



Some Topics in Model Rocketry



We have said Model Rocketry was educational as well as fun.
What can you learn about flying a little rocket?

Here are a few things:

Aerodynamics

Aerodynamic Stability

Bernoulli Principle

Lift

Coefficient of Drag

Friction

Lift and Drag

Nose and Tail Spins

Reynolds Number

Streamlining

Subsonic vs. Supersonic
airflow

Aesthetics/Design

Art in science context

Balance and Movement

Colors

Design and Style

Form and Function

Historical Design

Scale Modeling

Shape and Area

Chemistry

Accelerants

Catalysts

Combustion

Flame and Retardants

Glue and Cement

High and Low

Explosives

Propellants/Oxidants

Thermoplastics (styrene)

Thermosetting Plastics

(epoxy, polyurethane)

Math

Altitude Prediction

Area and Volume

Mass and Weight

Parabolic Trajectory

Probability

Statistical Deviations

Trigonometric

Tracking

Weight x Distance

Working with Formulae

Engineering

Laws and Motion

And Thermodynamics

Lightweight Structures

Electrical Devices

Aerodynamic Stability

Purpose

Efficiency

Time/Thrust Curves

Acceleration, G-force

Miniaturization

Electronics

Telemetry

Computer data analysis

Computer Programming

Instruments

Radio Remote Control

Ignition Systems

Altimeters

Accelerometers

Data Acquisition

Recording devices

Onboard cameras, still and
video

Language Arts

Following Instructions

Meetings

Reporting Experiences

Speech

Technical Jargon

Writings Instructions

Technique and Assembly

Subassembly

Care of Tools

Craftsmanship

Cutting

Drawing

Finish/Painting

Gluing & Cementing

History

Pascal, Bernoulli,

Newton

Ancient Fireworks

Medieval missiles

WW II: Bazookas and

Buzz Bombs

V-2, Bumper,

Redstone>>Saturn V

ICBMs & Politics

Tactical Nukes

Mutually Assured

Destruction

The Race to Space

The Race to the Moon

Big Rockets vs Micro

Technology

One Giant Leap

International

Expeditions

Commercial Satellites

Space Accidents:

Apollo 1 (1967)

Apollo 13 (1970)

Challenger (1986)

Columbia (2003)

Economics

Budget

Cost vs Performance

Cost Effectiveness

Materials

Organizational Budget

Pricing and Demand

Product Development

Tooling and Marketing

Event Planning

Meteorology

Reports and

Prediction

Thermals

Weather

Observation Wind

Sounding Rockets

Scientific Method

Social Skills

Teamwork

Leadership

Using Varied

Abilities

Pleasing Varied

Interests

Non-Verbal

Communication

Speech and Public

Address

Self Confidence

Critical Assembly

Handling Hazards

New Experiences

Sharp Knives

Enviromental

Atmospheric Research

Balsa Wood, a rain forest

product

Paints

Rockets and Air Pollution

Products of combustion

Styrene and Ozone

Source:

Apogee Rockets