Mechanical Sciences

MODEL ROCKET CONTEST GUIDELINES

Member Guide

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HEAD • HEART • HANDS • HEALTH

CONTENTS

PURPOSE

This contest is designed as a public demonstration of skills and knowledge acquired by 4-H members participating in the model rocketry program. This event offers youth an opportunity to compete with other 4-H'ers and to gain recognition for their accomplishments. Knowledge of model rocket technology and skill in safe construction practices and safe model rocket launching procedures will be evaluated, while creating enthusiasm and interest among youth, cooperative extension workers, 4-H leaders and parents. As a result, these youth are able to create an improved self-esteem and to develop many life skills.

The National Association of Rocketry has developed a Model Rocket Safety Code which is included in these guidelines. Becoming familiar and following the code will ensure a very safe rocket launch event.

Additional 4-H materials on model rocketry and aerospace can be obtained from the 4-H Cooperative Curriculum System, www.n4hccs.org. The Aerospace materials, *Aerospace Adventure*, consist of five activity guides: Pre-Flight, Grades K-2; Lift Off, Grades 3-5; Reaching New Heights, Grades 6-8; Pilot in Command, Grades 9-12; and Flight Crew Helper's Guide.

ELIGIBILITY

Note: The following requirements are for the state contest only. Each county may use the following rules or develop their own eligibility requirements within the general state 4-H guidelines.

Junior Division

- Contestants must be enrolled in the 4-H aerospace program.
- The contestants must be in grades 3 - 8.
- Each county may select one contestant to participate in the state 4-H model rocketry contest, junior division.

Senior Division

- Contestants must be enrolled in the 4-H aerospace program.
- The contestants must be in grades 9 - 13.
- Each county may select one contestant to participate in the state 4-H model rocketry contest, senior division.

EVENTS

The state 4-H contest will include the following events:

- Written examination
- Parts identification
- Model rocket judging
  - Judging of contestant's model rockets, face to face
  - Contestants judging model rockets (senior division only)
- Rocket launching and safety

CONTEST PLANNING

County

The county contest should be organized by the county rocketry leaders and/or Extension youth development agent.

Conducting the county contest during the county fair may create considerable spectator interest and public support for the program.

State

The state 4-H model rocketry contest will be organized by the State 4-H Mechanical Science Committee, University of Wisconsin-Madison Biological Systems Engineering Department staff and University of Wisconsin-Extension, Youth Development Department.

The state 4-H model rocketry contest will be held during the late summer at a location determined by the Youth Development Department.

RESPONSIBILITIES OF THE CONTEST ORGANIZERS

1. Select the date for the contest.
2. Determine the contest location.
3. Notify all participants of the time, date and place for the contest.
4. Acquire the equipment listed below.
5. Obtain judges. There should be a minimum of three judges. **Note**: For suggestions on selecting judges, see the section titled "Judging and Protest Handling" on page 3.
6. Publicize the contest in news media (newspaper, radio, etc.). The event should be publicized prior to the contest to encourage youth to participate. In addition, the results of the contest should be publicized immediately following the event.

EQUIPMENT NEEDED

- Clipboards and pencils. One clipboard per judge plus a sufficient number of pencils so that the contestants may complete the written parts and judging events of the contest.
- Written examination. One copy per contestant will be required. **Note**: For requirements on the examination see the section titled "Written Examination" on page 3.
- Written examinations may be obtained from the Mechanical Science specialist responsible for the aerospace project.
- Parts identification. One set of rocket parts is needed for parts identification.
- Rockets.
    - Contestants must make available model rockets which they constructed. **Note**: Contestants may use different rockets in the judging and launching activities.
    - Four rockets are needed for senior division contestants to judge and evaluate.
- Launching system. A safe launch system must be available for launching model rockets. Based on time constraints and the number of contestants, more than one launching system may be required.
- Launching area. Based on the model rocket engine used in launching, a field or area of sufficient size must be available and free of obstructions, such as trees, power lines and telephone lines.

SCORING

The penalty point system will be used: for each incorrect answer or action, points will be added to the contestant's score. The winner of the contest and placings will be determined by the lowest scores in an ascending order beginning with the lowest total points charged to any contestant. In case of a tie, the written exam will be used to break the tie.

All events will have time limits which are indicated in the description of each event, which follows later.

JUDGING AND PROTEST HANDLING

County

The county 4-H rocketry coordinators should select three judges who are knowledgeable about model rockets. The coordinators and judges should meet prior to the contest to discuss rules and rule interpretation and answer any questions. The judges need to have an opportunity to thoroughly study these rules before the contest.

Potential judges include representatives of model rocketry retail outlets, science teachers and past participants in model rocketry 4-H projects. **Note**: Parents of participating youths should not be judges.

State

Judges will be assigned to handle specific events in the contest. The State 4-H Mechanical Science Committee will interpret all problems related to rules arising before or during the contest and will make revisions depending on contest conditions. No questions or protests will be considered later than 15 minutes after the last contestant finishes all the events. Decision of the State 4-H Mechanical Science Contest Committee shall be final.

CONTEST EVENTS

Following is a description of the events for the state model rocketry contest. County organizers may design their contest differently to meet their specific goals. To insure the greatest success of the county's representative at the state event, it is suggested that these rules be followed within reason.

Written Examination

(30-minute time limit)

The purpose of the written examination is to determine the contestant's understanding of model rocketry design, construction and operation. The questions will be based on information found in the 4-H model rocket literature and materials found in model rocket kits.

The written examination will consist of 25 questions for the senior division and 15 questions for the junior division with 10 points per question. For each question answered incorrectly or omitted, 10 points will be added to the contestant's score. All questions will be multiple choice or true/false.

For the senior division, the source material will include knowledge and skills associated with rockets up to and including level four. For the junior division, knowledge and skill levels will include levels one and two model rockets. The senior division will require a greater depth of knowledge for success.

The number of questions missed or not answered x 10 = ____ points added to the contestant's score.

Parts Identification and Function

(30-minute time limit)

Contestants will demonstrate their knowledge of 1) model rocket parts and related equipment and 2) their function (senior division only). Before model rockets can be constructed and launched successfully by youth, they must know and understand the function of the rocket parts.

This event will consist of identifying 10 model rocket parts. Senior division contestant will also be expected to identify the item's function. For the junior division, the contestants will be given a list of parts and will be asked to write the number of each displayed part adjacent to the name on the scorecard. For the senior division, each item must be identified correctly by writing its common name and function in the scorecard. Parts Identification Scorecards may be found on page 6 (junior division) and page 7 (senior division).

In the junior division, 10 points will be added to each contestant's score for each part incorrectly identified. In the senior division, 10 points will be added to the contestant's score for each part incorrectly identified or unanswered. Another 10 points will be added if the part's function is incorrectly described or unanswered. The number of parts and functions missed or not answered x 10 = ____ points added to contestant's score.

An assortment of model rocket parts, such as fins, launch lug, nose cone, body tube, igniter, shock cord, engine mount and wadding will be provided for the parts identification event.

Rocket Judging

Judging of contestant model rockets

All contestants are expected to bring a model rocket to the state contest for judging. The contestants must have verification by parents, leaders or extension staff that indicates they constructed the rocket with a minimum of supervision. A judge will evaluate each model rocket entered in accordance with the judging form found in the Model Rocketry Leader's Guide or the judge in agreement with the planning committee may modify the judging sheet found on page 8.

Contestants judge model rockets (senior division only)

An additional requirement for the contestants in the senior event will be to judge four model rockets and rank them. Each error in ranking will add 10 points to the contestant's score. A time limit of 10 minutes will be imposed. A contestant's scorecard is found on page 9. See pages 10 - 11 for a schedule of the penalty points for this activity.

Rocket Launching

Each contestant in both the junior and senior divisions will launch their rocket. Each contestant will be asked to set up a launching system, prepare their rocket for launching and launch their rocket. These activities will be completed by one contestant at a time and out of sight of the other contestants. The contestants will be observed for proper and safe procedures during the event based on the model rocket safety code found on page 4. Also the contestants will attempt to land their rocket on a designated target which will be a 10-foot diameter circle. For each 10 feet, or fraction thereof, away from the outer edge of the circle, four points will be added to the contestant's score.

Example

A model rocket landed 142 feet from the outer boundary of the 10-foot circle.

Solution

150 (142 feet rounded up to 150 feet) divided by 10 and times four points equals 60 penalty points.

Each contest will have three opportunities to launch their model rocket. If the rocket fails to launch, the contestant will lose their turn. Each contestant will be certain of having one successful launch. If a contestant has three failed launch attempts, they will be permitted to make adjustments until a successful launch is obtained. The best landing of the successful launch(es) will be used for scoring. See page 12 for the Launching Preparation and Launching Scorecard for this event.

All rockets must have a recovery system. Only standard recovery systems, which include parachute, streamer, glider and helicopter, may be used for this contest. The contestant must use an engine recommended by the supplier.

MODEL ROCKET SAFETY CODE

National Association of Rocketry

Materials. I will use only lightweight, non-metal parts for the nose, body and fins of my rocket.

Motors. I will use only certified, commercially-made model rocket motors, and will not tamper with these motors or use them for any purposes except those recommended by the manufacturer.

Ignition System. I will launch my rockets with an electrical launch system and electrical motor igniters. My launch system will have a safety interlock in series with the launch switch and will use a launch switch that returns to the "off" position when released.

Misfires. If my rocket does not launch when I press the button of my electrical launch system, I will remove the launcher's safety interlock or disconnect its battery, and will wait 60 seconds after the last launch attempt before allowing anyone to approach the rocket.

Launch Safety. I will use a countdown before launch, and will ensure that everyone is paying attention and is a safe distance of at least 15 feet away when I launch rockets with D motors or smaller, and 30 feet when I launch larger rockets. If I am uncertain about the safety or stability of an untested rocket, I will check the stability before flight and will fly it only after warning spectators and clearing them away to a safe distance.

Launcher. I will launch my rocket from a launch rod, tower or rail that is pointed to within 30 degrees of the vertical to ensure that the rocket flies nearly straight up, and I will use a blast deflector to prevent the motor's exhaust from hitting the ground. To prevent accidental eye injury, I will place launchers so that the end of the launch rod is above eye level or will cap the end of the rod when it is not in use.

Size. My model rocket will not weigh more than 1,500 grams (53 ounces) at liftoff and will not contain more than 125 grams (4.4 ounces) of propellant or 320 N-sec (71.9 pound-seconds) of total impulse. If my model rocket weighs more than one pound (453 grams) at liftoff or has more than four ounces (113 grams) of propellant, I will check and comply with Federal Aviation Administration regulations before flying.

Flight Safety. I will not launch my rocket at targets, into clouds or near airplanes, and will not put any flammable or explosive payload in my rocket.

Launch Site. I will launch my rocket outdoors, in an open area at least as large as shown in the accompanying table (see Image 1), and in safe weather conditions with wind speeds no greater than 20 miles per hour. I will ensure that there is no dry grass close to the launch pad and that the launch site does not present risk of grass fires.

Recovery System. I will use a recovery system, such as a streamer or parachute in my rocket, so that it returns safely and undamaged and can be flown again, and I will use only flame-resistant or fireproof recovery system wadding in my rocket.

Recovery Safety. I will not attempt to recover my rocket from power lines, tall trees or other dangerous place

Image 1: Launch Site Dimensions Chart

LAUNCH SITE DIMENSIONS		
Installed Total Impulse (N-sec)	**Equivalent Motor Type**	**Minimum Site Dimensions (ft.)**
0.00 — 1.25	¼ A, ½ A	50
1.26 — 2.50	A	100
2.51 — 5.00	B	200
5.01 — 10.00	C	400
10.01 — 20.00	D	500
20.01 — 40.00	E	1,000
40.01 — 80.00	F	1,000
80.01 — 160.00	G	1,000
160.01 — 320.00	Two Gs	1,500

JUNIOR DIVISION

Name _____
County _____
Score _____

PARTS IDENTIFICATION SCORECARD
WISCONSIN STATE 4-H MODEL ROCKET CONTEST

Items to be identified have a number attached to them. Select the most correct name from the list. Write the item's identification number in the blank before the item's name. Time limit = 30 minutes.

_____ Body tube
_____ Engine
_____ Engine holder tube
_____ Engine hook
_____ Eye screw
_____ Fin
_____ Fin aligner
_____ Igniter
_____ Launcher
_____ Launcher control
_____ Launching lug
_____ Nose cone
_____ Parachute
_____ Shock cord
_____ Shock cord mount
_____ Shroud lines
_____ Spacing ring
_____ Streamer
_____ Tape disk
_____ Tracker
_____ Tube marking guide
_____ Wadding

SENIOR DIVISION

Name _____
County _____
Score _____

PARTS IDENTIFICATION SCORECARD
WISCONSIN STATE 4-H MODEL ROCKET CONTEST

Items to be identified have a number attached to them. Write the **common name** of the item in the space beside its corresponding number. In the space titled "purpose," write the item's purpose. Penalty points – 10 points for each item incorrectly identified or unanswered plus 10 points for item incorrectly identified or unanswered plus 10 points for each item's purpose incorrectly identified or unanswered. Time limit = 30 minutes.

	Item Name	**Purpose**
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		

Junior Division _____
Senior Division _____

Name _____
County _____

ROCKET APPEARANCE AND CONSTRUCTION SCORECARD
WISCONSIN STATE 4-H MODEL ROCKET CONTEST

Construction

Fins

Incorrectly spaced on the tube	(5)	_____
Fins not aligned with body tube	(5)	_____
Fins not normal to body tube surface	(5)	_____
Inadequate adhesive between fin and body	(5)	_____
Fillet between fin and body tube not well formed	(5)	_____
Incorrect fin edge attached to body tube	(5)	_____

Engine Mount

Engine hook improperly installed	(5)	_____
Engine holder tube improperly installed	(5)	_____
Engine does not securely mount in rocket	(10)	_____

Launch Lug

Launch lug missing	(15)	_____
Improper placement of launch lug	(5)	_____
Poor attachment of launch lug	(5)	_____

Recovery System and Nose Cone

Recovery system missing	(10)	_____
Shock cord missing	(10)	_____
Recovery system improperly installed	(5)	_____
Shock cord improperly installed	(5)	_____
Nose cone fits too tight or too loose in rocket body	(5)	_____
No wadding	(5)	_____

Finish

All surfaces not smooth	(5)	_____
Balsa not sanded and not sealed	(5)	_____
Paint coverage uneven	(5)	_____
Decals not on straight	(5)	_____

Total _____

SENIOR DIVISION

Name _____
County _____

CONTESTANTS JUDGE MODEL ROCKETS SCORECARD
WISCONSIN STATE 4-H MODEL ROCKET CONTEST

Place an X in the space preceding the correct placing for the model rocket class. Time limit = 10 minutes.

_____	ABCD	_____	CABD
_____	ABDC	_____	CADB
_____	ACBD	_____	CBAD
_____	ACDB	_____	CBDA
_____	ADBC	_____	CDAB
_____	ADCB	_____	CDBA
_____	BACD	_____	DABC
_____	BADC	_____	DACB
_____	BCAD	_____	DBAC
_____	BCDA	_____	DBCA
_____	BDAC	_____	DCAB
_____	BDCA	_____	DCBA

Score _____

CONTESTANTS JUDGE MODEL ROCKETS (JUDGES USE ONLY)

Correct Placings

ABCD	ABDC	ACBD	ACDB	ADBC	ADCB

Incorrect Placings and Penalties

ABDC (10)	ABCD (10)	ABCD (10)	ABCD (30)	ABCD (30)	ABCD (40)
ACBD (10)	ACBD (30)	ABDC (30)	ABDC (40)	ABDC (10)	ABDC (30)
ACDB (30)	ACDB (40)	ACDB (10)	ACBD (10)	ACBD (40)	ACBD (30)
ADBC (30)	ADBC (10)	ADBC (40)	ADBC (30)	ACDB (30)	ACDB (10)
ADCB (40)	ADCB (30)	ADCB (30)	ADCB (10)	ADCB (10)	ADBC (10)
BACD (10)	BACD (20)	BACD (30)	BACD (60)	BACD (50)	BACD (70)
BADC (20)	BADC (10)	BADC (50)	BADC (70)	BADC (30)	BADC (60)
BCAD (30)	BCAD (50)	BCAD (40)	BCAD (70)	BCAD (80)	BCAD (90)
BCDA (60)	BCDA (70)	BCDA (70)	BCDA (90)	BCDA (90)	BCDA (100)
BDAC (50)	BDAC (30)	BDAC (80)	BDAC (90)	BDAC (40)	BDAC (70)
BDCA (70)	BDCA (60)	BDCA (90)	BDCA (100)	BDCA (70)	BDCA (90)
CABD (30)	CABD (60)	CABD (10)	CABD (20)	CABD (70)	CABD (50)
CADB (50)	CADB (70)	CADB (20)	CADB (10)	CADB (60)	CADB (30)
CBAD (40)	CBAD (70)	CBAD (30)	CBAD (50)	CBAD (90)	CBAD (80)
CBDA (70)	CBDA (90)	CBDA (60)	CBDA (70)	CBDA (100)	CBDA (90)
CDAB (80)	CDAB (90)	CDAB (50)	CDAB (30)	CDAB (70)	CDAB (40)
CDBA (90)	CDBA (100)	CDBA (70)	CDBA (60)	CDBA (90)	CDBA (70)
DABC (60)	DABC (30)	DABC (70)	DABC (50)	DABC (10)	DABC (20)
DACB (70)	DACB (50)	DACB (60)	DACB (30)	DACB (20)	DACB (10)
DBAC (70)	DBAC (40)	DBAC (90)	DBAC (80)	DBAC (30)	DBAC (50)
DBCA (90)	DBCA (70)	DBCA (100)	DBCA (90)	DBCA (60)	DBCA (70)
DCAB (90)	DCAB (80)	DCAB (70)	DCAB (40)	DCAB (50)	DCAB (30)
DCBA (100)	DCBA (90)	DCBA (90)	DCBA (70)	DCBA (70)	DCBA (60)

BACD	BADC	BCAD	BCDA	BDAC	BDCA
ABCD (10)	ABCD (20)	ABCD (30)	ABCD (60)	ABCD (50)	ABCD (70)
ABDC (20)	ABDC (10)	ABDC (50)	ABDC (70)	ABDC (30)	ABDC (60)
ACBD (30)	ACBD (50)	ACBD (40)	ACBD(70)	ACBD (80)	ACBD (90)
ACBD (60)	ACBD (70)	ACBD (70)	ACBD (90)	ACBD (90)	ACDB (100)
ADBC (50)	ADBC (30)	ADBC (80)	ADBC (90)	ADBC (40)	ADBC (70)
ADCB (30)	ADCB (60)	ADCB (90)	ADCB (100)	ADCB (70)	ADCB (90)
BADC (10)	BACD (10)	BACD (10)	BACD (30)	BACD (30)	BACD (40)
BCAD (10)	BCAD (30)	BADC (30)	BADC (40)	BADC (10)	BADC (30)
BCDA (30)	BCDA (40)	BCDA (10)	BCAD (10)	BCAD (40)	BCAD (30)
BDAC (30)	BDAC (10)	BDAC (40)	BDAC (30)	BCDA (30)	BCDA (10)
BDCA (40)	BDCA (30)	BDCA (30)	BDCA (10)	BDCA (10)	BDAC (10)
CABD (40)	CABD (70)	CABD (30)	CABD (50)	CABD (90)	CABD (80)
CADB (70)	CADB (90)	CADB (60)	CADB (70)	CADB (100)	CADB (90)
CBAD (30)	CBAD (60)	CBAD (10)	CBAD (20)	CBAD (70)	CBAD (50)
CBDA (50)	CBDA (70)	CBDA (20)	CBDA (10)	CBDA (60)	CBDA (30)
CDAB (90)	CDAB (100)	CDAB (70)	CDAB (60)	CDAB (60)	CDAB (70)
CDBA (80)	CDBA (90)	CDBA (50)	CDBA (30)	CDBA (70)	CDBA (40)
DABC (70)	DABC (40)	DABC (90)	DABC (80)	DABC (30)	DABC (50)
DACB (90)	DACB (70)	DACB (100)	DACB (90)	DACB (60)	DACB (70)
DBAC (60)	DBAC (30)	DBAC (70)	DBAC (50)	DBAC (10)	DBAC (20)
DBCA (70)	DBCA (50)	DBCA (60)	DBCA (30)	DBCA (20)	DBCA (10)
DCAB (100)	DCAB (10)	DCAB (90)	DCAB (70)	DCAB (70)	DCAB (60)
DCBA (90)	DCBA (80)	DCBA (70)	DCBA (40)	DCBA (50)	DCBA (30)

CONTESTANTS JUDGE MODEL ROCKETS (JUDGES USE ONLY)

Correct Placings

CABD	CADB	CBAD	CBDA	CDAB	CDBA
Incorrect Placings and Penalties					
ABCD (30)	ABCD (50)	ABCD (40)	ABCD (70)	ABCD (80)	ABCD (90)
ABDC (60)	ABDC (70)	ABDC (70)	ABDC (90)	ABDC (90)	ABDC (100)
ACBD (10)	ACBD (20)	ACBD (30)	ACBD (60)	ACBD (50)	ACBD (70)
ACDB (20)	ACDB (10)	ACDB (50)	ACDB (70)	ACDB (30)	ACDB (60)
ADBC (70)	ADBC (60)	ADBC (90)	ADBC (100)	ADBC (70)	ADBC (90)
ADCB (50)	ADCB (30)	ADCB (80)	ADCB (90)	ADCB (40)	ADCB (70)
BACD (40)	BACD (70)	BACD (30)	BACD (50)	BACD (90)	BACD (80)
BADC (70)	BADC (90)	BADC (60)	BADC (70)	BADC (100)	BADC (90)
BCAD (30)	BCAD (60)	BCAD (10)	BCAD (20)	BCAD (70)	BCAD (50)
BCDA (50)	BCDA (70)	BCDA (80)	BCDA (10)	BCDA (60)	BCDA (30)
BDAC (90)	BDAC (100)	BDAC (70)	BDAC (60)	BDAC (90)	BDAC (70)
BDCA (80)	BDCA (90)	BDCA (50)	BDCA (30)	BDCA (70)	BDCA (40)
CADB (10)	CABD (10)	CABD (10)	CABD (30)	CABD (30)	CABD (40)
CBAD (10)	CBAD (30)	CADB (30)	CADB (40)	CADB (10)	CADB (30)
CBDA (30)	CBDA (40)	CBDA (10)	CBAD (10)	CBAD (40)	CBAD (30)
CDAB (30)	CDAB (10)	CDAB (40)	CDAB (30)	CBDA (30)	CBDA (10)
CDBA (40)	CDBA (30)	CDBA (30)	CDBA (10)	CDBA (10)	CDAB (10)
DABC (90)	DABC (70)	DABC (100)	DABC (90)	DABC (60)	DABC (70)
DACB (70)	DACB (40)	DACB (90)	DACB (80)	DACB (30)	DACB (50)
DBAC (100)	DBAC (90)	DBAC (90)	DBAC (70)	DBAC (70)	DBAC (60)
DBCA (90)	DBCA (80)	DBCA (70)	DBCA (40)	DBCA (50)	DBCA (30)
DCAB (60)	DCAB (30)	DCAB (70)	DCAB (50)	DCAB (10)	DCAB (80)
DCBA (70)	DCBA (50)	DCBA (60)	DCBA (30)	DCBA (20)	DCBA (10)

DABC	DACB	DBAC	DBCA	DCAB	DCBA
ABCD (60)	ABCD(70)	ABCD (70)	ABCD (90)	ABCD (90)	ABCD (100)
ABDC (30)	ABDC (50)	ABDC (40)	ABDC (70)	ABDC (80)	ABDC (90)
ACBD (70)	ACBD (60)	ACBD (90)	ACBD (100)	ACBD (70)	ACBD (90)
ACDB (50)	ACDB(30)	ACDB (80)	ACDB (90)	ACDB (40)	ACDB (70)
ADBC (10)	ADBC (20)	ADBC (30)	ADBC (60)	ADBC (50)	ADBC (70)
ADCB (20)	ADCB (10)	ADCB (50)	ADCB (70)	ADCB (30)	ADCB (60)
BACD (70)	BACD (90)	BACD (60)	BACD (70)	BACD (100)	BACD (90)
BADC (40)	BADC (70)	BADC (30)	BADC (50)	BADC (90)	BADC (80)
BCAD (90)	BCAD (100)	BCAD (70)	BCAD (60)	BCAD (90)	BCAD (70)
BCDA (80)	BCDA (90)	BCDA (50)	BCDA (30)	BCDA (70)	BCDA (40)
BDAC (30)	BDAC (60)	BDAC (10)	BDAC (20)	BDAC (70)	BDAC (50)
BDCA (50)	BDCA (70)	BDCA (20)	BDCA (10)	BDCA (60)	BDCA (30)
CABD (90)	CABD (70)	CABD (100)	CABD (90)	CABD (60)	CABD (70)
CADB (70)	CADB (40)	CADB (90)	CADB (80)	CADB (30)	CADB (50)
CBAD (100)	CBAD (90)	CBAD (90)	CBAD (70)	CBAD (70)	CBAD (60)
CBDA (90)	CBDA (80)	CBDA (70)	CBDA (40)	CBDA (50)	CBDA (30)
CDAB (60)	CDAB (30)	CDAB (70)	CDAB (50)	CDAB (10)	CDAB (20)
CDBA (70)	CDBA (50)	CDBA (60)	CDBA (30)	CDBA (20)	CDBA (10)
DACB (10)	DABC (10)	DABC (10)	DABC (30)	DABC (30)	DABC (40)
DBAC (10)	DBAC (30)	DACB (70)	DACB (40)	DACB (10)	DACB (30)
DBCA (30)	DBCA (40)	DBCA (10)	DBAC (10)	DBAC (40)	DBAC (30)
DCAB (30)	DCAB (10)	DCAB (40)	DCAB (30)	DBCA (30)	DBCA (10)
DCBA (40)	DCBA (30)	DCBA (30)	DCBA (10)	DCBA (10)	DCAB (10)

Junior Division _____
Senior Division _____

Name _____
County _____

LAUNCHING PREPARATION AND LAUNCHING SCORECARD
WISCONSIN STATE 4-H MODEL ROCKET CONTEST

		Launch Number 1	2	3
Rocket Preparation				
Improper installation of engine	(10)			
Improper installation of igniter	(5)			
Incorrect engine	(10)			
Launcher Preparation				
Improper setup	(5)			
Improper angle of launch rod	(5)			
Unsafe connection of igniter	(20)			
Rocket Launch				
No ignition or a burnout	(5)			
Initial flight path non-vertical	(10)			
Initial flight unstable	(10)			
Wiggle in powered flight and coast	(10)			
Recovery system does not deploy	(20)			
Partial recovery system deployed	(10)			
Rocket not useable after launching	(20)			
Distance from target _____ _____ _____ feet				
Roundup to the next 10 feet				
Divide by 10 _____ _____ _____				
Accuracy (x 4) _____ _____ _____				
Total				

The 4-H name and emblem are federally protected under Title 18 US Code 707. Created by Ron Schuler, Wisconsin 4-H Mechanical Science Specialist. Layout and design revised by Jenny Streiff, 4-H Youth Development Graphic Artist, June 2005.

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