

15<sup>th</sup> Annual

2020-2021

# Reach for the Stars National Rocket Competition

Ages 10 to 18

## Rules & Regulations

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Revised January 2021

Jack & Kathy Colpas  
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**15<sup>th</sup> Annual**                      **2021**  
**Reach for the Stars ~ National Rocket Competition**  
**Ages 10 to 18**

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

**3.. Order Rocketry Supplies –**

**New Pricing    Only \$25 per competitor - Shipped Directly to You**

Each Competitor Pack includes:

Registration in the **RFTS ~ National Rocket Competition** / Full Color Certificate  
Rocket Kit to build and launch\* / Supplies for 2 launches (motors, igniters, wadding)

Included with each order:

One Official **RFTS** National Entry Form / Rules Synopsis /  
Local Winner's Certificate & Letter to Parents

\*A standard Launch Set (launch pad, launch control) is required.

**Email us with answers to the questions below.**

*- 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 RFTS Competition Headquarters**  
**by the deadline – get invited to the National Winners' Celebration**  
**at Space Camp / U.S. Space & Rocket Center,**  
**“Rocket City” - Huntsville, Alabama.**

# 15th Annual **Reach for the Stars ~ National Rocket Competition** 2021

## 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 / Competitors may enter twice per year**

**Annual Deadline - December 31<sup>st</sup> 2021**

**Results from local Competitions determine the 5 National Winners.**

**National Winners' Celebrations - date to be announced**

**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 Competitors with disabilities**

**\*See complete rules for details**

### ----- **Social Distancing Amendments** -----

After inserting the engine / motor, the competitor will hand their rocket to an adult who will insert the igniter, connect the alligator clips, place the rocket on the Launch Pad and aim the rocket (Launch Rod or Rail) as directed by the competitor. The Launch Control should be attached to a flat surface for stability and to reduce handling. The adult will insert the safety key and begin count-down. The competitor will push the launch button using their own pencil or pen.

Each competitor will retrieve their own rocket.

To ease access and avoid having to bend to the ground for every launch - the Launch Pad and Launch Control can be attached to tables or benches. Aluminum foil can be used under the Launch Pad to protect the table's surface.

**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: 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! ( $L1 + L2 / 2 =$  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.)



# 15th Annual Reach for the Stars ~ National Rocket Competition 2021

## Quick Reference Guide (See complete rules for details)

<b>Rocket</b> <b>Ready-to-fly and snap together rockets do not qualify</b> <b>Popular models:</b> <i>Estes - Alpha (#1225)</i> <i>Alpha III (#1256)</i> <i>Gen E2X (#1764)</i> <i>Mi-Ti (#1799)</i> <i>Quest - Astra (#1004)</i> <i>Astra III (#1610)</i> <b>Custom –</b> <i>Freedom (#10024)</i> <i>Sierra (#10031)</i>	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.  <b>No weight may be added to effect flight and landing</b>
<b>Parachute</b>	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
<b>Fins</b>	3 to 6	Non-metal	
<b>Engines / Motors</b>	A8-3	A6-4	0.11 to 0.12 oz of Propellant Total Impulse of 2.5 Newtons 3 to 4 second delay
<b>Launch Rod or Rail</b>	Length 38” maximum	Launch Angle less than 30° from vertical	
<b>Target</b>	<b>50’ downrange</b>	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 first 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.**  
**One rocket per competitor.**  
\*Ready-to-fly & snap-together (no glue) rockets **Do Not** qualify  
\*\***Exceptions** - At host’s discretion hands-on help can be offered for Social Distancing and to Competitors with disabilities. **See complete competition rules for details**
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 at **Space Camp** at the **U.S. Space & Rocket Center**, ‘Rocket City’ Huntsville, Alabama.

Go to [www.RocketCompetition.com](http://www.RocketCompetition.com) for details.

## Reach for the Stars ~ National Rocket Competition

### Rules

#### 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 1<sup>st</sup> 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 at **Space Camp / U.S. Space & Rocket Center**, "Rocket City" Huntsville, Alabama.



See [www.RocketCompetition.com](http://www.RocketCompetition.com) for details.

#### D. Important Dates

**Kick-off: January 1<sup>st</sup>**

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

**Deadlines: Midnight - December 31<sup>st</sup> 2021**

1. Competition Entry Forms must be received at competition headquarters.
2. Forms may be sent 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](http://www.RocketCompetition.com)

#### **National Winners' Celebration -**

**Space Camp / U.S. Space & Rocket Center, "Rocket City" Huntsville, Alabama –**  
Date to be announced

See [www.RocketCompetition.com](http://www.RocketCompetition.com) for details.

## E. Registration:

1. Registration is included when purchasing rocketry supplies from **SciCon Services**

**IMPORTANT: If rocketry supplies are not purchased through SciCon Services Registration must be purchased separately\***

### Registration Package includes:

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

### 2. Competition Supplies and Registration Fees:

For details on supplies and pricing of Group and Individual Registrations go to [www.SciConServices.com](http://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 or videos 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** – Allowing for amendments necessitated by the requirements of Social Distancing and at the host's discretion, hands-on help can be offered to competitors with disabilities.

## H. Competition Supplies

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

See detailed specs at [www.SciConServices.com](http://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

<i>Estes</i> -	<i>Alpha</i> (#1225),	<i>Alpha III</i> (#1256),	<i>Gen. E2X</i> (#1764)
		<i>Mi-Ti</i> (#1799)	
<i>Quest</i> -	<i>Astra</i> (#1004),	<i>Astra III</i> (#1610)	
<i>Custom</i> -	<i>Freedom</i> (#10024),	<i>Sierra</i> (#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
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" parachute

- Minimum of 6 shroud lines for recovery.
- Shroud lines must be 8" to 14" in length from parachute to nosecone
- 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 or Rail

- 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  
Tubular fins are acceptable

## 6. Launch Equipment

- a. model rocket launch pad
- b. launch rod or rail (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  
Acknowledge participation - Awarded to adult hosts and sponsors
- 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.  
Competitors may enter only two (2) times per year.
3. Group 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**

**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 with exceptions for Social Distancing and special needs competitors.
    - II. Demonstration and verbal direction is acceptable
- Note:** The use of the **Pause-for-Science Rocket Construction** video is optional. Video is available at no charge to **RFTS Competition** hosts at [www.RocketCompetition.com](http://www.RocketCompetition.com)
- h. Construction, preflight preparation\*, aim and launch must be done by the competitor.

**\*Exceptions** - For Social Distancing and in cases of special needs competitors – local judges' decision will determine level of assistance needed.

### 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.  
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 to competitors with special needs and as noted in Social Distancing guidelines.**

#### ----- Social Distancing Guidelines -----

After inserting the engine / motor, the competitor will hand their rocket to an adult who will insert the igniter, connect the alligator clips, place the rocket on the Launch Pad and aim the rocket (Launch Rod or Rail) **as directed by the competitor.**

The Launch Control should be attached to a flat surface for stability and to reduce handling. The adult will insert the safety key and begin count-down. The competitor will push the launch button using their own pencil or pen.

Each competitor will retrieve their own rocket.

To ease access and avoid having to bend to the ground for every launch - the Launch Pad and Launch Control can be attached to tables or benches. Aluminum foil can be used under the Launch Pad to protect the table's surface.

**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 2<sup>nd</sup> 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 1<sup>st</sup> landing plus distance of 2<sup>nd</sup> landing divided by 2)

( $D1 + D2 / 2 = \text{Average Distance}$ )

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](http://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 and 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](http://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](http://www.RocketCompetition.com)

For details send a letter or email request to: [RocketCompetition@gmail.com](mailto: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