



# eRAPPER

Monthly Newsletter of the Maryland Association of Science Teachers  
**February 2010**

## Editor's Note

Have you had enough snow yet? I haven't seen this much snow in one place since my freshman year in college in Buffalo, NY. Some of you in the more western portions of our fair state are probably thinking, 'Welcome to my winters!'

With many of us having more time out of the classroom than in over the last week or so, this month's Teacher to Teacher column has been expressly written with the thought of helping us help our students 'get back into the swing of things'. Vikki did a nice job of providing some fun activities to re-engage brains!

Jackie's BookMark It! for February is wonderful as well. I've already added the site to my favorites!

Gary has given us another fun demonstration this month. Every student seems to be awed in the presence of open flame and this one provides a great opportunity to review scientific method as well.

Have you heard about the USA Science and Engineering Festival? This issue of the e-Rapper may be the first time you hear about it but certainly not the last! You and your students can participate in this Expo on the Mall in Washington, DC. Please be sure to check out the details and the invitation on pages 12-14!

Be sure to mark your calendars, set up your substitute plans and head up to Philadelphia in March for the NSTA National Conference! It's just a train ride or short drive for many of us. See the flyer in this month's Rapper for more information.

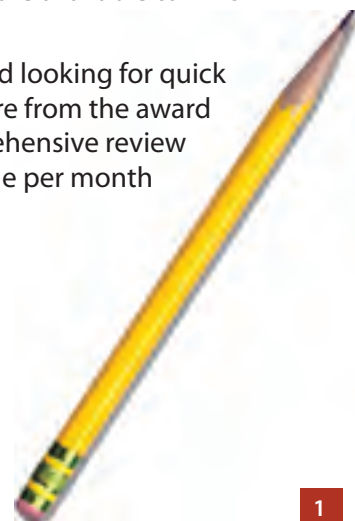
Do you have a great plan you'd like to implement? Could you use some funding to help move it along? Great timing as this month's issue contains information and an application for MAST's Mini-grants. Awards are available to MAST members with a great idea. Details on pages 8-12.

Are you one of our colleagues teaching elementary students? Are you teaching grades 3-5 and looking for quick science reviews to incorporate into your day? Oh, good! You'll be happy to see our new feature from the award winning Carl Bilotta of Frederick County! Science Reviews in a Minute are quick hits of comprehensive review Carl uses with his class and shares with his colleagues. He has graciously agreed to provide one per month to all MAST members!

Thank you very much for your time, attention and participation.

Donna

Donna Balado, Carroll County • [dmbalad@carrollk12.org](mailto:dmbalad@carrollk12.org)





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# President's Message

It's definitely a February to remember in Maryland, and though it seems that the snow is not going anywhere quickly, I feel quite confident that warmer, spring weather will find us eventually. In the meantime, I would like to share several upcoming opportunities that spotlight science education and the work you do with students.

Chronologically, the first event is the upcoming **NSTA National Conference** in Philadelphia March 18-21, 2010. Here is a chance to experience a national meeting in our own backyard. There are exciting speakers and presentations. Learn more at [www.nsta.org](http://www.nsta.org).

In April, join MAST and your colleagues from around the state as the **Evening Speaker Series** continues. Plans are underway for two events—one focused to elementary science and the other to secondary. As details are finalized, registration information will be forwarded.

May 2010 brings us the first **National Lab Day**. As I wrote in January, this is a unique opportunity that focuses attention on the importance of labs to science education for all students. There's additional information available at <http://www.nationallabday.org/>. Learn how you can participate in this first-ever event.

Looking ahead to the fall, there is another important celebration of science education. The first **U.S.A. Science and Engineering Festival** is slated to run for two weeks beginning October 10, 2010. There are many exciting events planned, but the highlight comes the week-end of October 23-24 with the **Science Expo on the Mall**. Professional organizations, government and private sector groups, colleges, universities, and high school students will be among those gathered on the Mall to spotlight science and engineering in our lives. Student participation in this once in a lifetime opportunity can be supported with one of several \$250 grants available through a competitive process. MAST is excited to provide details to you in this issue of the E-Rapper. You can also find information at <http://usasciencefestival.org/>. Please consider sharing some of your students' work with the world on the Mall!

The culmination of 2010 is the **NSTA Area Conference on Science Education in Baltimore November 11-13**. It is very exciting that many of you submitted proposals to share your best practices, and because of that, I am confident this will be one of the best regional conferences ever. The Planning Committee continues to work hard finalizing the program and local arrangements. Details on speakers and other exciting events during the conference, including a special event for MAST members, will be forthcoming soon. Though November may seem far in the future, plan to now to attend. You won't want to miss out!

2010 has started a bit shakily, but there is a LOT to anticipate. Remember, however, that none of these can occur without you. I invite you to continue your support of MAST and science education in Maryland through your membership and active participation. It is only with you onboard that we can succeed. Please contact me anytime at [mcwelle@carrollk12.org](mailto:mcwelle@carrollk12.org). I will look forward to seeing you in the coming months!

Warmest regards



*Monthly e-Rapper features a site for you to bookmark for future use in your instruction.*

<http://www.windows.ucar.edu/>

How many times have you found a great article or reading to feature in a lesson, and you had to re-write it to match the different level of readers in your class? If your curriculum includes Ecology, Weather, Biology, Geology, Physics, Space weather, Space missions, Earth's climates, Astronomy and the Universe, Earth or Our Solar System then this website is here to help you. Here you will find readings and research in three different reading levels. Each page can be viewed in Spanish or English. Simply click on the reading level or language and the reading changes. This is a wonderful teaching tool for our heterogeneous classes.

The site is rich in graphics, maps, games, puzzles, a journal tool and pictures. Each reading has links that explain terms and concepts using the same quality graphics, maps and pictures.

A teacher resource page on the site provides educational links, classroom activities and a Scientist in Schools Program.

The site was created by NASA, National Science Foundation, and National Center for Atmospheric Research, CMMAP, and CISM.

Pass this URL on to your World Studies, Art, English and Reading Teachers. There are sections featuring Myths, Stories, Art, History, and Current Events.

Jackie Geer, Montgomery County

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# TEACHER TO TEACHER

## Beat the Cold with Great Warm-ups for Your Students!

*After the extended blizzard break, our students' brains are going to need a little warming up. Here are some ideas that make warm-ups fun as we thaw out and return to class...*

**PASSWORD:** If you ever watched the classic game show, you know how this game goes. Give students vocabulary words on folded pieces of paper so no one can see what is written. Each student partners up and without using the vocabulary word itself, describes it one word at a time. After giving the partner a word, the partner must make a guess. Repeat the process until the partner guesses the word OR make it timed! Students love the competition involved if you give them a time limit. After one partner guesses the word, it is his or her turn to give one-word clues.

**TWO TRUTHS AND A LIE:** Have each student write three statements about a recent topic on a piece of paper. One statement must be false while the other two must be true. Students can either pair up to determine the lies or the teacher can ask for volunteers and take a class vote.

**WORDSPLASH:** Students are given a list of vocabulary words and asked to put them in some sort of meaningful set. This is great for bringing out the different modalities of learning: Some students will draw the association while others will create written paragraphs or concept maps to show meaning.

**FREE ASSOCIATION:** Give students a vocabulary word on the board. Every student in the room must come up and write a word they associate with the vocabulary. As a closer, you could even ask students to build a concept map around the ideas listed.

There are so many fantastic ideas out there and we would love to hear yours! Email us anytime with ideas that work for you!!!

*Do you have a question you want answered or advice that would help other teachers? Email us back and your ideas may appear in a future column!*

Vikki Bol, Calvert County

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# Hydrogen Peroxide Demo

*I'm a firm believer that students should look forward to coming to science classes. There's a world of wonder in each of us and seeing science come alive through classroom demonstrations is an excellent way to engage students. This is the second in a series of demonstrations that can be used in most physical science classes at either middle school or high school levels.*

Here's a great demonstration of the power of catalase, an enzyme found in most living organisms. It's also a great demonstration for teaching the scientific method.

1. Place about  $\frac{1}{4}$  inch of regular granulated yeast in a test tube. The bigger the test tube the better.
2. Pour about 3 to 4 mL of ordinary hydrogen peroxide in the test tube. Almost instantly the catalase contained in the yeast will produce foamy bubbles containing oxygen.
3. Light the end of a wooden splint (Starbuck's coffee stirrers work great) and blow out the flame making sure you have a glowing ember on the splint.
4. Insert the glowing splint into the test tube and watch it burst into flames.
5. Blow out the splint and reinsert in the test tube. It bursts into flames again.

Catalase is an enzyme that rapidly separates hydrogen peroxide into water and oxygen.

If you don't explain to students the ingredients you are using, it's a great way to work through the observation, question, hypothesis steps of the scientific method.

*Note: This demo works very well with 3% hydrogen peroxide – the type you have in your medicine cabinet at home.*

Gary Fuhrman, Carroll County



# Science Reviews

## Life Science in a minute



*Teaching science in elementary school? Are you wishing you had some help? Well, here you go! Each month, you will see a new feature entitled, "Science Reviews in a Minute." These science reviews provide students in grades 3-5 with a quick thought provoking science question. These reviews will also offer teachers the opportunity to access science review questions without having to do all the work of searching. Teachers' creativity will generate the most appropriate use for their classrooms. However, some ideas for use include morning work time, as a station during language arts time, follow-up work for when students have completed work, and right after lunch or recess. If you find these reviews helpful, have more to offer or have found ways to incorporate them into your day, please let us know and we'll include them in this column!*

## Cells

All organisms are made of cells. A cell is the smallest living part of an organism. Some kinds of organisms, such as bacteria, are made of only one cell. That single cell is the organism's entire body. Many other kinds of organisms, including elephants, trees, and people, are made of trillions of cells.

The body of a many-celled organism is made of different kinds of cells. For example, many animals have bone cells, nerve cells, muscle cells, and blood cells. Plants have leaf cells and root cells. Each kind of cell in an organism performs a different function.

**From the information above, identify the statement that supports the need for specialized cells in multi-cellular organisms.**

- All organisms are made from cells.
- Each kind of cell in an organism performs a difference function.
- The body of a many-celled organism is made of different kinds of cells.
- A cell is the smallest living part of an organism.

Carl Bilotta, Frederick County

# CELLS

## MAST ANNOUNCES ANOTHER ROUND OF INSTRUCTIONAL MINI-GRANTS

MAST will award instructional Mini-grants to MAST members for the 2009-2010 school year. With the success of previous years' Instructional Mini-Grant Programs, the MAST Executive Board has decided to continue the program. Each award will be for a sum of money up to \$500 to enable a teacher to purchase supplies and equipment for new and innovative projects to supplement his or her classroom instructional program.

Applicants, who must be MAST members, should submit an application via email showing a timeline, detailed budget, and plan for evaluation of the project. They should indicate how the project incorporates current science education reform movements such as the National Science Education Standards, Project 2061, Benchmarks, Maryland State Department of Education Content Standards and county outcomes among others. They should show evidence that their principal understands the scope of the project and concurs with its implementation. The merit of a proposal will be judged on the above criteria as well as the number of students that will benefit. Projects that will reach students at more than one grade level are especially encouraged. Applicants can check the MAST web site for an application form and a rubric used in evaluating proposals. The deadline for submitting a mini-grant proposal is Friday, March 12, 2010. Proposal must be submitted as a Word document via email to [carl.bilotta@fcps.org](mailto:carl.bilotta@fcps.org). The principal's letter of support should also be emailed or postmarked by March 12, 2010 to:

**Carl Bilotta**  
**MAST Awards Committee**  
**c/o Deer Crossing Elementary School**  
**10601 Finn Drive**  
**New Market, MD 21774**

**240-236-5900**  
**[Carl.Bilotta@fcps.org](mailto:Carl.Bilotta@fcps.org)**



# 2010 Mini-Grant Application Form for MAST Members

**ALL APPLICATIONS MUST BE RECEIVED VIA EMAIL NO LATER THAN MARCH 12, 2010.**

**Applicants will be notified of Mini-grant awards by early April.**

Member's Name \_\_\_\_\_

Project Title \_\_\_\_\_

Home Address \_\_\_\_\_

Phone (home) \_\_\_\_\_ e-mail \_\_\_\_\_

School Name \_\_\_\_\_

School Address \_\_\_\_\_

School Phone \_\_\_\_\_ fax \_\_\_\_\_

Focus of the Proposal \_\_\_\_\_

(National Science Education Standards, Project 2061, Benchmarks, Maryland State Department of Education Content Standards and county outcomes, other)

Grade-level/s of students affected by grant \_\_\_\_\_

Number of students affected by grant \_\_\_\_\_

Amount requested (Maximum \$500) \_\_\_\_\_

Statement of the Proposal \_\_\_\_\_

Proposal Objectives/ Goals \_\_\_\_\_

On separate page/s submit a minimum of a paragraph each addressing the following points:

- The project time-line including projected date for required article for the MAST Rapper
- A plan for evaluation
- How your project incorporates the ideas of current science education reform movements
- A detailed budget for the project, including names of suppliers (not to exceed \$500). (Receipts of expenditures will be required by the MAST treasurer.)
- **A principal letter that shows evidence of their understanding of the scope of the project and that they concur.**

Criteria that will be used to judge the merit of the proposal will include the above items as well as the number and grade level/s of students that will benefit. Projects that will reach students at more than one grade level and for more than one year are especially encouraged. For your information, a rubric for the evaluation of the projects is included at the end of this application.

Proposals must be sent electronically in MS Word format by March 12, 2010 to: [carl.bilotta@fcps.org](mailto:carl.bilotta@fcps.org).

**The original of your principal's letter of support for the project's implementation during the 2010-2011 school year should be postmarked by March 12, 2010 and be mailed to:**

**Carl Bilotta**  
c/o Deer Crossing Elementary School  
10601 Finn Drive • New Market, MD 21774  
240-236-5900 • [Carl.Bilotta@fcps.org](mailto:Carl.Bilotta@fcps.org)

*If you are not a MAST member, please send your membership application form (on the web site or in the MAST Rapper) and dues to the membership chairman. Only Mini-Grant applications from current members will be considered.*

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**Evidence of linkage to:**

National Science Education Standards, Project 2061, Benchmarks,  
Maryland state content standards, MSPAP, Maryland and county outcomes, other  
*specific mention of linkage to focus area(s): mention how strategies support/address the focus* \_\_\_\_\_(5)

**Clearly defined objectives**

*specific mention of behavioral objectives/goals that support the focus* \_\_\_\_\_(5)

**Clearly defined product**

*a complete plan- engagement through evaluation* \_\_\_\_\_(5)

**Activities which support the objective**

*evidence of feasible and appropriate instructional activities which support objectives/goals* \_\_\_\_\_(5)

**Number of students/grade levels/years**

*evidence of several classes/grade levels involved* \_\_\_\_\_(3)

**number of students benefiting**

*continuation of project/investment for \_\_\_ years*  
*Evidence of partnerships such as vendors, private sector, and other contributions* \_\_\_\_\_(1)

**Evidence of collaboration with other teachers**

*evidence of integration with other sciences or other content areas;*  
*and/or evidence of peer collaboration or team teaching* \_\_\_\_\_(2)

**Detailed Budget**

*expenditures support only the proposed project, limited to materials, equipment;*  
*detailed list with catalog numbers/supplier's name* \_\_\_\_\_(5)

**Timeline addresses project parameters**

*article for MAST Rapper after implementation* \_\_\_\_\_(5)

**Letter of support**

*support from principal indicating school's commitment* \_\_\_\_\_(1)

**Discretionary**

*committees impressions of likeliness to result in a quality product* \_\_\_\_\_(5)

# Educational Opportunities

**First ever USA Science & Engineering Festival provides many opportunities for teachers and students to participate**

The first USA Science & Engineering Festival is an all out celebration of science and will descend on the greater Washington DC area in October 2010. The Festival kicks off on 10/10/10 and features several programs for local area schools, including the Nifty Fifty and Lunch with a Laureate program. The event culminates in a 2-day Expo on the National Mall, that gives students the chance to explore all facets of science and engineering through hundreds of free, hands-on activities. Over the next few months we will keep you abreast of the many opportunities for teachers and students to participate. For more information on the Festival visit [www.usasciencefestival.org](http://www.usasciencefestival.org)

Here are two great opportunities for your students (more programs will be announced soon):

## **Have your students create a hands-on science activity for the Expo on the National Mall:**

The Expo will feature over 350 of the nation's leading science & engineering organizations with hands-on activities. High-school student groups or science clubs are invited to create exhibits to show others how much fun science can be. A limited number of \$250 grants to offset cost of materials are available. Proposals from high-schools are being accepted now through February 28. For more information, see the attached pdf. To submit your proposal to be considered for a \$250 grant, fill out an online form located at <https://scholarnexus.wufoo.com/forms/exhibitgrant-application-form>

## **Rubik's Cube Tournament for student teams – winning teams win cash prizes – free teacher workshop – first 30 teachers receive free Math Education Kit**

The Tournament will consist of teams of eight, K-12 only, who will be competing for the fastest time to collectively solve 25 Rubik's Cubes. All teams will compete in the preliminary Tournament to be held on Thursday, October 21, 2010, at the National Electronics Museum. The top six finalists will advance to the Grand Final to be held on Saturday, October 23, 2010, as part of the USA Science & Engineering Festival Expo on the National Mall. **You CAN Do the Rubik's Cube** is a math education program that can be integrated into the school curriculum and/or used as an educational outreach activity through after school clubs, community youth organizations or any environment that encourages learning activities. The first 30 teachers/coaches who register a student team for the tournament AND attend the teacher/coach orientation workshop are eligible to receive a free Math Education Kit valued at \$150. Registration Deadline April 30.

For more information about the Tournament visit

[http://www.usasciencefestival.org/index.php?option=com\\_content&view=article&id=88&Itemid=93](http://www.usasciencefestival.org/index.php?option=com_content&view=article&id=88&Itemid=93)

Questions? Please email Ruth Kiefer at [rkiefer@mindspring.com](mailto:rkiefer@mindspring.com)



### **Submission Deadline**

To be considered for a grant, you must submit your proposal no later than February 28, 2010. You will be notified by March 10, 2010, whether you have been awarded a grant to offset your cost of materials.

### **Exhibit Examples**

#### **This is Not Your Father's Auto Shop** by San Diego High School

Take the gas crisis into your own hands. Learn about the latest in alternative energy and how you can convert your car to biodiesel or electricity.

#### **It's Elementary, My Dear Watson!** by Elementary Institute of Science

Find out what a snake has in common with a rat, a starfish with a sea cucumber and a reptile with a bird in this fun interactive lesson on taxonomy. Oh, and there's more: play a interactive game to learn about our most limiting natural resource .... It's not what you're thinking!!! ... It's not Oil, but rather Water.

### **About the 2010 Inaugural USA Science & Engineering Festival**

The 2010 Inaugural USA Science & Engineering Festival is modeled after the 2009 San Diego Science Festival, and popular science festivals in Europe and Australia. Worldwide science festivals are 7 to 14 days and draw between 100,000 and 1 million people to celebrate science through inspiring lectures, hands-on activities and exhibits, contests, theatre, comedy, poetry, art film, and music – all celebrating science. Mr. Larry Bock is responsible for the development of the 2009 San Diego Science Festival that promoted 30 days of activities with 350 collaborating organizations, 500 free events, and drew over 200,000 people.

For frequent updates on the Festival, sign-up for the bi-weekly e-newsletter at

[www.usasciencefestival.org](http://www.usasciencefestival.org)

Additional websites are provided below for more information. Any questions regarding the submission process, please contact Mr. Larry Bock via email at [biobock@mac.com](mailto:biobock@mac.com) or phone 760.846.3473.

### **2010 Inaugural USA Science & Engineering Festival Websites**

<http://www.usasciencefestival.org/>

Facebook

<http://www.facebook.com/group.php?gid=46922645272&ref=ts>

LinkedIn

<http://www.linkedin.com/in/larrybock>

Twitter

<http://twitter.com/USAScienceFest>

“Making Science Cool: Inspiring Students and Giving Society Something to Celebrate” by Larry Bock

<http://www.xconomy.com/san-diego/2009/10/05/making-science-cool-inspiring-students-and-giving-society-something-to-celebrate/>

2009 Inaugural San Diego Science Festival 2-minute video

<http://www.scivee.tv/node/12528>



## Science Education is a National Matter

It has been mentioned that teachers are the most important factor for student success. The National Conference on Science Education, March 18-21, Philadelphia, is one event where science educators can gather with renowned experts in every science discipline, in every grade band, and access the best professional development across the nation.

Educators will work on learning new content, hear about assessment strategies, tackle how to integrate science study with other subjects, and participate in hands-on activities to take back to the classroom. It might be that you want new inquiry techniques or you teach ELL and want to close the achievement gap.

With nearly 2000 sessions to choose from, day long programs in Chemistry, Biology, Earth Science and Physical Science, renowned presenters like Bill Nye, and 10,000 other science educators to meet, you'll come away with solid skills, new ideas, and a network of peers who have a passion for science. And we're betting your students will profit from your new experiences.

Check out some of our sessions:

- Seven Inquiry-based Labs That Integrate the Physical Sciences and Algebra (High School)
- NASA Astrobiology Institute: Life on Earth...and Elsewhere? (Middle-High School)
- Differentiated Science Inquiry (Elem-High School)
- Making Biology Come Alive Through Bioinformatics (High)
- Can You Keep a Secret? hands-on/minds-on activities involve the science of disappearing ink, puzzles. Lessons are related to the science standards of solubility, material science, and energy. (PreK/Middle)
- Nanotechnology for the Classroom: The Next BIG Thing! (Elem)
- The Ubiquitous Middle Level Science Classroom- Learn effective strategies for integrating math, social sciences, and the arts into your curriculum.
- Empirical Evidence vs. Intuition and the Let's Make a Deal Game Show (High-College)
- Featured Speaker, John Mooy, story teller and author will present "*Class, I'd Like You to Meet Mr. Einstein*"- Make scientific facts, concepts, and events past and present come to life in your classroom through story...a most powerful tool.
- Climate Change Here and Now: Coastal, Ocean, and Atmospheric Impacts-ticketed with \$60 stipend. Symposium led by NOAA scientists (Grades 5-12)

From the pre-service teacher to the valued administrator, this conference offers rich experiences and lasting memories. Join us.

Visit [www.nsta.org](http://www.nsta.org) for more information or to register.

NSTA BALTIMORE AREA CONFERENCE



# “Charting the Course to Excellence”

**Baltimore, MD • November 11–13, 2010**

CONFERENCE STRANDS include:

- Teaching Science in the 21st Century
- Embracing the World from our own Backyard: Environmental Education
- Building Tomorrow’s Workforce: Science, Technology, Engineering and Mathematics Educ.

Please Contact Elizabeth McCook, NSTA Baltimore 2010 Program Chair, with your questions at [Elizabeth.mccook@fcps.org](mailto:Elizabeth.mccook@fcps.org)



# MEMBERSHIP FORM

**Welcome to MAST! Please print, complete, and mail this form to the address below.**

**Type of Membership – Please check one space in each column.**

- |  |                                  |
|--|----------------------------------|
| <input type="checkbox"/> 1 year – \$15.00          | <input type="checkbox"/> New     |
| <input type="checkbox"/> 3 year – \$40.00          | <input type="checkbox"/> Renewal |
| <input type="checkbox"/> Student – \$5.00 (1 year) |                                  |

**Member Information – Please fill this out completely!**

Last Name		First Name		Level – please check all that apply:  <input type="checkbox"/> Pre-K <input type="checkbox"/> Elementary <input type="checkbox"/> Student <input type="checkbox"/> Supervisory <input type="checkbox"/> Middle/Jr. High <input type="checkbox"/> High School <input type="checkbox"/> College/University <input type="checkbox"/> Organization (please specify)  <input type="checkbox"/> Other (please specify)
Street Address				
City		State	Zip	
Local School System		School		
Home Phone	Work Phone	Cell Phone		
Email Address		Alternate Email Address		

I would like to donate \$ \_\_\_\_\_ to support:  
 the MAST Awards for Excellence in Science Education Program  
 the MAST Mini-Grants Program

Please make your check payable to the Maryland Association of Science Teachers (MAST) and send it with this completed application to:  
 MAST  
 P.O. Box 368  
 Finksburg, MD 21048

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For Office Use: Date Received \_\_\_\_\_ Amt Paid \_\_\_\_\_ Membership to: \_\_\_\_\_  
 Cash \_\_\_\_\_ Check Number \_\_\_\_\_ Check date \_\_\_\_\_ MER 2.10