

DEPARTMENT H	DIVISION 881			LEGO BUILDING
PREMIUM	Purple \$2.50	Blue \$2.00	Red \$1.50	White \$1.00
CLASS 901	Lego Model (500 pieces or less)			
CLASS 902	Lego Model (501 pieces or more)			
CLASS 903	Lego Original (500 pieces or less)			
CLASS 904	Lego Original (501 pieces or more)			

## ROBOTICS

### ROBOTICS RULES

- GENERAL RULES** – See GENERAL RULES – SCIENCE, ENGINEERING & TECHNOLOGY
- ENROLLMENT** – Youth enrolled in Robotics Explorer, Robotics Probe or GEAR TECH 21 may exhibit in any class within this division.
- TOP EXHIBIT** – A top exhibit will be selected from those exhibits receiving purple ribbons in the robotics division.
- MANUALS** – Printed materials are available from the Johnson County Extension Office for all currently enrolled 4-H members in Johnson County.

DEPARTMENT H	DIVISION 861			ROBOTICS
PREMIUM	Purple \$2.50	Blue \$2.00	Red \$1.50	White \$1.00
CLASS 1	<b>Robotics Poster</b> – Create a poster (14" x 22") communicating a robotics theme such as "Robot or Not", "Pseudo Code", "Real World Robots", "Careers in Robots" or "Autonomous Robotics", "Precision Agriculture" or a robotic topic of interest to the 4-H exhibitor.			
CLASS 2	<b>Robotics Notebook</b> – Explore a robotics topic in-depth and present your findings in a notebook. Documentation should include any designs, research, notes, pseudo code, data tables or other evidence of the 4-H'ers learning experience. The notebook should contain at least three pages. Topics could include a programming challenge, a programming skill, calibration, sensor exploration, or any of the topics suggested in Class 1 (see above).			
CLASS 3	<b>Robotics Video</b> – This class should be displayed in a notebook. The notebook should include a video clip on a CD/DVD that demonstrates the robot performing the programmed function. Include your pseudo code and screenshots of the actual code with a written description of the icon/command functions.			
CLASS 4	<b>Robotics Career Interview</b> - Interview someone who is working in the field of robotics and research that career. Interviews can either be written or in a multimedia format (CD/DVD). Written interviews should be in a notebook. Written reports should be three to five pages, double-spaced, 12-point font, and 1" margins. Multimedia reports should be between three and five minutes in length.			
CLASS 5	<b>Robotics Sensor Notebook</b> – Write pseudo code which includes at least one sensor activity. Include the code written and explain the code function.			
CLASS 6	<b>Build a Robot (may use kit)</b> – Include a robot and notebook including the pseudo codes for at least one program you have written for the robot, the robots purpose, and any challenges or changes you would make in the robot design or programming.			
CLASS 7	<b>Kit Labeled Robot (cannot be programmed)</b> – This class is intended for explorations of robotic components such as arms or vehicles OR educational kits marketed as robots that do not have the ability to be programmed to "sense, plan, and act." The exhibit should include a project the youth has constructed, a description of what it does and an explanation of how it is similar to and different from a robot.			
CLASS 901	<b>Other Exhibit</b> – Other exhibit demonstrating the knowledge gained in this project.			

## GEOSPATIAL

### GEOSPATIAL RULES

- GENERAL RULES** – See GENERAL RULES – SCIENCE, ENGINEERING & TECHNOLOGY
- ENROLLMENT** – Youth enrolled in Geospatial or GEAR TECH 21 may exhibit in any class within this division.
- TOP EXHIBIT** – A top exhibit will be selected from those exhibits receiving purple ribbons in the geospatial division.
- MANUALS** – Printed materials are available from the Johnson County Extension Office for all currently enrolled 4-H members in Johnson County.

DEPARTMENT H	DIVISION 880			GEOSPATIAL
PREMIUM	Purple \$2.50	Blue \$2.00	Red \$1.50	White \$1.00
CLASS 1	<b>Poster</b> – Create a poster (not to exceed 14" x 22") communicating a GPS theme such as: how GPS or GIS works, careers that use GPS or GIS, how to use GPS, what is GIS, GPS or GIS in agriculture, precision agriculture, or a geospatial topic of interest.			
CLASS 2	<b>4-H Favorite Places or Historical Site Poster</b> – The 4-H exhibitor identifies a favorite place or historical site (including grave sites) in Nebraska. Exhibit should include latitude and longitude, digital picture, and local area map. Posters size should not exceed 14" x 22".			
CLASS 3	<b>GPS Notebook</b> – Keep a log of at least five places visited using a GPS enabled device. For each site, record the latitude, longitude, and elevation. Also include a description of the site, a paragraph explaining what was interesting about the site or finding it. Photos of each site and/or cache are optional but encouraged.			
CLASS 4	<b>Geocache</b> – Assemble a themed geocache. Each geocache should be a watertight container. It should include a logbook and pencil for finders to log their visits and may include small trinkets, geocoins, etc. for the finders to trade. Documentation should include a title, teaser description, and geographic coordinates of intended placement. Register the site at <a href="http://geocaching.com">http://geocaching.com</a> , include a print out of its registry. The entry may include a photograph of the cache in its intended hiding place.			
CLASS 5	<b>Agricultural Precision Mapping</b> – 4-Hers will assemble a notebook that will include a minimum of 2 digital copies of various data layers that can be used in precision agriculture to identify spatial patterns and/or correlations (printed copies of websites were applications can be purchased is acceptable) A report of how the analysis of the various data will be used to make a management decision.			
CLASS 7	<b>4-H History Map</b> – Preserve 4-H History: Nominate a Point of Interest for the 4-H History Map Project include copy of submitted form in folder or notebook. To nominate a site for the 4-H history map please go to <a href="http://arcg.is/1bvGogV">http://arcg.is/1bvGogV</a> . For more information about 4-H history go to <a href="http://www.4-hhistorypreservation.com/History_Map/">http://www.4-hhistorypreservation.com/History_Map/</a> For a step by step video on nominating a point, please go to this link: <a href="http://tinyurl.com/nominate4h">http://tinyurl.com/nominate4h</a> . Write a brief description of historical significance of 4-H place or person. (a minimum of one paragraph)			
CLASS 8	<b>GIS Thematic Map</b> – Using any GIS software, create a thematic map. Thematic maps can utilize any subject of interest to you. Example maps would be Amelia Earhart's or Sir Francis Drake's voyage, population density maps, water usage maps, etc. Create GIS map using data from books and/or reliable internet sources (e.g. US Census Bureau, etc.). Map may be any size from 8 ½" x 11" up to 36" x 24". The map should include: title, base map, neat line, north arrow, and legend. Identify the source of your information on the back of the map.			