

“Writing, Science and Math through Rocketry”

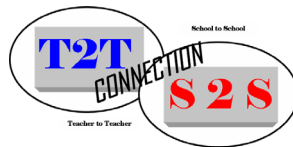
~ A Returning Developer ~



For further information contact...

Janice Katz

Davenport School of the Arts
8 West Palmetto Street
Davenport, FL • Route: C
863-421-3247 / 863-421-3360
Janice.katz@polk-fl.net



2008 - 2009 IDEA CATALOG OF EXCELLENCE

■ PROGRAM OVERVIEW

The purpose of this program is to give students the opportunity to explore **Writing, Science and Math through Rocketry** over the course of 1-2 weeks in an exciting, hands-on, and motivational way. Instead of just reading about the rockets or physics concepts, our students get the opportunity to experiment with it in hands-on activities. Students will use die cut shapes to design their own rocket. Next, students will count and graph the shapes they used to create the rocket. Students learn vocabulary and practice the principle “for every action there is an equal and opposite reaction” (Newton’s Third Law). Students participate in making fizzie rockets, stomp rockets and water bottle rockets.

The student’s progress will be assessed via observation as well as work. See the attached rubric for assessment options.

This program has been implemented in kindergarten and first grade classrooms with students with special needs mainstreamed in them. It is easily adapted for second and third grade students. Class sizes have ranged from 18-22 students. The lesson plans indicate whether the activity is designed for whole group or small group instruction.

Tables or desks will be needed for the activities. We use a school owned

laptop, Eiki projector, and screen to show video clips and PowerPoint presentations. See “Materials Budget” for specific materials needed.

Many outside resources can be incorporated in this program. We involved speakers from United Space Alliance, NASA and Space Camp. One of our teachers works at Space Academy for Educators. This teacher presented Space Academy PowerPoint presentations to all of the classes. Field trip suggestions include the Kennedy Space Center and Fantasy of Flight.

■ OVERALL VALUE

This unit inspires students to come to school and learn. Students are excited every day to find out what they will be exploring. The students pick up and apply advanced vocabulary. This unit gets the parents involved in their student’s education. Parents come in and ask questions like: did you really have a real Engineer come in and talk to the class?

The excitement continues even after the unit is over. Students continue to make connections back to facts they learned during this unit, building on the previous knowledge. We know that our students learn and have fun doing it.

■ LESSON PLAN TITLES

- Shape Rockets
- Stomp Rockets
- Fizzie Rockets
- Water Bottle Rockets
- Writing

■ MATERIALS

Materials for each lesson are listed with each lesson plan. Overall materials budget including pricing and vendors follows the lesson plans.

■ ABOUT THE DEVELOPER

Janice Katz has a B.S. in Early Childhood Education and Intervention from Purdue University. She has taught kindergarten for 8 years at Davenport School of the Arts.

During the summer she works with Educators at Space Academy for Educators in Huntsville, Alabama. She presents annually at the Space Exploration Educator’s Conference in Houston, Texas.



“Writing, Science and Math through Rocketry” Janice Katz

Lesson Plan No 1: Shape Rockets



■ SUBJECTS COVERED

Writing, Science, Math

■ GRADES

Kindergarten - Third

■ OBJECTIVES

GOAL: Familiarize students with the parts of a rocket.

Objective

- ✓ Students will identify the following parts of a rocket: nose cone, fins, body.

GOAL: Familiarize students with different geometrical shapes.

Objective

- ✓ Students will identify the following shapes: square, triangle, hexagon, rhombus, and trapezoid

GOAL: Familiarize students with parts of a graph: Title, Y axis, X axis, scale.

Objective

- ✓ Students will make their own graph to show the shapes they used to make their rocket.

■ MATERIALS

This activity can be done with a large or small group and requires the following materials:

- Pattern (or attribute) blocks
- Pattern (or attribute) blocks cut from construction paper
- black construction paper
- grade level appropriate graph paper
- writing utensils
- white crayons
- glue sticks

■ SUNSHINE STATE STANDARDS

MA.K.G.2.1

describe, sort and re-sort objects using a variety of attributes such as shape, size, and position.

MA.K.G.2.2

identify, name, describe and sort basic two-dimensional shapes such as squares, triangles, circles, rectangles, hexagons, and trapezoids.

MA.K.G.2.5

use basic shapes, spatial reasoning, and manipulatives to model objects in the environment and to construct more complex shapes.

MA.K.A.1.1

represent quantities with numbers up to 20, verbally, in writing, and with manipulatives.

LA.K.4.2.1

participate in creating a variety of informational/expository forms (e.g., labels, lists, graphs, observations, summaries) through drawing or writing;

LA.K.4.2.2

participate in creating simple summaries from informational/expository text (e.g., graphs...)

■ DIRECTIONS

Shape Rockets:

Use pattern (or attribute) blocks to let students explore making different rockets. You can give them a guide to match the shapes or let them make their own rockets. Cut the shapes out of construction paper (an Ellison die cut is available for this). Students will glue the shapes on a black piece of construction paper.

Next give the students a piece of graph paper. Have students graph the shapes that make up their rocket.



“Writing, Science and Math through Rocketry” Janice Katz



Lesson Plan No 2: Stomp Rockets



■ **SUBJECTS COVERED**

Writing, Science, Math

■ **GRADES**

Kindergarten - Third

■ **OBJECTIVES**

GOAL: Familiarize students with the parts of a rocket.

Objective

- ✓ Students will identify the following parts of a rocket: nose cone, fins, body.

GOAL: Familiarize students with the concept of force and motion.

Objective

- ✓ Students will identify the force put on the rocket and the motion as a result.

GOAL: Familiarize students with the concept that they can get more done by working together.

Objective

- ✓ Students will take turns helping each other make the body of their rocket.

GOAL: Familiarize students with a cylinder.

Objective

- ✓ Students will identify the shape of the pipe as a cylinder.

■ **SUNSHINE STATE STANDARDS**

MA.K.G.2.3: Identify, name, describe, and sort three-dimensional shapes such as spheres, cubes and cylinders.

SC.A.1.1: The student understands that all matter has observable, measurable properties.

SC.C.1.1: The student understands that types of motion may be described, measured, and predicted.

SC.C.2.1: The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted.

SC.H.1.1: The student uses the scientific processes and habits of mind to solve problems.

SC.H.3.1: The student understands that science, technology, and society are interwoven and interdependent.

SS.A.3.1: The student understands Western and Eastern civilization since the Renaissance.

LA.K.5.2.1: listen carefully and understand directions for performing tasks (e.g., three or four-step oral directions).

LA.K.5.2.5: communicate effectively when relating experiences and retelling stories heard.

LA.K.5.2.6: use complete sentences when speaking.

LA.K.5.1.2: write from left to right and top to bottom of page;

LA.K.5.1.3: recognize spacing between letters and words; knows how subject matter, symbols, and ideas are used to communicate meaning in works of art.

■ **MATERIALS**

This activity can be done with a large or small group and requires the following materials:

- plastic bottles (2 liter or 1 liter)
- copy paper
- scotch tape
- glue stick
- markers
- scissors
- stomp rocket launcher
- safety goggles

■ **DIRECTIONS**

***Stomp Rockets:**

Always discuss safety first. Each student will make their own Stomp Rocket. You can vary the activity depending on the ability level you are working with. You will need a Stomp Rocket Launcher. They are probably the easiest kind of launcher to build yourself and least expensive to purchase. You will need to pick out your launcher before students build their rocket because the body of the rocket has to match the size

of the pipe on the launcher. Wrap a piece of white copy paper (vertically) around the pipe to make the body of the rocket. Younger students will need to pair up to help each other do this. The paper should be a tight roll so air can't escape. One student can roll and hold and the other student can put the tape or glue on and then switch jobs. Students can name their rocket and write the name on this rolled paper. Students can use a glue stick or tape to seal the body of the rocket. After sealing the body, just slide it off the pipe. Students will make and attach paper fins (triangles) for stability. The number of fins will depend on the size of the pipe you are launching with; most likely 3 or 4 fins. To make the nose cone: cut a point at the top of the rolled paper. Use scotch tape to seal the top. If air can leak out, the rocket will not launch. I found this to be a great opportunity for problem solving. I told the students "If air can leak out, the rocket will not launch. The air will go out the top of your rocket and the rocket won't move." I did not check all of the rockets then and there. I let the students try to launch them. If it didn't launch then we talked about problem solving. We looked for a hole and taped it. The force on a stomp rocket is created by attaching an empty soda bottle to the end of the tubing. Students will step on this bottle to force the air out, through the tubing and into the rocket.

During the launch you can discuss things such as why did some rockets go higher than other rockets, what effect would a larger or smaller bottle have on the height of the rocket, what effect would more or less fins have on the rocket and Newton's Third Law. Students can also repeat the launch making changes to confirm their predictions.

Stomp rockets were so fun and easy that we brought them to recess for weeks. The students could choose to build/modify the rockets and launch them with teacher supervision.

**Teacher can choose to do Water Bottle Rocket and/or Stomp Rockets.*



“Writing, Science and Math through Rocketry” Janice Katz



Lesson Plan No 3: Fizzie Rockets



■ SUBJECTS COVERED

Writing, Science, Math

■ GRADES

Kindergarten - Third

■ OBJECTIVES

GOAL: Familiarize students with the concept of force and motion.

Objective

- ✓ Students will identify the force put on the film container and the motion as a result.

GOAL: Familiarize students with the states of matter: solid, liquid and gas.

Objectives

- ✓ Students will identify what states of matter are used as fuel in the fizzie rocket.
- ✓ Students will identify what state of matter is created when the water and Alka-seltzer tablet are combined.

■ MATERIALS

This activity can be done with a large or small group and requires the following materials:

- clear 35mm film canister
- Alka-seltzer tablets
- water
- safety goggles

■ SUNSHINE STATE STANDARDS

MA.K.G.2.3: Identify, name, describe, and sort three-dimensional shapes such as spheres, cubes and cylinders.

SC.A.1.1: The student understands that all matter has observable, measurable properties.

SC.C.1.1: The student understands that types of motion may be described, measured, and predicted.

SC.C.2.1: The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted.

SC.H.1.1: The student uses the scientific processes and habits of mind to solve problems.

SC.H.3.1: The student understands that science, technology, and society are interwoven and interdependent.

SS.A.3.1: The student understands Western and Eastern civilization since the Renaissance.

LA.K.5.2.1: listen carefully and understand directions for performing tasks (e.g., three or four-step oral directions).

LA.K.5.2.6: use complete sentences when speaking.

■ DIRECTIONS

Fizzie Rockets:

Always discuss safety first. Discuss the states of matter: solid, liquid and gas. First put a small amount of water in the clear film canister. Then quickly add the piece of Alka-seltzer, put the lid on and place the canister lid side down on the ground. Clear the area. Count down from 10 to 0 and watch the chemical reaction. The cylinder will pop off from the pressure built up inside the canister. The amount of Alka-seltzer can be varied (a quarter of a tablet to a whole tablet) for different results.

During the launch you can discuss things such as why did some canisters go higher than other canisters, what effect would a larger or smaller amount of Alka-seltzer have on the height of the rocket, what effect would a larger or smaller amount of water have on the rocket and Newton's Third Law. Students can also repeat the launch making changes to confirm their predictions.



“Writing, Science and Math through Rocketry” Janice Katz



Lesson Plan No 4: Water Bottle Rockets



SUBJECTS COVERED

Writing, Science, Math

GRADES

Kindergarten - Third

OBJECTIVES

GOAL: Familiarize students with the parts of a rocket.

Objective

- ✓ Students will identify the following parts of a rocket: nose cone, fins, body.

GOAL: Familiarize students with the concept of force and motion.

Objective

- ✓ Students will identify the force put on the rocket and the motion as a result.

GOAL: Familiarize students with symbolism in art.

Objective

- ✓ Students will identify a symbol and what it stands for in his/her mission patch.

GOAL: Familiarize students with working in a group.

Objective

- ✓ Students will work cooperatively, making compromises to work successfully in a group.

SUNSHINE STATE STANDARDS

SC.A.1.1: The student understands that all matter has observable, measurable properties.

SC.C.1.1: The student understands that types of motion may be described, measured, and predicted.

SC.C.2.1: The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted.

SC.H.1.1: The student uses the scientific processes and habits of mind to solve problems.

SC.H.3.1: The student understands that science, technology, and society are interwoven and interdependent.

SS.A.3.1: The student understands Western and Eastern civilization since the Renaissance.

LA.K.5.2.1: listen carefully and understand directions for performing tasks (e.g., three or four-step oral directions).

LA.K.5.2.5: communicate effectively when relating experiences and retelling stories heard.

LA.K.5.2.6: use complete sentences when speaking.

LA.K.4.3.1: the student will draw a picture and use it to explain why this item (food, pet, person) is their favorite.

LA.K.5.1.2: write from left to right and top to bottom of page;

LA.K.5.1.3: recognize spacing between letters and words; knows how subject matter, symbols, and ideas are used to communicate meaning in works of art.

VA.B.1.1.1: understands that works of art can communicate an idea and elicit a variety of responses through the use of selected media, techniques, and processes.

VA.B.1.1.2: understands that works of art can communicate an idea and elicit a variety of responses through the use of selected media, techniques, and processes

VA.B.1.1.3: knows a variety of purposes for creating works of art.

VA.B.1.1.4: uses the elements of art and the principles of design to effectively communicate ideas.

VA.E.1.1: The student makes connections between the visual arts, other disciplines, and the real world.

VA.E.1.1.1: understands that people create art for various reasons and that everyday objects are designed by artists.

*Teacher can choose to do Water Bottle Rocket and/or Stomp Rockets.

MATERIALS

This activity can be done with a large or small group and requires the following materials:

- plastic bottles (2 liter or 1 liter),
- clay
- tagboard and copy paper
- various kinds of tape
- 4 oz. cone paper cups
- markers / crayons / scissors
- hot glue gun & hot glue sticks
- water
- rocket launcher
- bicycle pump
- safety goggles
- examples of NASA mission patches

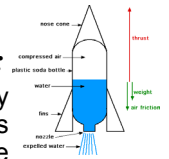
DIRECTIONS

*Water Bottle Rockets:

Always discuss safety first. Water Bottle Rockets can be done as a whole group, small group or with individual students. Whether you do this activity as a group or as individuals you can have students develop a mission patch. Every NASA crew develops a mission patch for their mission prior to launch. Show the students some examples of past mission patches and discuss the symbolism. For example, Gemini V put a picture of a Pioneer Wagon on their mission patch. The Pioneer Wagon symbolized that they viewed themselves as Pioneers of the Space Frontier. Numbers are also very symbolic in mission patches.

After students create their mission patch, they are ready to move on to making the rocket. You can vary the activity depending on the ability level you are working with. You can give each team a certain amount of “money”. All of their supplies will cost “money” as they build the rocket. This will force them to weigh their options, make decisions and compromise with other group members. If you are working with younger students you do not have to use this aspect. The plastic soda/water bottle is the body of the rocket. Students will make and attach cardboard fins for stability (fins go at the bottom of the rocket, which is actually the top of the bottle). Students will need more weight at the top of their rocket. Clay can be placed on the top of the rocket, which is actually the bottom of the bottle. A nose cone should be attached to the top of the rocket (covering the clay). There is a stability test that can be performed. Tie a piece of string around the middle of the bottle. Tie another piece of string to it so you can spin it like a lasso. If the bottle goes around stable then it will be stable in flight. You can put water in the bottle (do not fill more than half way) or launch without water.

During the launch you can discuss things such as why did some rockets go higher than other rockets, what effect would more or less water have on the rocket, what effect would more or less fins have on the rocket and Newton's Third Law. Students can also repeat the launch making changes to confirm their predictions.



“Writing, Science and Math through Rocketry” Janice Katz



Lesson Plan No 5: Writing



■ **SUBJECTS COVERED**

Writing, Science, Math

■ **GRADES**

Kindergarten - Third

■ **OBJECTIVES**

GOAL: Students practice writing skills.

Objectives:

- ✓ Students will practice letter sound correspondence.
- ✓ Students will correctly write high frequency words.
- ✓ Students will use correct capitalization and punctuation in sentences.
- ✓ Students will use correct sentence structure.

■ **MATERIALS**

- “Fonts for Teachers” found at: www.fonts4teachers.com can be used to create a variety of different writing prompts related to rockets and exploring space.
- grade level appropriate writing paper
- pencils

■ **SUNSHINE STATE STANDARDS**

LA.K.3.1.1

rewrite by connecting thoughts and oral language to generate ideas.

LA.K.3.1.2

rewrite by drawing a picture about ideas from stories read aloud or generated through class discussion.

LA.K.3.2.1

draft write by drawing, telling, or writing about a familiar experience, topic or text.

LA.K.3.3.1

will revise the draft by adding additional details to the draft and checking for logical thinking with prompting.

LA.K.3.4.1

will edit for correct use of knowledge of letter/sound relationships to spell simple words

LA.K.3.4.2

capital letters to begin “important words

LA.K.3.4.3

end punctuation, including periods, question marks, and exclamation points

LA.K.5.1.2

write from left to right and top to bottom of page

LA.K.5.1.3

recognize spacing between letters and words

■ **DIRECTIONS**

Have students write about one of the rockets they previously made and launched. Students could write historical facts or a fictional account about their rocket.

A page with a starter prompt can be used with younger students.



"Writing, Science and Math through Rocketry" Janice Katz

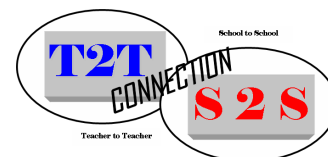
Lesson Plans Materials Budget



Materials Budget

SUPPLIER	ITEM DESCRIPTION	COST	QUANTITY	TOTAL COST
Lakeshore	1 package black construction paper 9x12	.99	1	.99
	1 package yellow construction paper 9x12	.99	1	.99
	1 package blue construction paper 9x12	.99	1	.99
	1 package red construction paper 9x12	.99	1	.99
	1 package green construction paper 9x12	.99	1	.99
	1 package white construction paper 9x12	.99	1	.99
	1 package orange construction paper 9x12	.99	1	.99
	1 package graph paper	7.40	1	7.40
	1 package white Crayola crayons	.69	1	.69
	1 set pattern blocks	12.95	1	12.95
	Safety goggles (set of 6)	16.95	1	16.95
Wal-mart	Modeling clay	3.27	1	3.27
	Alka seltzer tablets (12 pack)	2.49	1	2.49
	One 2 liter soda bottle	.69	1	.69
	Tag board	.42	3	1.26
	Rubbermaid 4 ounce cone drinking cups (200 count)	4.96	1	4.96
	Mini high temp. glue gun	1.97	1	1.97
	1 package glue sticks (high temp.) for the glue gun	4.48	1	4.48
	Bicycle pump	15.37	1	15.37
Sun 'n Fun	Stomp Rocket Launcher Kit	25.00	1	25.00
Versey Enterprises	Liter Soda bottle launching base	60.00	1	60.00
www.fonts4teachers.com	Fonts for Teachers	39.95	1	39.95
FREE MATERIALS				
www.nasa.gov /images	Examples of NASA mission patches can be printed out			
Wal-mart Photo dept.	Empty 35 mm. film canisters can be obtained to be used with fizzie rockets			
Jim Miles Professional Bldg	Ellison die cuts – to cut out the various pattern block designs			
Wal-mart/ Friends	Empty Lipton's Green Tea/White Tea 16.9oz bottles			
USEFUL ADDRESSES: Versey Enterprises 1258 North 100 East Shelley, ID 83274 (208) 357-3428 (208) 357-3428 Fax Jim Miles Professional Building 524 Us Hwy. 98 South Lakeland, FL 33813 Sun 'N' Fun 4175 Medulla Rd Lakeland, FL 33813 (863) 644-0741		Subtotal		\$204.36
		Tax if applicable		
		Shipping if applicable		
		TOTAL BUDGET AMOUNT		\$204.36

Teacher's Name Janice Katz
 School: Davenport School of the Arts



“Writing, Science and Math through Rocketry” Janice Katz

Rubric 3-5 Part 1



Writing, Science and Math through Rocketry

Assessment for

1

2

3

4

Water bottle rocket	Know rocket is made up of different parts, create a mission patch, work in group to create rocket, recalls rocket moves upward from a net force.	Correctly identify 2 parts of rocket, recall rocket has upward motion due to net force, create and explain mission patch, contribute to success of group.	Identifies 3 parts of rocket, recalls net force causes the motion and the speed, explains gravity will pull the rocket back to the ground, create, explain and use symbols in mission patch, contribute to success and problem solving of group	Identifies many parts of rocket and explains their purpose, recalls net force of air causes upward motion and relates it to Newton’s 3 rd law, use symbol knowledge to create original meaningful symbols and explain significance of the patch, explains and solves group problems, increases efficiency and contributes to success of group
Writing Skills	Uses a prewriting strategy, has a main idea, most words spelled correctly.	Uses prewriting strategies, main idea is supported, few spelling errors, follows conventions of punctuation and sentence structure.	Uses a variety of prewriting strategies, main idea is supported and has a beginning middle & end, incorporates sentence variety, uses correct verb and noun forms, sentence structure and spelling	Incorporates variety of prewriting strategies, clear main idea with strong support in the beginning middle and end, variety in sentence structure and word choice, correct verb and noun forms and subject verb agreement, correct spelling, sentence and paragraph structure.

“Writing, Science and Math through Rocketry” Janice Katz

Rubric 3-5 Part 2



Writing, Science and Math through Rocketry

Assessment for

1

2

3

4

Shape Rockets	Correctly identifies shapes, and makes a graph corresponding to picture illustrating shapes being combined, explains orally data collected	Correctly names all shapes and uses geometric vocabulary to describe them, correctly makes and analyzes graph data corresponding to picture which illustrates shapes being combined	Correctly identifies all shapes and uses geometric vocabulary describing them, makes & analyzes data and labels parts of graph which correspond with illustration of shapes being combined	Correctly identifies all shapes and uses geometric vocabulary, correctly, makes, analyzes data in writing and labels all parts of graph which correspond with their illustration of shapes being combined.
Fizzie Rockets	Recalls the rocket will move as a result of force identifies 2 states of matter, and makes a prediction about the experiment	Recalls the rocket has upward motion due to a force, identifies 3 states of matter and knows they change and makes a prediction	Explains net force caused upward motion, identifies all states of matter gives examples on how they can change and relates this information to their prediction	Explains that a chemical reaction created the net force, identifies all states of matter, recalls the chemical change when making a prediction and analyzing the results of the experiment
Stomp Rockets	Recalls rocket body is made up of different geometrical shapes, knows force will give it motion, and works in a group to create a stomp rocket	Identifies the geometrical shapes used for the rocket body, recalls it has upward motion from a net force and contributes to group success	Identifies air (stomp) is the net force causing upward motion and gravity the downward motion, correctly identifies all geometrical shapes used in rocket body, contributes to success and problem solving of group	Explains air (stomp) is the net force causing the upward motion contributes it to Newton's 3 rd law, and gravity causes it to come down, identifies all geometrical shapes used to create body, explains and corrects group problems and mediates among members

TOTAL _____

“Writing, Science and Math through Rocketry” Janice Katz

Rubric K-2 Part 1



Writing, Science and Math through Rocketry

Assessment for

1

2

3

4

Shape Rockets	Recalls rocket is made of different parts, correctly identifies two shapes, and makes a graph	Identifies 1 part of rocket, correctly names 3 shapes, and correctly makes and analyzes graph	Identifies 2 parts of rocket, correctly identifies 4 or 5 shapes, and makes, analyzes, and labels some parts of graph	Identifies 3 parts of rocket and explains their purpose, identifies all 6 shapes, correctly makes, analyzes, and labels all parts of graph
Fizzie Rockets	Recalls the rocket will move and identifies one state of matter	Recalls the rocket has upward motion identifies 2 states of matter and recalls states of matter can change	Explains force caused upward motion, identifies 3 states of matter and gives examples on how they can change	Explains that a chemical reaction created the force/motion, identifies 3 states of matter, recall the change and explains how the solid and liquid create a gas and force
Stomp Rockets	Recalls rocket is made up of different parts; moves; body is circular; work in group to create rocket	Identifies 1 part of rocket, recalls it has upward motion and circular body shape, contributes to group success	Explains air is the force causing upward motion, correctly identifies 2 parts of rocket, contributes to success and problem solving of group, Recalls body is a cylinder	Identifies 3 parts of rocket and explains their purpose, identifies air as the force behind motion and contributes it to Newton’s 3 rd law, identifies body as geometrical cylinder, explains and corrects group problems and mediates among members

“Writing, Science and Math through Rocketry” Janice Katz

Rubric K-2 Part 2



Writing, Science and Math through Rocketry

Assessment for

1

2

3

4

Water bottle rocket	Know rocket is made up of different parts, create a mission patch, work in group to create rocket, recalls rocket moves	Correctly identify 1 part of rocket, recall rocket has upward motion, create and explain mission patch, contribute to success of group	Identifies 2 parts of rocket, recalls force causes upward motion, create, explain and use symbols in mission patch, contribute to success and problem solving of group	Identifies 3 parts of rocket and explains their purpose, recalls force of air causes upward motion and relates it to Newton’s 3 rd law, use symbols to create original symbols and explain significance of the patch, explains and solves group problems, increases efficiency and contributes to success of group
Writing Skills	Correctly recalls and writes high frequency words.	Correctly translates beginning sounds to writing and recalls high frequency words.	Correctly translates beginning and ending sounds. Correctly uses capitalization and high frequency words.	Correctly translates beginning, middle, and end sounds. Uses correct capitalization, punctuation, sentence structure and high frequency words

TOTAL _____