

YOUTH - ENGINEERING
4-H, FFA & GRANGE
Department JJ

ENGINEERING

1. Neatness, methods of presentation and electrical requirements for use and safety will be considered in judging.
2. Educational Poster information is in Department Q.

4-H Engineering Award

Sponsored by Knight Construction

\$20.00 for Best General Engineering or Electrical

ELECTRICITY - Enter at least 3 classes.

DIVISION 4111 Primary, ages 5 - 7

DIVISION 4112 Junior, ages 8 - 10

DIVISION 4113 Intermediate, ages 11 - 13

DIVISION 4114 Senior, ages 14 - 19

Class No. Blue 20, Red 15, White 10

1. Plug-in showing underwriter's knot
2. Display of 3 electrical hazards
3. Chart of various types of wiring or size of wire
4. Rewire a lamp or make a lamp
5. Circuit chart, giving description of wire and fuse size
6. Simple motor
7. Tool chest or work apron for electric tools
8. Test lamp

9. Chart showing how a battery works
10. Electromagnet
11. Permanent magnet
12. Properly wired convenience outlet
13. Properly wired single pole switch
14. Build a crystal radio
15. Build a SCR motor and light control
16. Make a small motor portable
17. Knock down of motor
18. Other or self-determined

COMPUTERS - Enter at least 2 classes: project book and 1 other class.

DIVISION 4121 Primary, ages 5 - 7

DIVISION 4122 Junior, ages 8 - 10

DIVISION 4123 Intermediate, ages 11 - 13

DIVISION 4124 Senior, ages 14 - 19

Class No. Blue 20, Red 15, White 10

1. Project book
2. Educational poster or chart showing basic parts and function
3. Program by exhibitor
4. How to use program in 4-H Record book or public presentation
5. Use of software or hardware
6. Use of word processing
7. Computer Ethics
8. Glossary of words and meanings
9. Artwork
10. Email or Internet and how it works
11. File system
12. Show basics of building and repairing computers
13. Applied Robotics Simple
14. Applied Robotics Complex
15. Home/Farm Automation/Control Simple
16. Home/Farm Automation/Control Complex
17. Internet of Things Simple

Complex Entries Blue 40, Red 20, White 10

18. Internet of Things Complex
19. Computer Animation Simple
20. Computer Animation Complex
21. Computer Aided Design Simple
22. Computer Aided Design Complex
23. Digital Artwork Simple
24. Digital Artwork Complex
25. Website Design Simple
26. Website Design Complex
27. CNC Industrial Arts Simple (Cutting, Machining, 3D Printing)
28. CNC Industrial Arts Complex (Cutting, Machining, 3D Printing)
29. Analog Circuit Design Simple
30. Analog Circuit Design Complex
31. Digital Circuit Design Simple
32. Digital Circuit Design Complex
33. Other or Self-Determined

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SMALL ENGINE - Enter at least 2 classes.

DIVISION 4131 Primary, ages 5 - 7

DIVISION 4132 Junior, ages 8 - 10

DIVISION 4133 Intermediate, ages 11 - 13

DIVISION 4134 Senior, ages 14 - 19

Class No. Blue 20, Red 15, White 10

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|---|--|
| <ol style="list-style-type: none">1. Small engine project book of current year2. Component parts of small engine in detail - display carburetor, magneto, etc., separately3. Small engine display naming parts4. Home-made projects power fed by small engines, 2 or 4 cycle | <ol style="list-style-type: none">5. Show how to maintain6. Show how to store7. Show safety when using8. Other or self determined |
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AUTOMOTIVE - All divisions enter at least 3 classes.

DIVISION 4141 Primary, ages 5 - 7

DIVISION 4142 Junior, ages 8 - 10

DIVISION 4143 Intermediate, ages 11 - 13

DIVISION 4144 Senior, ages 14 - 19

Class No. Blue 20, Red 15, White 10

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| <ol style="list-style-type: none">1. One chart describing a highway safety practice2. Chart describing highway hazards3. Display of what makes a car go and stop4. Display of a part or parts of engine, naming parts5. Display of car care6. Display of car costs7. Display of traffic codes and your responsibilities8. Display of car safety check9. Display of Engine as Power Unit | <ol style="list-style-type: none">10. Display of Engine that needs Clean Air11. Display of How Fuel System Works12. Display of Igniting Air-Fuel Mixture13. Display of How Engine Temperature is controlled14. Display of Lubrication15. Display of Tires and Their Care16. Other or self-determined |
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SNOWMOBILING - Open to all 4-H members

DIVISION 4151 Primary, ages 5 - 7

DIVISION 4152 Junior, ages 8 - 10

DIVISION 4153 Intermediate, ages 11 - 13

DIVISION 4154 Senior, ages 14 - 19

Class No. Blue 20, Red 15, White 10

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|---|--|
| <ol style="list-style-type: none">1. Safety Display2. Engine Care Display3. Outdoor Survival Techniques | <ol style="list-style-type: none">4. Maintenance, Care and Storage5. Other or self-determined |
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AEROSPACE SERIES - Enter at least 2 classes.

DIVISION 4161 Primary, ages 5 - 7

DIVISION 4162 Junior, ages 8 - 10

DIVISION 4163 Intermediate, 11 - 13

DIVISION 4164 Senior, 14 - 19

Class No. Blue 20, Red 15, White 10

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|--|---|
| <ol style="list-style-type: none">1. Display of what it is like to be weightless.2. How gravity affects our lives on earth.3. How space suits are made4. What foods astronauts eat in space and why | <ol style="list-style-type: none">5. Build a rocket6. Rocket safety7. Show rocket equipment8. Other or self-determined |
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BICYCLE SERIES - Enter at least 2 classes.

DIVISION 4171 Primary, ages 5 - 7

DIVISION 4172 Junior, ages 8 - 10

DIVISION 4173 Intermediate, ages 11 - 13

DIVISION 4174 Senior, ages 14 - 19

Class No. Blue 20, Red 15, White 10

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|--------------------------------------|--|
| 1. Bicycle safety | 4. Display showing proper maintenance/repair |
| 2. What traffic signs mean | 5. Display of plan for bicycle trip/route |
| 3. State laws that apply to bicycles | 6. Other or self-determined |

WOOD SCIENCE

DIVISION 4181 Primary, ages 5 - 7

DIVISION 4182 Junior, ages 8 - 10

DIVISION 4183 Intermediate, ages 11 - 13

DIVISION 4184 Senior, ages 14 - 19

Class No. Blue 20, Red 15, White 10

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|--------------------------------------|----------------------------|
| 1. How to mark, measure and cut wood | 5. Safety practices |
| 2. Use hand and power tools | 6. Lumber dimensions |
| 3. Types of fasteners and use | 7. Other or self-determine |
| 4. How to apply finishes | |

WIND ENERGY PROJECT

DIVISION 4191 Primary, ages 5 - 7

DIVISION 4192 Junior, ages 8 - 10

DIVISION 4193 Intermediate, ages 11 - 13

DIVISION 4194 Senior, ages 14 - 19

Class No. Blue 20, Red 15, White 10

1. Show 4 ways wind can be used to do work
2. Show 4 ways wind can be harmful
3. Where does the wind come from? Show how this can be done.
4. Show how geography affects wind power
5. Show wind power projects in various parts of the United States
6. Show factors of successful wind power projects
7. Can wind power work in our area? How?