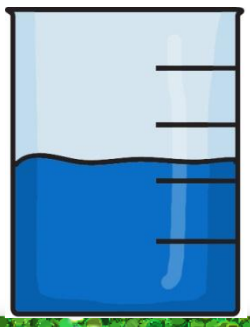
Primary School Science Fair



Dear Teacher,

Congratulations you are about to undertake a fantastic and wonderful experience for both you and the student involved! Hooray for you! Now, I am not going to lie to you and say that this is SUPER easy! But I will tell you that by the end of this you will be glowing with pride from what you and your students have accomplished! Go you!

Now I am going to come right out and say it: You are A-M-A-Z-I-N-G! Now that we have your confidence all fluffed up let's begin!

Why do a science fair you ask? Well Why not?!? Your students gain so much from this process!

What exactly do they gain? You ask skeptically. I know you have heard horror stories about experiments gone bad or parents doing projects for kids. Well it happens but honestly this packet will make each step easier for you, your parents, and your students!

Your students gain:

1. Valuable experience in problem solving using the scientific or engineering method. (a.k.a. the ever popular buzz word problem solving skills)
2. Experience in putting together a final product that they are proud to display to peers, judges, and teachers alike.
3. Experience in public speaking and taking a stand as they defend their hypothesis to a judge.
4. The satisfaction in completing a long term project!

You get the general idea! You gain a lot more than a headache.... I mean a sense of pride and joy for your students! Not only do you get a sense of pride and joy as you watch your young scientist vehemently defend that their little growing seed needed water and not soda in order to survive, you get the satisfaction in knowing that you provided them the skills to figure that out all on their own! There is nothing more satisfying than knowing that you gave a child the skills to teach him or herself.

As a teacher I whole heartedly believe in the Chinese proverb: if you give a man a fish you feed him for a day, but if you teach a man to fish you feed him for the rest of his life. I think kids are much the same way! If you give the child the answer you but satisfy that child for a moment, but if you teach a child to think and learn for his or herself you satisfy that child's thirst for knowledge for the rest of his or her life.

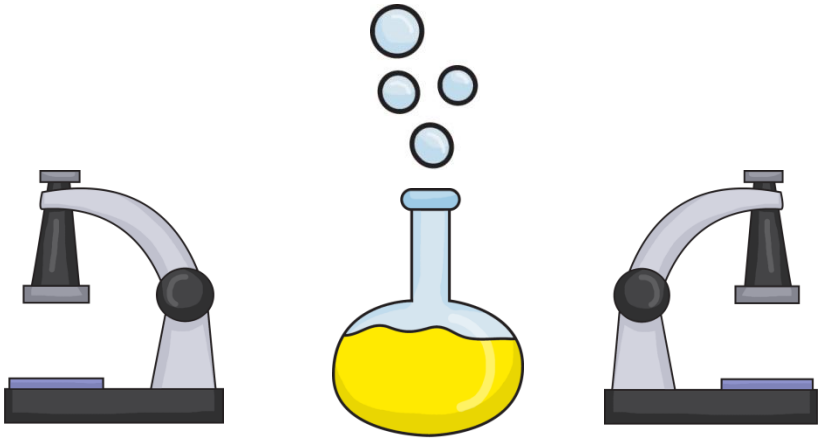
Cheesy yes, but so very true!

On that note, each section has a teacher initials box so that you can sign off as your young scientists complete each step!

Good Luck!

The Jr. Mad Scientist

My Science Fair Book



This book belongs to: _____

Dear Parents,

Your student will be participating in the science fair this year! Please encourage your student to work on this project independently. I know as a parent it is very difficult to sit back and watch the mistakes happen. But that is the magic of science! It is all about learning from the mistakes!

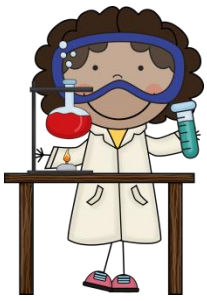
This packet is designed to help your child to understand the process of a science or engineering experiment. I encourage you as a parent to read through this packet with your child, to get excited, even assist your junior scientist with the experiment. But please, let the scientific explanation be your students. Allow your child to develop their own way of explaining what happened. I am looking for your child's effort and ability to execute the scientific or engineering process when I grade. I am not grading their ability to explain the principals of flight in correct mathematical terms.

It is important that you and your student agree on a project. You can easily choose a project that has little to no cost. This packet has a page full of suggestions! The only thing you will need to purchase is a tri-fold display board that can easily be purchased at any of the following stores: Target, Wal-Mart, The Dollar Tree, Staples, Office Max, or any craft store.

Please encourage your student to begin this project right away. It will be a fun and educational experience! Please fill out the Parent Student and Teacher Agreement and return by the deadline set on the due dates page.

Thank you for all that you do!

Science Fair Coordinator-



Parent, Student, and teacher Project agreement

My Student and I have reviewed the Science Fair Packet

My Student and I have chosen and agreed on a project together.

We have chosen the following science question to investigate:

_____

_____

_____

_____

Parent:

I approve the above scientific or engineering experiment and have reviewed the packet and deadlines with my child.

Parent Signature:_____

Student:

I agree to follow the guidelines in this packet and turn in work that I am proud of by the due date.

Student Signature: _____

Teacher:

The Topic is approved.

Teacher Signature: _____

Science Fair Due Dates:

Due Date:	Title:	Description:	Completed?
	The Scientific method Sheet	This sheet is to make sure that you understand *all* of the steps of the scientific method before you begin.	☐
	Step 1: Ask a question Sheet	This sheet will help you brainstorm ideas for your science question.	☐
	Parent, Student, and Teacher Project Agreement form	You must have your question chosen and approved by your parent and teacher. Please bring in the signed sheet by the due date.	☐
	Step 2a: Research Step 2b: Giving Credit	Use the road map to help you become an expert on your chosen topic! The more you know the better your hypothesis and conclusion!	☐
	Step 3: State your Hypothesis	Re-state your question and create you educated guess!	☐
	Step 4: Test your Hypothesis	Write out what materials you need and all the steps you have to follow in detail!	☐
	Step 5: Analyze your Results	Explain everything that happened and explain if you were correct with your hypothesis.	☐
	Step 6: Share your Results	This is a checklist to make sure you put everything on your presentation board!	☐
	THE SCIENCE FAIR!!!!!!!!!!	This is the day your poster board needs to be at school!	☐

The Scientific Method

We can thank the father of experimental science, Sir Francis Bacon (1561-1626), for giving us the scientific method. The Scientific method is a method to explore a topic using an experiment. Each step is listed and explained below.

Step 1: Question: The scientific method starts when you ask a question about something you are curious about. A few questions you might ask:

- How come?
- What happens when?
- I wonder why?

Make sure your science question is specific and measurable! Do not ask "why do plants grow?" ask "Do bean plants grow better in sand or dirt?"

The bean plant is specific and you can measure which plant grew better by measuring the height! ☺

Step 2: Research: The research step is important! A Scientist researches their science question to find the best way to do their experiment *without* repeating mistakes other scientists have made. Scientist also research their topics in order to become experts and to better explain their experiment!

Step 3: Hypothesis: Once you research your question you can create your hypothesis! A hypothesis is an educated guess. You will guess the answer to your question using your research (another reason why we research!)

Use this formula to state your hypotheses: I think that _____ because according to my research _____.

For example: I think that the bean plant that gets watered with sugar water will grow the tallest because according to my research plants need sugar in order to live. Without enough sugar the plant cannot grow as tall. I don't think salt will grow a tall plant because it might make the plant thirstier. Salt usually makes me thirsty.

Feel free to use one or more sentences to fully explain your hypothesis! The more you explain the better your experiment!

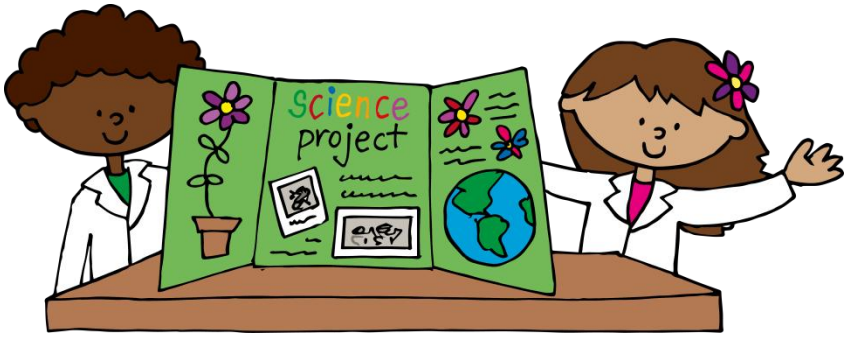
Step 4: Test your hypothesis: In this step you will need to explain the difference steps you took to test your hypothesis. This is your experiment. You will need to explain the following:

- List *all* of the materials a scientists would need in order to complete your experiment.
- Explain what your **control** is: The thing that you will not change in the experiment; in the case of the bean plant the amount of each liquid would be the same. (each plant gets one cup of liquid a day)
- Explain what your **dependent variable** is: The thing that you will measure, in the case of the bean plant experiment it would but how tall each plant is.
- Explain what the **independent variable** is: the thing that will be changed, in the case of the bean plant it is the liquid it is being watered with.
- List every single little step you took in order to complete the experiment
- Include pictures of yourself doing a few of the steps so that other scientists know what a professional scientist looks like when doing your experiment.

Step 5: Analyze your results: here is a list of things you will need to do to analyze your results like a super scientist:

- Create a bar graph, pie chart, or any sort of chart that can visually compare the measurements you took for your experiment.
- Explain what happened during your experiment in <u>great detail!</u> Explain *everything* that happened! If the bean plant grew only one inch or didn't grow at all state that in a complete sentence! When I say explain everything that happened I mean explain everything! If your cat knocked the sugar water plant over by accident explain it! Maybe the cat knocking over the plant made your results different? The analysis section is *your* area to write out ***<u>everything</u>*** that happened and for you to explain ***<u>why</u>*** you think you got the results you did.
- Be sure to conclude you analysis by answering this question: Was your hypothesis correct why or why not? What would you do differently next time?
- **Use the following formula for your concluding sentence:** My hypothesis was/was not correct because of _____. I think that the next time I try this experiment I will _____.

Step 6: Share your results! This is where you display all your hard work on a tri-fold board and explain your experiment to a judge! Yay!



The Scientific Method

Directions Make sure that before begin your experiment that you have completed this page and your teacher has checked off the completed box at the bottom.

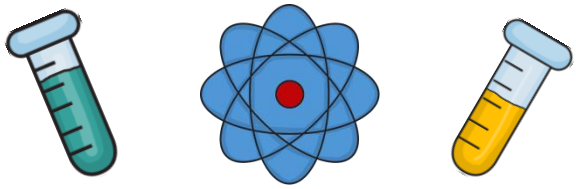
Step 1: Question- In your own words describe what a science question is.

Step 2: Research- What are at least two reasons why research is an important step in the scientific method?

Step3: Form a Hypothesis- What is a hypothesis and why is it important to explain why we predicted what we did?

Step 4: test your hypothesis- What is a control?

What is an independent variable?



What is a dependent variable?

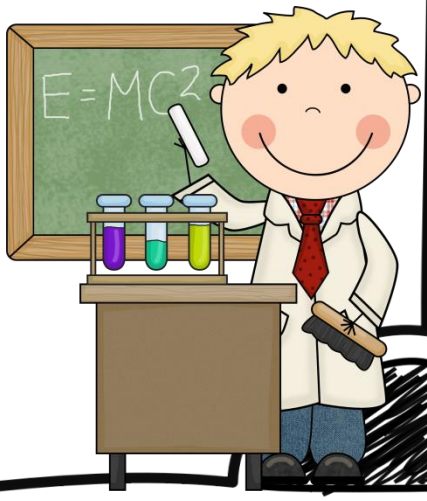
Step 5: Analyze your results- Why would a scientist want to explain everything that happened in the results part of the experiment?

Step 6: Share your results- What are you most looking forward to about science fair?

What are you least looking forward to about the science fair?

Good luck!

Teacher Initials box



Step 1: Ask a Question

Directions: Use this page to help you write your science question.

Look around you and think about the following questions:

a. What interests you?
b. What are you curious about?
c. What is something you have always wondered about?

Brain storm *at least* ideas in the box below

2. Look at your ideas in the above box and Circle the ideas that can be measured using numbers and can actually be done with your own two hands.
   (Example of measurements: height, weight, time, volume, or distance)
3. List your top three ideas that are circled here:
   1. _____
   2. _____
   3. _____
4. Look at your top three ideas and decide which one will be the most interesting to explore!

My final question that I want to submit for approval is:

_____

_____

_____

_____

Teacher approved →

Step 2a: Research

Directions: use this road map organizer to help you with your research. You can use the internet or the library to help you.

The Goal is to become an expert in your topic!

START

1) Identify Key words in your science question.
2) (Example: Does a bean plant grow better with sugar water, salt water or plan water? Key words would be, sugar, grow, bean plants, salt, and water)

Science Question: _____

_____

_____

Key Words: _____

_____

3) Use the key words to create questions for you to research. The following examples are all questions I would need to answer in order to make a great hypothesis.
4) Example: How tall can a bean plant grow? What helps a plant grow? What is salt made out of? What is sugar made out of?

List at least three research questions from your key words below.

1. _____

2. _____

3. _____

Optional Bonus _____

On the next page answer the research question given and write your research question from the above step on the line and answer it inside the box.

What steps will you need to complete in order to do this experiment? Summarize your findings in the box below:

Research Question 1: _____

_____

Write any notes or draw any diagrams that will help you answer the above question inside this box:

Research Question 2: _____

_____

Write any notes or draw any diagrams that will help you answer the above question inside this box:

Research Question 3: _____

_____

Write any notes or draw any diagrams that will help you answer the above question inside this box:

Now that you are an expert it is time to write your hypothesis after your teacher approves your research! → Teacher approved: ☐

Step 2b: Giving credit to those you learned from

Directions: Use this page to help you create a references section for your science board. Write down each and every source you actually used to help you.

You have to give credit to the sources you use! For example if I go to www.beanplants.org to learn about bean plants for my experiment then I need to give the site credit for helping me with my project by having a references section!

Reference #1: Book title or Web Page Title:

Book Authors Name or Web Address:

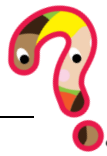
Reference #2: Book title or Web Page Title:

Book Authors Name or Web Address:

Reference #3: Book title or Web Page Title:

Book Authors Name or Web Address:

Step 3: State Your Hypothesis



Restate your Science Question so that it is specific and measurable:

Use this formula to state your hypotheses: I think that _____ because according to my research _____.

For example: I think that the bean plant that gets watered with sugar water will grow the tallest because according to my research plants need sugar in order to live. Without enough sugar the plant cannot grow as tall. I don't think salt will grow a tall plant because it might make the plant thirstier. Salt usually makes me thirsty.

Feel free to use one or more sentences to fully explain your hypothesis! The more you explain the better your experiment!

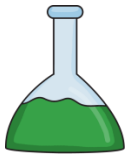
State your hypothesis:

Teachers Approved: ☐

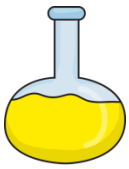
Step 4: Test Your Hypothesis

Directions: Answer the following questions then follow the steps that you listed to complete your experiment.

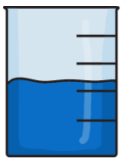
1. What is your control? (what stays the same?)



2. What is your dependent variable? (What you will measure?)



3. What is your independent variable? (What will you change?)



What Materials do you need to complete your experiment?

What are *all* of the steps you need to do in order to complete your experiment? (This is what is known as your procedure)

Teachers Approved:

Step 5: Analyze Your Results

Create a bar graph, pie chart, or any sort of chart that can visually compare the measurements you took for your experiment in the box below.

In the lines below explain what happened during your experiment in great detail! The analysis section is *your* area to write out ***everything*** that happened and for you to explain ***why*** you think you got the results you did.

Conclusion Statement: Was your hypothesis correct? why or why not? What would you do differently next time? **Use the following formula for this sentence:** My hypothesis was/was not correct because of _____. I think that the next time I try this experiment I will _____.

Teachers Approved: ☐

Step 6: Share Your Results

Directions: Use the checklist below to help you create a super science fair presentation board.

- ☐ I have a creative title on my board that tells the reader what my experiment is.
- ☐ I have my science question labeled and my question is visible.
- ☐ I have a section labeled for research
- ☐ In my research section I summarize the things I learned about my topic.
- ☐ My research is NOT copied from the internet and is in my OWN words.
- ☐ My Hypothesis is stated in a complete sentence and explains why I think I will get the results I predicted.
- ☐ My Hypothesis is clearly labeled
- ☐ My Materials are listed and clearly labeled
- ☐ My procedure (or steps) are listed in the correct order
- ☐ My Procedure is clearly labeled
- ☐ My results are shown using a graph or diagram
- ☐ My Graph or diagram is clearly labeled
- ☐ My results are explained in complete sentences.
- ☐ My results are clearly labeled
- ☐ My Conclusion statement is stated in a complete sentence and I explain why my hypothesis was correct or incorrect.
- ☐ My concluding statement is clearly labeled.
- ☐ I have a references section on my board where I list all of my references.
- ☐ My "References" Section is clearly labeled.
- ☐ I have pictures, drawings, or images that help illustrate my experiment or explain what I did.
- ☐ My board looks neat and does not have a lot of blank spaces.
- ☐ Everything on my board is typed and printed in a large enough fonts that someone can read it from 3 feet away.
- ☐ Everything on my board is written using correct grammar and spelling.
- ☐ My board is something I am VERY proud to display!

A list of Websites to help you find a topic for science fair:

1. http://www.sciencekids.co.nz/projects.html
2. http://www.all-science-fair-projects.com/
3. http://www.education.com/science-fair/elementary-school/
4. http://www.sciencebuddies.org
5. http://www.ipl.org/div/projectguide/
6. http://school.discoveryeducation.com/sciencefaircentral/

Science Fair Grading Ruberic

The Project Display Board is worth 80 points of your total science fair grade and your verbal presentation is worth 20 points.

What is being scored	Excellent (8-10 points)	Okay to Good (5-7 points)	Poor (0-4 points)
Labels, Materials, and Procedure	There is a creative and catchy title. Student has labeled each section. Each Label is Printed and attached to board in a neat and appealing manner. Labels are attached in the order of the scientific method. Student has a materials and procedure section with the materials and steps taken to complete the experiment. Everything is typed.	There is a title. Student has labeled most or all sections. Labels are written but are neat. Labels are attached in the order of the scientific method. The student has the materials listed and the steps listed but may have not fully explained each step. Everything is written neatly.	The title is missing. Student has missing labels. Labels are hand written or difficult to read. Labels are not in the order of the scientific method. The materials or procedure section is missing. Poorly written
Question and hypothesis	Question is Clearly labeled and is specific and measurable. The hypothesis is clearly labeled and written in a complete sentence and the student explains the reason he or she believes their hypothesis will be correct. Everything is typed	The Question and hypothesis is clearly labeled. The question is specific and measurable. The Hypothesis is stated in a complete sentence but not explained clearly. Everything is written neatly.	The question and/or the hypothesis are missing a label. The question is a simple question. The hypothesis is not explained but is stated. Everything is hand written and not neat.
Research	Research section is clearly labeled. Research is related to the experiment and is explained in 1-2 paragraphs. Everything is typed.	Research section is clearly labeled. Research is related to the experiment and explained in at least a few sentences. Everything is hand written neatly.	Research section is either missing or Poorly written and unlabeled.
Results	The Result Sections is clearly labeled. The Results are explained in an organized fashion. There is a diagram or a graph of some kind to help explain the results. The graph or diagram is well labeled with units and titles. Everything is typed or very neat. (graphs can be hand drawn for full credit)	The Results section is clearly labeled. The results are explained but may not be very well organized. There is a diagram or a graph present but a few labels might be missing. Hand writing is neat.	The results section is missing a label. The diagram or graph is completely unlabeled and the results are poorly explained. Everything is hand written and not neat.

Analysis	The analysis is clearly labeled. The analysis is at least 1-2 paragraphs and is well thought out and organized. Student explains what went wrong or right. Student explains their control, independent variable and dependent variable. Everything is typed and organized.	The analysis is clearly labeled. The analysis is explained in at least one paragraph. Student explains their diagram or graph but does not explain what went wrong or right. Student forgets to explain either the control or dependent or independent variable. Written neatly	The analysis section is not clearly labeled. The student does not explain his or her results very well. The student forgets to explain what the control, independent or dependent variable is. Not neat and organized contains equations that the student is incapable of explaining.
Conclusion Statement	Conclusion statement is clearly labeled. Conclusion statement restates the hypothesis and explains why the hypothesis was correct or incorrect. Student also explains what he or she would do differently if they did the experiment again. Everything is typed and is neat.	Conclusion statement is clearly labeled. Conclusion statement explains why the hypothesis was correct or incorrect. Everything is written neatly	Conclusion statement is not labeled or is missing. Concluding statement does not explain why the hypothesis was correct or incorrect.
References	References are clearly labeled. References are in alphabetical order. References are typed.	References are clearly labeled and are neat.	No references.
Spelling, Grammar, creativity, and Neatness	No spelling or grammar issues. Board is neat and does not have a lot of empty space. Student uses pictures of the experiment. Student included props to help illustrate his or her experiment. Pictures can be hand drawn	Very few spelling and grammar mistakes. Board is neat and does not have a lot of empty space, might have some. Student includes pictures but no props or no pictures and few props. Pictures can be hand drawn.	A lot of spelling and grammar mistakes. Board is sloppy and has a lot of empty space. No pictures no props
Presentation Effort	Student was prepared to answer questions about his or her project and was able to answer questions	Student spoke clearly but was unable to answer a few questions	Student was unable to explain his or her project.
Presentation Content	Student was able to clearly explain any vocabulary words, mathematical concepts, diagrams, or graphs for his or her project. Student clearly understood the steps of the scientific method and could clearly explain how it was used for their science project.	Student was able to explain most of the vocabulary words, mathematical concepts, diagrams, or graphs for his or her project. Student understood the scientific method.	Student could not explain any vocabulary words, mathematical concepts, diagrams, or graphs for his or her project. Student did not understand the scientific method.

The Science Fair Information Page

This Page will have all of the information you will need to get through the day of the science fair!

When is the Science Fair?

The science fair will be held on____/_____/_____

Where will the Science Fair be held?

The Science Fair will be located _____

When should I bring my Project to school?

You can drop off your project at _____between the hours of _____ and _____. If you need to make other arrangements please let me know the week before the science fair.

What time will I be interviewed about my project?

Your interview will be around _____.

Here are a few interview questions you can expect:

1) What did you learn from your project?
2) What was the part of your project that was the most fun?
3) What was the most difficult part of your project?
4) You can expect the judge to ask you about any of the vocabulary you used to explain your project, so make sure you understand everything that is on your board.

How long with the Science fair be open for parents to walk through and look at projects?

Parents can walk around the science fair on the day of the science fair between the hours of _____ and _____.

When can I pick up my Project to take it home?

You can pick up your project on _____/_____/_____ during the hours of _____ and _____. If you need to make other arrangements please let me know the week before the science fair.

Can I have props that go with my display?

Yes you may have a few props but remember space is limited.

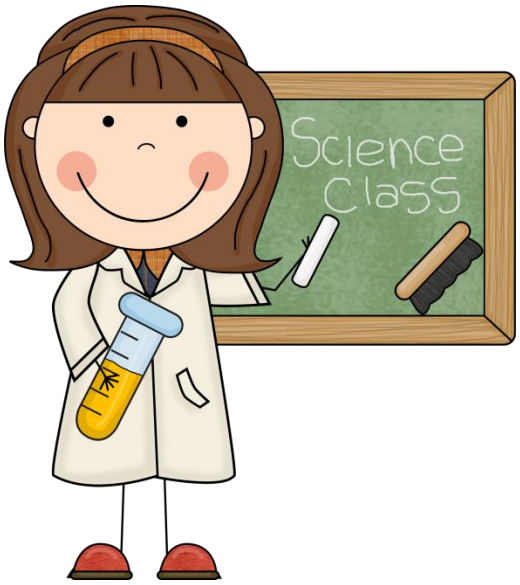
Places to Find Science Supplies

Steve Spangler Science –

http://www.stevespanglerscience.com

Carolina biological –

http://www.carolina.com



Radio shack-

http://www.radioshack.com

Elmer's Foam Boards-

http://www.elmers.com/products/foam-and-display-boards/school-and-science-fair

Edmund's Scientific-

http://www.scientificsonline.com/

Home Science Tools -

http://www.hometrainingtools.com/

Thank You!

Thank you for downloading my product!
I use all of the products that I create in my own classroom and can proudly state that they are effective!

Connect with The Jr. Mad Scientist!
Be sure to follow my TPT store by clicking on 'Follow Me' next to my logo to receive notifications of new products and upcoming sales.

I have been known to do a few flash freebies on new products!

Visit my Blog for more great activities and freebies that you can use in your classroom.
Http://www.thejrmadscientist.blogspot.com

Thank you to the following sellers for such super products!