include the current year's edition of the appropriate Project Description for the exhibit form filled out neatly and securely attached to the exhibit. *4-H Project Description* sheets are posted at
http://oregon.4h.oregonstate.edu/node/1858 Be sure to use the newest version of the Project Descriptions for each technology exhibit. Exhibitors should answer the description page carefully and in full sentences. This is the exhibitor's opportunity to tell the judge about their project. Judging Evaluations can be found at:
http://oregon.4h.oregonstate.edu/node/1858. These provide valuable information to youth on creating their project displays.

In some cases, the exhibit may be a poster or a three-dimensional display. Individual exhibits are **limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high.** Posters must not exceed 22"x 28".

These classes are open to all 4-H members without being enrolled in the 4-H computer project. See additional exhibit requirements, above, for Technology classes.

A print version of the program must be submitted unless otherwise noted in the class description below. Youth are responsible for submitting clear directions on how judges can access the files, read code and start programs. You may include a disk, CD or thumb/travel drive as part of your exhibit. If you do, all files must be compatible with use on a PC.

Value is placed on youth that can model the learning process, or show how their skills have increased while completing the project.

The youth exhibitor should identify a problem to solve or create a work application involving technology. Possible ideas might include: applying existing software programs to a 4-H project area, composing music, developing a game, drawing landscape scenes, designing buildings, publishing club newsletters, creating a website, editing a video, working with photographs, etc.

Online projects using Google applications or other Web 2.0 software are acceptable. Youth must make sure clear directions are given in the project explanation so the judges can find and access the project online. Website exhibits must be viewable online or on a disk, CD or thumb/travel drive.

Exhibits entered in the "Programming" class must be a program written, translated, or substantially (at least 30%) altered by the 4-H member. In the programming projects please submit a hard copy or thumb/travel drive for programs with excessive pages such as GameMaker software and working files so the judge can see the code. Submit a URL that points to the development software so it can be downloaded.

861 100 1_ _ Computer Software Application, Word Processing
861 101 1_ _ Computer Software Application, Excel/Spreadsheet
861 102 1_ _ Computer Software Application, Presentation Software
861 103 1_ _ Computer Software Application, Graphic Design/Digital Imaging
861 104 1_ _ Computer Software Application, Database Management
861 105 1_ _ Computer Software Application, Multimedia Projects
861 100 2_ _ Computer Programming861 100 3_ _ Computer Hardware Design
861 100 4_ _ Computer 3D Printer Application

Note: Fill in blank in class number (__) with one of the following numbers.
11   **Junior**, First year in this project area
21 **Other Junior**
12   **Intermediate**, First year in this project area
22 **Other Intermediate**
13   **Senior**, First year in this project area
23 **Other Senior**
34 **Club Exhibit**

861 100 1_ _ Computer Software Application, Word Processing
Description: Projects created by youth that show learning in the area of word processing. Project should be an original creation by the participant that shows their word processing skills.

See additional exhibit requirements, above, for Computer classes. Evaluation: Use Computer Software Application Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

861 101 1_ _ Computer Software Application, Excel/Spreadsheet
Description: Projects created by youth that show learning in the area of spreadsheet design and usage. The exhibit should be a spreadsheet or chart within an Excel document, not a chart imported in to a word processing program. Project should be an original creation by the participant that shows their spreadsheet skills. Intermediate and Senior members are expected to have some formula usage in their project.

See additional exhibit requirements, above, for Computer classes. Evaluation: Use Computer Software Application Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

861 102 1_ _ Computer Software Application, Presentation Software
Description: Projects should be created by youth to show learning in the area of presentation design skills. Software can be any current presentation software including online versions like Google applications or voicethread.com. Project should be created by the participant to show their presentation design skills. Youth can also submit video clips of how the presentation was used. (For example: A video clip of the youth using the presentation in a group activity.)

See additional exhibit requirements, above, for Computer classes. Evaluation: Use Computer Software Application Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

861 103 1_ _ Computer Software Application, Graphic Design/Digital Imaging
Description: Projects created by youth that show learning in the area of graphic design or digital imaging. Software can be any current presentation software including online versions. Project should be created by the participant to show their graphic design or digital imaging skills.

See additional exhibit requirements, above, for Computer classes. Evaluation: Use Computer Software Application Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

861 104 1_ _ Computer Software Application, Database Management
Description: Projects created by youth that show learning in the area of database management. Project should be an original creation by the participant that shows their spreadsheet skills. Intermediate and Senior members are expected to have apply their projects to real world scenarios. Youth are responsible for submitting clear directions on how judges can access the files.

See additional exhibit requirements, above, for Computer classes. Evaluation: Use Computer Software Application Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

861 105 1_ _ Computer Software Application, Multimedia Projects
Description: Projects created by youth that show learning in the area of Multimedia Projects. Software can be any current software including online versions. Project should be created by the participant to show their multimedia skills. In general, multimedia includes a combination of text, audio, still images, animation, video, or animation. Multimedia combines multiple content forms. Youth are responsible for submitting clear directions on how judges can access the files.

See additional exhibit requirements, above, for Computer classes. Evaluation: Use Computer Software Application Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

861 100 2_ _ Computer Programming
Description: Projects created by youth that show learning in the area of programming. Project should be created by the participant to show their programming skills. Hard copy or travel/thumb drive (for programs with excessive pages, such as GameMaker software) of the program must be submitted. It is up to the youth to ensure the program will function or display at Fair. Youth are responsible for submitting clear directions on how judges can access the files. Submit information that allows a judge to look at the programming code in order to evaluate your work on the Computer Programming Project Description Form. If only an executable (compiled) product is submitted the project cannot be judged in the computer programming class.

See additional exhibit requirements, above, for Computer classes. Evaluation: Use Computer Programming Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

861 100 3_ _ Computer Hardware Design
Description: Projects created by youth that show learning in the area of hardware. Project should be an original creation by the participant that shows their computer hardware skills. It is up to the youth to ensure the hardware and project will function or display at Fair. Intermediate and Senior members are expected to have apply their projects to real world scenarios. Youth are responsible for submitting clear directions on how judges can access the files.

See additional exhibit requirements, above, for Computer classes. Evaluation: Use Computer Hardware Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

861 100 4   Computer 3D Printer Application
Description: Projects created by youth that show learning in the area of 3D design and printing on a 3D printer.   Project should be an original creation by the participant that shows their skills. Each exhibit must include the item created with the 3D printer and a series of screen shots from the design software that show the (1) early stages, (2) middle stages and (3) final stages of the design process. Application Project Description for the exhibit form filled out neatly and securely attached to the exhibit. *4-H Project Description* sheets are posted at http://oregon.4h.oregonstate.edu/node/1858.

See additional exhibit requirements, above, for Computer classes. Evaluation: Use Computer Software Application Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

Robotics

Each exhibit piece must be labeled with the member's name, county and class number. If more than one article is contained in the exhibit each article must be labeled with the member's name, county and class number. This may be done with masking tape, attaching an index card, or writing directly on the back with a marker. All the articles that comprise the exhibit must be attached to each other.

Each exhibit must include the current year's edition of the appropriate Project Description for the exhibit form filled out neatly and securely attached to the exhibit. *4-H Project Description* sheets are posted at http://oregon.4h.oregonstate.edu/node/1858. Be sure to use the newest version of the Project Descriptions for each technology exhibit. Exhibitors should answer the description page carefully and in full sentences. This is the exhibitor's opportunity to tell the judge about their project. Judging Evaluations can be found at: http://oregon.4h.oregonstate.edu/node/1858. These provide valuable information to youth on creating their project displays.

863 102 1_ _ Education poster- Junk Drawer Robotics Level 1
863 102 2_ _ Education poster- Junk Drawer Robotics Level 2
863 102 3_ _ Education poster- Junk Drawer Robotics Level 3
863 103 1_ _ Robotics/ Lego Robotics
863 104 1_ _ Junk Drawer Robotics Level 1
863 104 2_ _ Junk Drawer Robotics Level 2
863 104 3_ _ Junk Drawer Robotics Level 3

Note: Fill in blank in class number (__) with one of the following numbers.
11   **Junior**, First year in this project area
21   **Other Junior**
12   **Intermediate**, First year in this project area
22   **Other Intermediate**
13   **Senior**, First year in this project area
23   **Other Senior**
34   **Club Exhibit**

863 102 1_ _ Education poster- Junk Drawer Robotics Level 1
An educational poster on any robotics topic youth learned about in Junk Drawer Robotics, Level1, Give Robots a Hand, addressing the theme robotic arms, hands and grippers.

The exhibit may be a poster or a three-dimensional display. Individual exhibits are **limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high.** Posters must not exceed 22"x 28". Judging criteria are outlined on the *4-H Education Display Check Sheet* (40-463) available from the county Extension Office or the state 4-H website at http://oregon.4h.oregonstate.edu/node/1853. An *Educational Display Exhibit Explanation Card* (000-01) must be attached to each exhibit.

863 102 2_ _ Education poster- Junk Drawer Robotics Level 2
An educational poster on any robotics topic youth learned about in Junk Drawer Robotics, Level 2, Robots on the Move, addressing the theme moving, power transfer and locomotion.

The exhibit may be a poster or a three-dimensional display. Individual exhibits are **limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high.** Posters must not exceed 22"x 28". Judging criteria are outlined on the *4-H Education Display Check Sheet* (40-463) available from the county Extension Office or the state 4-H website at http://oregon.4h.oregonstate.edu/node/1853 . An *Educational Display Exhibit Explanation Card* (000-01) must be attached to each exhibit.

863 102 3_ _ Education poster- Junk Drawer Robotics Level 3
An educational poster on any robotics topic youth learned about in Junk Drawer Robotics, Level 3, Mechatronics, addressing the theme the connection between mechanical and electronic elements.

The exhibit may be a poster or a three-dimensional display. Individual exhibits are **limited in size to 30" wide, 24" deep (front to back), and 36" high. Club exhibits are limited in size to 60" wide, 24" deep and 36" high.** Posters must not exceed 22"x 28". Judging criteria are outlined on the *4-H Education Display Check Sheet* (40-463) available from the county Extension Office or the state 4-H website at http://oregon.4h.oregonstate.edu/node/1853 . An *Educational Display Exhibit Explanation Card* (000-01) must be attached to each exhibit.

863 103 1_ _ Robotics / Lego Robotics
Description: An exhibit of two parts: (1) a robot made by the member, and (2) a Robotics Engineering Journal. Projects should be a robot created by youth. For the purposes of this project exhibit, a robot is defined as a machine that is electrical and mechanical and is *guided by a computer program*. They can be created from kits or from miscellaneous parts. All robots will be returned after fair. More weight is given for youth designed projects. Robots will be judged on structural stability, creativity, functionality. Youth are responsible for submitting clear directions on how judges can access the files and make the robot function. Robot and a full description of what it is meant to accomplish must be submitted.

A Robotics Engineering Journal is required. Include the date of each meeting, names of the persons present and a record of what was done. Include photos, illustrations and examples of software code developed or changed. The journal information will be used by the member to fill out the Robotics Project Description sheet for fair. It is important that the member downloads the Robotics Project Description sheet from *4-H Project Description* sheets posted at http://oregon.4h.oregonstate.edu/node/1858 to know what is required in the Journal. Be sure the Journal includes the problem/task you choose to solve or what you hoped to accomplish. What were the goals of this project? What is the robot programmed to do? List the steps you used to solve the problem or accomplish your task. What materials (software, books, online resources, kits) did you use? Explain your results and provide a thoughtful evaluation of the project. If you were to do it again, how/what would you do differently or how would you improve your project? Who was involved in this project?   How did you come up with the idea for this project? What was the most difficult aspect of this project?

See additional exhibit requirements, above, for Robotics classes.   Evaluation: Use Robotic Evaluation available at: http://oregon.4h.oregonstate.edu/node/1858

863 104 1_ _ Junk Drawer Robotics Level 1
An exhibit on any robotics topic youth learned about in Junk Drawer Robotics, Level 1, Give Robots a Hand, addressing the theme robotic arms, hands and grippers or trebuchet-type catapult design. An exhibit of two parts: (1) an exhibit made by the member and (2) a photocopy of the corresponding design and build pages from the Junk Drawer Robotics Youth Robotics Notebook.

863 104 2_ _ Junk Drawer Robotics Level 2
An exhibit on any robotics topic youth learned about in Junk Drawer Robotics, Level 2, Robots on the Move, addressing the theme moving, power transfer and locomotion. Design, build project options are the Clipmobile, Can-Can Robot, Es-Car-Go or Sea Hunt. An exhibit of two parts: (1) an exhibit made by the member and (2) a photocopy of the corresponding design and build pages from the Junk Drawer Robotics Youth Robotics Notebook.

863 104 3_ _ Junk Drawer Robotics Level 3
An exhibit on any robotics topic youth learned about in Junk Drawer Robotics, Level 3, Mechatronics, addressing the theme the connection between mechanical and electronic elements.   Design, build project options are Forward and Reverse, Wall Follower Design, Breadboard, Say What? or "Build Your Robot." An exhibit of two parts: (1) an exhibit made by the member and (2) a photocopy of the corresponding design and build pages from the Junk Drawer Robotics Youth Robotics Notebook.

~SPECIAL 4-H AWARDS~
TECHNOLOGY PROJECTS

Outstanding S.E.T. Exhibit
Friend of 4-H