### VCTM 2014 Math Beauty Contest

The theme of the VCTM 2003 spring conference was “Mathematics: A Universal Network of Beauty.” Johnny Lott, President of NCTM, commented in his address to participants that he liked the conference title and thought it might be nice to have a Mathematics Beauty Contest. After some discussion the publicity committee for VCTM thought that Johnny Lott’s idea might be a way to publicize VCTM and also give students throughout Virginia a chance to show their problem solving ability in “beautiful ways.”

VCTM is sponsoring the contest again this year and is offering students the opportunity to submit solutions to problems. The committee will receive entries **by mail only**. No emails or faxes will be accepted. **Each entry must have two 3”x 5” index cards attached with the following information on each one: name, address, phone, E-mail (if there is one), school, address of school, school phone number and grade level for the contest.** **Please place all of this same information on the actual paper as well**. If the index cards are not included the entry will be disqualified. We had over 1,300 entries the first year so it is important that students follow the procedures. One of the index cards for each person will be placed in a container and one entry will be drawn from each group. The entry that is drawn must have a correct solution and must show the logical, sequential development of the solution. A paragraph fully explaining the thinking involved and the problem solving strategies used is required. The committee will not be looking for just algorithms to be used, but will be concentrating on the development of the solution. Students are encouraged to construct their own knowledge in order to solve the problem. Students should also be encouraged to proofread their work so that there are no careless mistakes that would disqualify their solutions.

The problems are for students to work. They are **not** intended as family exercises or classroom exercises where everyone works on them together. If a student needs to have someone read the problem to him/her, that is acceptable, but all work should be the student’s work. We want to encourage thinking and the use of problem solving strategies. Solutions do not have to be “beautiful” works of art. That is not what we are emphasizing in this contest. Work should be neatly done and should be legible. The process and thinking used to arrive at a correct solution are the “beautiful” aspects of this contest. Students at all levels may work the problems using any strategy that is meaningful to them and that arrives at a correct solution. We **are not** looking for a “my way or the highway” type solution. It is important to explain the thinking that has occurred during the acquisition of the solution, so a paragraph stating this must be included. A parent or another adult may need to write the paragraph **that the student dictates** at the k - 2 levels or for those who need special accommodations because of disabilities.

You will find the problems for the various levels attached. Math supervisors and math contact people please distribute these to each of your schools. You can distribute these to the appropriate contacts for each of your schools the first week of November. The contest begins November 11th. The entries must be postmarked by January 15th. One winner will be selected for each level. The names of the winners will be posted on the VCTM website. Winners will be notified by mail. Each winner will receive a framed certificate and a $25.00 Walmart Gift Card and a pizza party for their class. Remember entries must be postmarked by January 15, 2014 and **must be submitted by mail only.** Questions may be addressed to Brenda Barrow at themathlady@cox.net or 757 – 617 - 0984. **Please call only if** **you do not have access to email.**

Each grade level group has a different person who will be receiving the entries. Please be careful to send the entry to the correct contact person. If a middle school student would like to enter the category for ninth – Algebra I he/she is welcome to do so, but he/she must send the entry to the contact person for the ninth – Algebra I group.

We are looking forward to having many “beautiful” entries for this “Mathematics Beauty Contest.” Mathematics truly is a beautiful subject and we want the world to know it.

**Check vctm.org for the winners after February 20th.** After February 20th there will be a certificate of participation that those who entered the contest can download from the vctm.org website.

### Problems for the 2014 VCTM Math Beauty Contest

##### K – 2 SOLs: K.15, K.16, 1.16, 1.17, 2.20

Send k – 2nd entry to: **Donna Weaver – Suburban Park Elementary School 310 Thole Street Norfolk, VA 23503**

Please create a pattern that is either a growing or repeating pattern or both. Please be sure to tell what your thinking was by writing a paragraph explaining your thoughts about your creation of the pattern. Students who are not able to write the paragraph may dictate it to an adult who can write exactly what the student says. We wish you the best. We look forward to your entry. **Be sure to include a paragraph that fully explains your thinking.**

**Remember to attach two 3” X 5” index cards to your entry** with your name, address, phone,

E-mail (if you have one), school name, school address, school phone and grade level on them. Also write this information on your actual entry. **It must be postmarked by January 15, 2014**. Contact Brenda Barrow at themathlady@cox.net or call 757 – 617 - 0984 if you have questions. **Email is preferred**.  **Please only use the phone number if you do not have access to email. Visit vctm.org for winners after February 20th.**

**3rd – 5th**  SOLS: 3.4, 3.5, 3.6, 3.19, 4.4, 4.15, 5.4, 5.17

Send 3rd – 5th entry to: **Lisa Hall – Lakeside Elementary School - 6700 Cedar Croft St. Richmond, VA 23228**

The Jones family went to visit a farm and saw animals and chickens. The children liked to count things so they counted the number of animals and the number of chickens. The animals had 4 legs each and the chickens had 2 legs each. They decided to make up a problem about the animals and chickens for other people to solve. There were twice as many chickens with 2 legs as animals with 4 legs. They figured there was a total of 30 chickens and animals combined. When they added the legs of all the chickens and animals with 4 legs they got a total of 80 legs. How many chickens were there? How many animals with 4 legs were there?

**Be sure to include a paragraph that fully explains your thinking and problem-solving strategies.**

**Remember to attach two 3” X 5” index cards to your entry** with your name, address, phone,

E-mail (if you have one), school name, school address, school phone and grade level on them. Also write this information on your actual entry. **It must be postmarked by January 15, 2014**. Contact Brenda Barrow at themathlady@cox.net or call 757 – 617 - 0984 if you have questions. **Email is preferred**.  **Please only use the phone number if you do not have access to email. Visit vctm.org for winners after February 20th. NOTE:** There are some practice problems on the VCTM website that students may do to help them see how to think through solving the problem for the 2014 contest.

**6th – 8th** SOLs: 6.6, 6.7, 6.17, 6.18, 7.3, 7.4, 7.14, 8.14, 8.15

Send 6th – 8th entry to: **Alfreda Jernigan – P.O. Box 10727 Norfolk, VA 23513**

Tom liked to draw and he wanted to design houses when he grew up. One day he drew a picture of the front of a house that had 3 floors. He used 3 different shapes for the windows. He used rectangles, triangles and pentagons. There were twice as many triangles as pentagons and twice as many rectangles as triangles and pentagons combined. There were a total of 18 windows on the front of the house. How many rectangles were there? How many pentagons were there? How many triangles were there?

**Be sure to include a paragraph that fully explains your thinking** **and problem-solving strategies.**

**Remember to attach two 3” X 5” index cards to your entry** with your name, address, phone,

E-mail (if you have one), school name, school address, school phone and grade level on them. Also write this information on your actual entry. **It must be postmarked by January 15, 2014**. Contact Brenda Barrow at themathlady@cox.net or call 757 – 617 - 0984 if you have questions. **E-mail is preferred**.  **Please only use the phone number if you do not have access to e-mail. Visit vctm.org for winners after February 20th. NOTE:** There are some practice problems on the VCTM website that students may do to help them see how to think through solving the problem for the 2014 contest.

**9th – Algebra I** SOLs: A.1, A.4, A.7, A.8, A.11

Send 9th – Algebra I entry to**:** **Brenda Barrow - 1311 E. Bayview Blvd Norfolk, VA 23503**

The Williams Family went to the zoo. They saw the giraffes, elephants, tigers and lions and they counted how many of each of these animals they saw. After they counted they saw that there were an equal number of giraffes and elephants. There were 1/4 as many tigers as giraffes and elephants combined. There were twice as many lions as tigers. When they added up the number of animals they saw there was a total of 14. How many of each of these animals did they see?

**Be sure to include a paragraph that fully explains your thinking and problem-solving strategies.**

**Remember to attach two 3” X 5” index cards to your entry** with your name, address, phone,

E-mail (if you have one), school name, school address, school phone and grade level on them. Also write this information on your actual entry. **It must be postmarked by January 15, 2014**. Contact Brenda Barrow at themathlady@cox.net or call 757 – 617 - 0984 if you have questions. **E-mail is preferred**.  **Please only use the phone number if you do not have access to e-mail. Visit vctm.org for winners after February 20th. NOTE:** There are some practice problems on the VCTM website that students may do to help them see how to think through solving the problem for the 2014 contest.

 **Above Algebra** **I** SOLs: AII.4, AII.11

# Send Above Algebra I entry to: Connie Shepard - 109 Whitehall Ct. Williamsburg, VA 23188

**Be sure to include a paragraph that fully explains your thinking and problem-solving strategies.**

Tom liked to cut people’s grass to earn money during the summer. When people paid him he saved the money so he could buy a new bike for each of his 2 younger brothers and a bike for himself. He had a total of 66 bills. He had one dollar bills, five dollar bills, ten dollar bills and twenty dollar bills. When he counted the five dollar bills he had one fourth as many five dollar bills as one dollar bills. He had two fifths as many ten dollar bills as five dollar bills and one dollar bills combined. He had one ninth as many twenty dollar bills as five dollar bills and ten dollar bills combined. How many $1, $5, $10, and $20 bills did he have? What was the total amount of money that he had? If each bike cost the same amount how much did he pay for each one?

**Remember to attach two 3” X 5” index cards to your entry** with your name, address, phone,

E-mail (if you have one), school name, school address, school phone and grade level on them. Also write this information on your actual entry. **It must be postmarked by January 15, 2014**. Contact Brenda Barrow at themathlady@cox.net or call 757 – 617 - 0984 if you have questions. **E-mail is preferred**.  **Please only use the phone number if you do not have access to e-mail. Visit vctm.org for winners after February 20th. NOTE:** There are some practice problems on the VCTM website that students may do to help them see how to think through solving the problem for the 2014 contest.

**ENJOY THE CHALLENGE!**

##  Thank you, MATH LOVERS, for entering the contest!

Each grade level group has a different person who will be receiving the entries. Please be careful to send the entry to the correct contact person. If a middle school student would like to enter the category for ninth – Algebra I he/she is welcome to do so, but he/she must send the entry to the contact person for the ninth – Algebra I group.

We are looking forward to having many “beautiful” entries for this “Mathematics Beauty Contest.” Mathematics truly is a beautiful subject and we want the world to know it.

Thank you for your help in distributing these and in making this a success.

Alfreda Jernigan - Chair of the VCTM Math Beauty Contest Committee Brenda Barrow – Co-chair

**Contact People**:

# K – 2nd Donna Weaver Suburban Park Elementary School 310 Thole St. Norfolk, VA 23503

**3rd – 5th** Lisa Hall Lakeside Elementary School 6700 Cedar Croft St. Richmond, VA 23228

**6th – 8th** Alfreda Jernigan – P. O. Box 10727 Norfolk, VA 23513

**9th – Algebra I** Brenda Barrow - 1311 E. Bayview Blvd Norfolk, VA 23503

**Above Algebra I** Connie Shepard - 109 Whitehall Ct. Williamsburg, VA 23188

In order to assure that all entries have been received, the winners will be selected on or after January 29, 2014. Winners will be notified by February 15th.

**Check vctm.org for the winners after February 20th.** After February 20th there will be a certificate of participation that those who entered the contest can download from the vctm.org website.

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