

14th Annual

2019-2020

Reach for the Stars National Rocket Competition

Ages 10 to 18

Rules & Regulations

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Revised July 2019*

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Reach for the Stars ~ National Rocket Competition

Ages 10 to 18

It's as simple as **3... 2... 1...**

3.. Order Rocketry Supplies –

Send us your numbers

– We will reply with a 'no obligation' estimate

1. How many competitors? (minimum 12)
2. What age / grade? (ages 10 to 18)
3. When do you want to launch?
4. Do you have launch equipment? (launch pad and control)
5. Are you experienced?

2.. Build Rockets & Launch Twice

Competition - run by you - at your location - at any time

Host several Local Competitions per Year

Closest average landing *WINS LOCAL EVENT!*

1.. Award Certificates to All competitors, teachers, leaders and host organization!

Send your Local Winner's Entry to National RFTS Headquarters.

Results of the Local Competitions determine the National Winners.

The five (5) closest of all entries submitted to Competition Headquarters by the deadline – get invited to the National Winners' Celebration under an "October Sky" at Space Camp / US Space & Rocket Center, "Rocket City" - Huntsville, Alabama.

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Helping Kids Reach for the Stars, Reach for the Stars ~ National Rocket Competition

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14th Annual 2019 - 2020
Reach for the Stars ~ National Rocket Competition
Rules Synopsis

From National Association of Rocketry / Pink Book - Spot Landing Event

“The purpose of this competition is to land the entry so that the tip of its nose cone is closest to a predetermined spot on the ground.”

A minimum of 12 Competitors (age 10 - 18) required per local event
Host may run several RFTS Competitions throughout the year

Annual Deadline – July 31st

Results from local Competitions determine the 5 National Winners.
Annual National Winners’ Celebrations under an ‘October Sky’
Space Camp, U.S. Space & Rocket Center, Huntsville, Alabama

Rockets must be constructed, prepared and launched by the competitor*

One rocket per competitor / Ready-to-fly & snap-together (no glue) rockets Do Not qualify

Must follow the manufacturer’s instructions

Assistance is limited to verbal coaching*

Exceptions - At host’s discretion hands-on help can be offered to:

1. Insert starter / igniter 2. Competitors with disabilities

***See complete competition rules for details**

In dry or windy conditions check with your local Fire Department to determine launch safety.

Three (3) on-site adult Judges required - One must be a Public Official

**i.e. School Admin (Principal, Asst. Principal), Police or Fire Dept. (Ranking Officer),
Scout District or Council Leader, Elected Official, etc.**

Host may act as judge / Relatives of participating competitors cannot be judges

This is a national competition and should be treated seriously

1. Target (clearly marked & easily visible) should be placed **50’ downrange** from launch pad.
 - a. Target must be fixed to ground to prevent accidental movement.
ex: a nail through a piece of paper or small flag on dowel
 2. Rocket must be propelled by an “A” motor / engine (ex: A8-3 / A6-4) and landed by parachute
 3. In an order selected at random, each competitor will launch and mark their landing spot.
 - a. Judges will determine if the rockets are safe for launch.
 - b. Touchdown spot of the tip of the nosecone should be immediately marked.
Buried cable marking flags, golf tees, bamboo skewers, nails with tape flags or similar device make good markers
 - c. A launching angle of less than thirty degrees from vertical must be used. (**NAR Pink Book**)
- Note:** In the event that the judges cannot agree on the touchdown spot - the touchdown will be determined as a point halfway between the two points in question.
4. All competitors launch for the second time and mark the landing spot.
IMPORTANT: No repairs may be made prior to the second launch.
 5. Measurements must be taken in **feet and inches to the nearest inch**.
 - a. Metric measure may be used - but must be converted before submitting the Entry Form.
- Note:** Only the winning competitor needs to be measured with accuracy. All others may be estimated.
6. Record as 50 feet any:
 - a. landing at a distance greater than 50 feet.
 - b. landing that does not reach the ground (landings in trees, ponds, etc.)
 - c. rocket unable to fly.
 - d. rocket that cannot be returned to the judges.
 - e. rocket that separates into two or more unattached pieces.
 7. Closest average distance wins! ($L1 + L2 / 2 = \text{average distance}$)
(landing one distance) plus (landing two distance) divided by 2, equals (average distance)
Note: It is best to convert measurements to inches before averaging.
 8. Fill out, collect required signatures and submit **Entry Form**
Note: For accuracy – Entry Form should be completed on launch day if possible.
 9. Award certificates - can be done at a later date if desired. (Parent night, awards banquet, etc.)

Rocket Ready-to-fly and snap together rockets do not qualify Popular models: <i>Estes</i> - Alpha (#1225) Alpha III (#1256) Gen E2X (#1764) <i>Quest</i> - Astra (#1004) Astra III (#1610) <i>Custom</i> - Freedom (#10024) Sierra (#10031)	Length 11 ½" to 15 ½"	Diameter .95" to 1.25"	Weight not to exceed 2 ½ oz (71 grams) *including parachute *without engine / motor Most commercial kits that fit the dimensions have acceptable weight. No weight may be added to effect flight and landing
Parachute	Minimum six shrouds 8" to 14" in length	Diameter 11" to 15"	All or part of spill-hole may be removed (max 4 ¼" diam.) Note: nothing may be done to prevent the parachute from opening fully
Fins	3 to 6	Non-metal	
Engines / Motors	A8-3	A6-4	0.11 to 0.12 oz of Propellant Total Impulse of 2.5 Newtons 3 to 4 second delay
Launch Rod	Length 38" maximum	Launch Angle less than 30° from vertical	
Target	50' downrange	Clearly Visible	Stationary

A. Purpose

This year's **RFTS Competition** is dedicated to the Apollo Astronauts.

1. The purpose of this competition is to foster an interest in model rocketry, STEM (Science, Technology, Engineering, Math) subjects and aeronautics.
2. The goal of the program is to give kids the unique educational experience of building and launching their own solid-fuel powered rocket.
3. The mission of the program is to keep alive the memory of the 1st Teacher-in-Space.
Christa McAuliffe

B. Eligibility

1. Open to anyone residing in any of the United States except where prohibited by law.
2. Competitor must be between the ages of ten (10) and eighteen (18) at time of launch.
3. **A minimum of 12 Competitors are required for each local Competition.**
4. Host must register before running Competition.
Host may run several Local Competitions per year.
5. **Each competitor must build, prep* and launch their own rocket.**

Ready-to-fly & snap-together (no glue) rockets Do Not qualify

***Exceptions** - At host's discretion hands-on help can be offered to:

1. **Insert starter / igniter**
2. **Competitors with disabilities** -

***See complete competition rules for details**

One rocket per competitor.

6. Competition hosts are encouraged to award prizes at the local level.
7. National Winners are determined from all local competition entries submitted by deadline.

C. National Winners' Celebration

Five (5) National Winners will be invited to celebrate under an "October Sky" at **Space Camp / U.S. Space & Rocket Center**, Huntsville, Alabama.

Go to www.RocketCompetition.com for details.

14th Annual **2019 - 2020**
Reach for the Stars ~ National Rocket Competition

A. Purpose

This year's **RFTS Competition** is dedicated to the Apollo Astronauts.

1. The purpose of this competition is to foster an interest in model rocketry, STEAM (Science, Technology, Engineering, Art, Math) subjects and aeronautics.
2. The goal of the program is to give kids the unique educational experience of building and launching their own solid-fuel powered rocket.
3. The mission of the program is to keep alive the memory of the 1st Teacher-in-Space.
Christa McAuliffe.

B. Eligibility

1. Open to anyone residing in any of the United States except where prohibited by law.
2. Competitor must be at least ten (10) – but less than nineteen (19) years of age at time of launch.
3. A minimum of 12 Competitors are required for each local Competition.
4. Groups must register before running Competition.
5. Each competitor must build, prep and launch their own rocket.

One rocket per competitor. Ready-to-fly & snap-together (no glue) rockets Do Not qualify

C. National Winners' Celebration

1. Competition hosts are encouraged to award prizes at the local level.
2. Five (5) National Winners will be invited to celebrate under an "October Sky" at **Space Camp / U.S. Space & Rocket Center**, "Rocket City" Huntsville, Alabama.

See www.RocketCompetition.com for details.

D. Important Dates

Kick-off: August 1st

1. Local competitions can be run at any time.
2. Hosts may run several local Competitions throughout the year.

Deadlines: Midnight - July 31st

1. Competition Entry Forms must be received at competition headquarters.
2. Forms may be sent to us via mail, e-mail or fax. (206) 350-7880
3. National Winners will be contacted within one week after the deadline and will be posted on our website www.RocketCompetition.com

National Winners' Celebration -

Space Camp / U.S. Space & Rocket Center to be held under an 'October Sky'

See www.RocketCompetition.com for details.

E. Registration:

Registration is included when purchasing Rocketry supplies from **SciCon Services**

1. Registration Package includes:

RFTS Competition National Entry Form, Rules Synopsis, Achievement Certificates for each competitor, Local Winner's Certificate & letter to parent, Host's Certificate(s).

2. Competition Supplies and Registration Fees -

For details on supplies and pricing of Group and Individual Registrations go to www.SciConServices.com.

3. Orders can be placed:

- a. by credit card
- b. by fax or e-mail with a Purchase Order
- c. by check or money order payable to **SciCon Services** mailed to:
SciCon Services, 1683 Siesta Drive, Sarasota, Florida 34239

Note: Checks will need extra time to process and clear

Important Note:

When rocket kits are purchased from sources other than **The Rocketman** or **SciCon Services** they must adhere to the specifications outlined in Section H.

- ★ Proof of this must be shown in the form of published specifications from the manufacturer included with copy of purchase receipt.
- ★ If no such information is available measurements must be made and verified by the local competition judges. Photos can be used to substantiate measurements.

Failure to submit this information with the Competition Entry Form may void the entry

F. Three (3) on-site Judges

Note: **Celebrity Judges** (astronauts, actors, authors, etc.) are encouraged. However, their duties should be limited to countdown for launch. They seldom have time to complete all of the marking and measuring for the competition.

1. Three adults (over 21 years of age)

One must be a Public Official

i.e. School Admin (Principal / Assistant Principal), Police or Fire Dept. Ranking Officer, Scout District / Council Leader, elected official, etc.

a. Host may be a judge

b. Relatives of participating competitors cannot be judges.

2. Judges will determine the landing spot of the rocket's nose cone and oversee the measurement of the distance from the target.

a. The target should be clearly marked and easily visible prior to the first launch.

3. If the judges cannot agree on the touchdown spot - the touchdown will be determined as a point halfway between the two points in question.

4. Decisions of the judges are final.

5. **IMPORTANT:** If possible the **RFTS Competition National Entry Form** should be completed and signed the day of the local event. Please submit entry as soon as possible following the launch.

G. Age: 10 to 18 at time of launch

All competitors must build, prepare and launch their own solid-fuel powered rocket. *
Direct adult supervision recommended for those under 12

***Exceptions** - At host's discretion, hands-on help can be offered to:

1. **Insert starter / igniter**
2. **Competitors with disabilities**

H. Competition Supplies

This is a national competition. Supplies are limited. Order early!

See detailed specs at www.SciConServices.com

Order at least 3 weeks early to avoid a \$35 haz mat fee.

1. Rockets -

Must be built by competitor from scratch or from a kit

a. Examples

Estes - Alpha (#1225),

Alpha III (#1256),

Gen. E2X (#1764),

Quest - Astra (#1004),

Astra III (#1610)

Custom - Freedom (#10024),

Sierra (#10031)

Ready-to-fly (RTF) & Snap-together rockets Do Not Qualify

b. All rockets must fit the following specifications: *

Total Height	11 ½ to 15 ½ inches
Body Tube Diameter	7/8 to 1 ¼ inches
Plastic Parachute Diameter	11 to 15 inches
Fins / 3 to 6	non-metal

*Weight not to exceed 2 ½ oz (71 grams)

including parachute without engine / motor

* Most commercial rocket kits that fit the dimensions are within the weight limit.

Note: No weight may be added to affect flight or landing.

A postal scale is helpful in weighing rockets.

2. Parachute Recovery

All rockets must use a 11" to 15" plastic parachute

a. Minimum of 6 shroud lines for recovery.

b. Shroud lines must be 8" to 14" in length from parachute to nosecone

c. All or part of the pre-marked 'spill-hole' may be removed.

No more than 4 ¼ inches in diameter

Note: Nothing may be done to prevent deployment and full opening of the parachute.

3. Launch Rod

a. Must be of standard construction – maximum 38 inches in length.

4. Engines

A8-3 Engine - Estes #1598

Or an engine with the following specs

Propellant 0.11 oz.

Total impulse 2.5 N

3 second delay

A6-4 Engine - Quest #5740

Or an engine with the following specs

Propellant 0.12 oz.

Total Impulse 2.5 N

4 second delay

5. Fins

3 to 6

Non-metal

6. Launch Equipment

- a. model rocket launch pad
- b. launch rod (not to exceed 38 inches)
- c. launch control

7. Measuring tape

- a. Able to measure distances up to 50 feet to the nearest inch.
- tape shorter than 50 feet may be used - however attention must be paid to accuracy.
- b. Measurement may be done in metric – but, must be converted before submission of RFTS Competition Entry Form.

Note: It is best to convert measurements to inches prior to averaging.

8. Modeling supplies

- a. Glue, sandpaper, hobby knife, ruler, scissors & paint (optional).

Note: 'School Glue' is not the same as white glue. It is not as strong and takes longer to set.

9. Competition Entry Form – should be completed on launch day if possible

- a. Must be signed by:
Winner's Parent or guardian
Judge #1 (public official)
Judge #2
Judge #3
- b. Must be received at RFTS headquarters by **Competition Deadline**
(See Section D).
- c. We are not responsible for lost, stolen, misdirected or postage due entries.
- d. Entries must be on original, numbered form.
Submission by fax, mail or e-mail accepted.

Please submit entry as soon as possible following the launch.

10. Certificates

- a. Recognize achievement - Awarded to all competitors who build and launch
- b. Feature inspirational quote from *Christa McAuliffe*
“**Push yourself as far as you can. Reach for the Stars!**”
- c. Display the artwork of Astronaut & Moonwalker, *Alan Bean*
- d. Full color – professionally printed – suitable for framing

I. Local Competitions

1. A minimum of 12 participants is required for each local competition.
There is no maximum number.
2. Hosts may run multiple competitions throughout the year.
3. Participants must be registered for an event prior to launch.
4. One Competition Entry Form is supplied per Group Registration.
5. Any model rocket building and launching should follow the rules and precautions set forth by the rocket manufacturer and the *National Association of Rocketry*.
6. All laws and regulations regarding model rocket flights for your location should be observed.
7. **In dry or windy conditions check with your local Fire Department to determine launch safety.**

J. Procedures

1. Construction

Direct adult supervision recommended for those under 12

All competitors must build and launch their own solid-fuel powered rocket.

- a. Model rockets must comply with all specifications in this document (see section H) and the *NAR, Model Rocketry Safety Code*
- b. One rocket per competitor. **Ready-to-fly & snap-together (no glue) rockets Do Not qualify**
- c. The rocket may not be remotely controlled or remotely guided.
- d. No modifications can be made to the original rocket design except for parachute spill-hole as specified in these rules.
- e. No weight may be added to affect altitude.
 - Glue and paint must not be applied in a fashion to add excessive weight.
- f. Parachute must be 11 to 14 inches in diameter
- l. Parachute modification is limited to removal of all, part or none of the center circle / spill-hole (maximum 4 ¼ in. diameter).
- g. Competitors must build their own rockets.
 - I. Assistance in construction and launch is hands-off only.
 - II. Demonstration and verbal direction is acceptable

Note: The use of the **Pause-for-Science Rocket Construction** video** is optional.

available at no charge to **RFTS Competition hosts at www.RocketCompetition.com

- h. Construction, preflight preparation*, aim and launch must be done by the competitor.

***Exceptions** - In cases of physical limitation – local judges' decision will determine level of assistance needed.

Assistance may be given for insertion of starter / igniter

2. Launch

In dry or windy conditions check with your local Fire Department to determine launch safety.

Sounding (practice) launches (to test the wind) are permitted.

However, once competition begins – all launches count.

- a. Target (center clearly marked & easily visible) should be placed 50 ft. downrange from launch pad.
 - l. Target must be fixed to ground to prevent accidental movement (Ex: a golf tee through a piece of paper or small flag on dowel will work).
- b. Competitors must do all of their own launch prep*.
(i.e. parachute packing, engine insertion, aim of launch rod, attachment of micro-clips, etc.)

***Note: Assistance may be given for insertion of starter / igniter**

In the event of a physical limitation preventing the competitor from performing these tasks. Help may be offered at the discretion of the judges. The competitor should direct the steps being performed.

- c. In an order selected at random, each participant will launch their rocket and mark its landing spot. Touchdown spot of the nosecone should be immediately marked. (cable flags, bamboo skewers, golf tees & nails make suitable markers)
- d. After rockets are determined to be safe - Competitors launch a 2nd time to determine winner of local competition.
- e. Measurements of the winning entry must be taken in feet and inches (to the nearest inch) and recorded.

Note: Only the winning entry needs to be measured with accuracy.

All others may be estimated.

- f. Closest average distance wins. Distance is measured from the spot the tip of the nosecone touched the ground to the target –
(Distance of 1st landing plus distance of 2nd landing divided by 2)

Note: It is best to convert measurements to inches prior to averaging.

- g. Record as 50 feet any:
 - I. landing at a distance greater than 50 feet.
 - II. landing that does not reach the ground (landings in trees, ponds, etc.).
 - III. rocket unable to fly.
 - IV. rocket that cannot be returned to the judges.
 - V. rocket that separates into two or more unattached pieces.
- h. During the competition, ignition of the engine constitutes a flight. If an engine fails to ignite, the engine, igniter or both may be replaced.
 - i. Certificates of Achievement should be awarded to all competitors who launch. May be done at a later time (i.e. awards ceremony)
 - j. Competition entry form should be filled out and signed immediately.
 - k. Send to **Reach for the Stars ~ National Rocket Competition Headquarters** as soon as possible. (see section E)

K. Competition Rules

VOID WHERE PROHIBITED

1. The five (5) National Winners will be contacted within one week of the Competition deadline and will be posted on our website www.RocketCompetition.com
2. Decisions of the judges are final.
3. Employees of **TheRocketman / SciCon Services** and their immediate families are not eligible.
4. Winner's accommodations and travel (if provided) are for the awards ceremonies only. If winner cannot attend on the specified date, the prize will be forfeited and an alternate winner may be selected. Prize does not include taxes or any other expenses not specifically listed herein
5. All entries become the property of **TheRocketman / SciCon Services** and will not be acknowledged or returned.
6. **TheRocketman / SciCon Services** and affiliates reserve the right to substitute prizes of equal or comparable value.
7. **TheRocketman / SciCon Services** and affiliates assume no responsibility for any losses, injuries, or damages resulting from participation in the competition or the Winner's Celebration.
8. All prizes and awards are guaranteed by the individual company involved, not by **TheRocketman** or **SciCon Services**.
9. **TheRocketman / SciCon Services** and affiliates may use each winner's name, photograph, likeness, and/or voice in any publicity or advertising relating to the competition or future promotions without compensation or approval.
10. By participating, entrants agree to be bound by the official rules and the decisions of the judges.
11. All federal, state, and local taxes are the sole responsibility of the winners.
12. All other expenses associated with this trip are the responsibility of the winner. The prize is subject to availability, advance reservations and other restrictions.
13. Winner and his/her parent(s) or guardian(s) are required to complete and sign an affidavit of eligibility and liability release within 7 days of receipt of prize notification. Noncompliance or return of winner's notification as undeliverable will result in disqualification and selection of an alternate winner.
14. We are not responsible for late, lost, stolen, incomplete, illegible, misdirected, or postage due mail or fax.
15. By entering the competition - competitors agree to release and hold harmless the sponsor, distributor and affiliates from any and all liability, loss, damage or injuries to any person

or property of any kind sustained in connection with their participation in the competition and/or use of any prize awarded.

L. Additional Information

1. Check the website www.RocketCompetition.com for competition updates and further information.
2. In the event of a tie the winner will be chosen by the closest single landing among the tying entries.
3. For local competitions no questions or protests will be considered later than fifteen minutes after the winner is announced.
4. Questions and protests must reach competition headquarters within 24 hours of the competition deadline.
5. Decision of the judges, both local and national, shall be final.

M. Winners' Announcement

National Winners will be contacted within one week of the Competition deadline and will be posted on our website www.RocketCompetition.com

- or send a letter or email requesting the names to: RocketCompetition@gmail.com
Reach for the Stars ~ National Rocket Competition / Winners
1683 Siesta Dr.
Sarasota, FL 34239

This competition is void where prohibited and subject to federal, state, and local laws, taxes and regulations. Certain restrictions may apply.

Reference:

National Association of Rocketry: *Model Rocketry Safety Code, United States Model Rocketry Sporting Code (Pink Book) - Spot Landing Competition*

Estes: *Model Rocket Contest Guide, Laws Pertaining to Rocketry, Rocketry 101, Model Rocketry Technical Manual*

NASA: *Rockets, an Educators Guide*