Kentucky Council of Teachers of Mathematics
December, 2004

President's Letter

In a few more weeks, my term as President will be over. I think back over the changes in KCTM in the last two years, and I am proud of the Board and its accomplishments. I want to reflect on those accomplishments.

We have almost finished a Policy Manual to guide new officers in their duties. Most board positions have a job description and list of duties. For the first time, we drafted, approved, and used a budget to guide our expenditures. This manual also includes conference-planning information. Anyone interested in hosting the annual conference now has several documents to use as guidelines about what needs to be done. A big "Thank You" goes out to Kathy Mowers, who helped get this off the ground many, many years ago.

Over the last two years, we have had two successful conferences, one at Second Street School, in Frankfort, and one at Gray Middle School, in Ryle, KY. The MESA banquets were very enjoyable, and as always, the conference received outstanding reviews. I look forward to getting back into presenting a little more once all of my KCTM duties have been fulfilled. Thank you to all the people who make the conferences run smoothly.

During my years as President, the board also tried to increase communication among affiliated councils throughout the state and with NCTM. We've sent a representative to each national NCTM conference for three of the last four years. In addition, NCTM affiliate representatives have attended two of our board meetings. We've had board members attend two Affiliate Leadership Conferences, one of which we co-hosted. I personally have attended the regional conferences of the Eastern Kentucky Council and the Cumberland Council. Officers who have served on the board represent many geographical areas of the state: Western Kentucky, South Central Kentucky, Northern Kentucky, and Central Kentucky. For the first time, KCTM Products were available at an affiliate meeting as well (Thank you to Kathy Montgomery)! This is something we hope to do again.

Another accomplishment has been this newsletter itself. We moved from a paper version to an electronic version. The content of the newsletter has also increased. Each of the four vice-presidents now submits an article for every newsletter. Hopefully you've read some interesting lesson plans and have been able to incorporate them into your own classroom. In the future we hope to have an article from each affiliate representative what is happening within the affiliate. If you are interested in submitting and article or lesson plan, contact the vice-president for your level (see the web site for this information). Amy Herman continues to serve as the editor, so contact her with submissions as well.

Over the last two years, two board members showed that KCTM board members are also strong in the classroom. Ruth Casey attained National Board Certification and was recently elected to the NCTM Board of Directors. Our new vice president, Billie Travis (employed by Scott County, like me!) was named Kentucky Teacher of the Year. Two MESA banquets were held, and many people were recognized for the work they do for mathematics education. KCTM has very strong people indeed at the helm!

My time as President of this organization has taught me a great deal about leadership (both what to do and what not to do!). I am pleased that Gina Foletta, from Northern Kentucky University, will be taking over the presidency as of January 2005, and Maggie McGatha, from the University of Louisville, is waiting in the wings as President-elect. I know that at the end of their terms, they will be able to list off many more accomplishments of the Kentucky Council of Teachers of Mathematics.

See you at the next conference!

Respectfully yours,
Lori Durham
KCTM President
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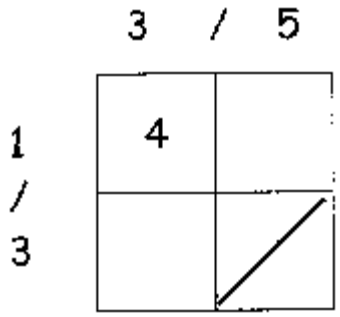
Teaching Strategies for Adding and Subtracting Fractions with Unlike Denominators

Materials: lattice paper or grids

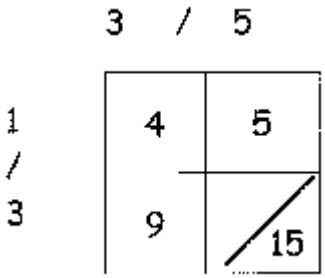
If you have ever had trouble teaching some students how to add or subtract fractions with unlike

denominators, here is an interesting way to introduce the skill to struggling students or your whole class. Most of us teach equivalent fractions or fraction circles as a way to solve these types of problems. This approach is a little different, but nonetheless effective.

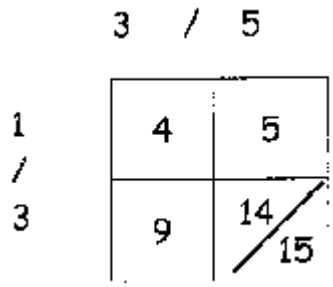
1) Start by displaying what a lattice box looks like. (Some of your students may have learned to multiply using the lattice method). Explain to students that they will be using the lattice to add numbers like 3/5 and 1/3. Complete the lattice for them as shown below.



2) Next show them how to complete the lattice. In the upper right hand box, they will write the product of the 1 numerator and the 5 denominator. Next they will write the product of the 3 denominator and the 3 numerator in the lower left hand box. In the bottom box with the divider, they will write the product of the two denominators (3 x 5 = 15) in the bottom portion of the square.



3) Finally, have the students add the numbers they wrote in the two squares (9+5) and place the answer (14) in the top portion of the bottom right hand square. They now have the answer to their problem. Keep in mind, it may not be in simplest form so they may have to reduce!



Hint: I always begin a problem by having students estimate what might be the answer. Fractions are

no different. I have them estimate whether the two fractions they are adding are closer to 0, $\frac{1}{2}$ or 1 and then add mentally. Always have them check their work to see if it's close to their estimate!

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TI-73 Explorer – What a valuable teaching tool for middle school!

The TI-73 Explorer, the latest middle school graphing calculator, replaces the original middle school graphing calculator (TI-73). Improved benefits include:

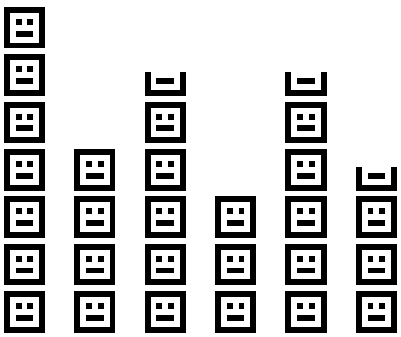
- Flash memory
- 8 Pre-Loaded APPS (Software Applications that cover topics including area formulas, geoboard simulation, numberline, and probability). Additional APPS can be downloaded from the TI-website (education.ti.com).
- Cheaper than the original TI-73 (About $60.00)

The TI-73 Explorer has limitations for high school students, but it does have several advantages over the TI-83+ that make it attractive / marketable for middle-schools:

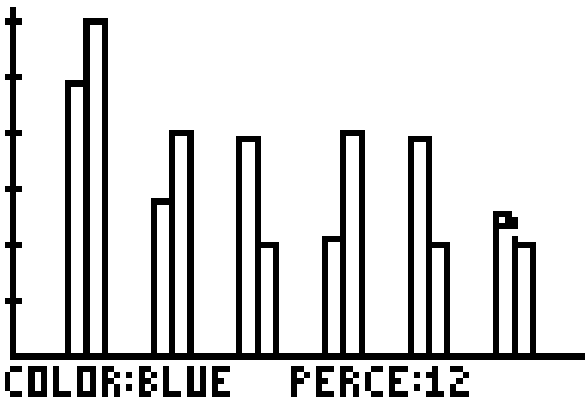
- Fraction functions
- Constant Key
- Additional Graphing options: Circle graph, pictograph, and bar graph)
- Coin and dice toss features
- Metric conversions
- Larger keys for enthusiastic fingers
- Cheaper than the TI-83+

A big difference in the TI-73 in comparison to the TI-83 is the graphing options.
Below are several graphs using M&M data.

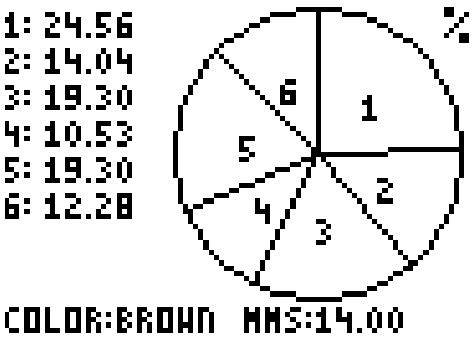
1.) **Pictograph:** There are 7 different icons on the TI-73. In the pictograph below, each icon represents 2 M&Ms. Using the TRACE button, the calculator will display the color and number of M&Ms.



2.) **Bar graph:** The graph below compares the percent of blue M&Ms found in one bag to the percent of blue M&Ms that is placed in a batch when they are made in the factory.

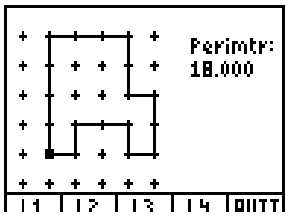


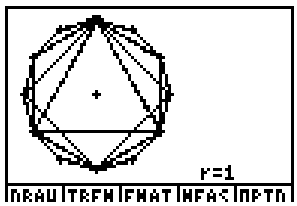
3.) **Circle Graph:** This graph shows the percentage of M&Ms found in one bag.



Another popular feature of the TI-73 is the APPS software. The TI-73 Geoboard APPS is an electronic geoboard that allows you to:

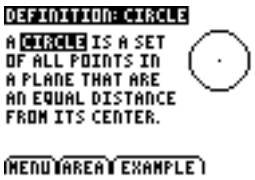
- Draw objects on square or circular boards.
- Rotate reflect and translate objects.
- Measure lengths, areas, perimeters, and angles.
- Store measured values in lists for plotting and analysis.

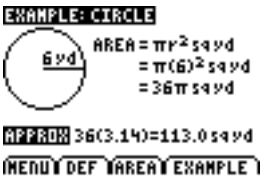


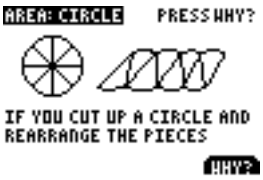


The TI-73 Formula APPS has two components: Definitions/Formulas and Area Quiz.

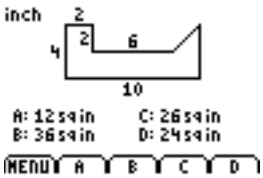
1.) The Definitions/Formula section includes rectangle, square, parallelogram, triangle, trapezoid and circle. The "Why" for each shape is especially beneficial for students.

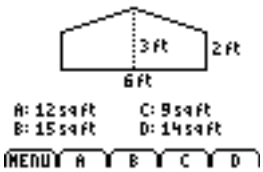






2.) The Area Quiz component has 2 levels of multiple-choice problems. Some teachers use this feature to review for CATS.





As you can see, the TI-73 calculator is an exciting tool for the middle school math classroom! I hope you are enjoying the TI-73 as much as I do.

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Favorite Websites

I would like to share some of my favorite websites that I have used recently to aid in my teaching. Some of these sites I have used in class to support a lesson. Others I use in preparation of a lesson, and still others I use to obtain miscellaneous materials. The internet certainly has revolutionized our teaching! I am sure that I could list pages of websites that I have used in the past. For this article I just chose some of my recent favorites. I hope you find some of them useful.

1. http://www.cs.uidaho.edu/~casey931/mega-math/workbk/map/mpprstory.html

This tells "The story of the Young Map Colorer". This is a simple presentation of the Four Color Problem. I used this in class and my students really enjoyed it.

2. http://mathforum.org/isaac/problems/bridges1.html

This is a Math Forum Project that introduces topology and the Konigsberg Bridge Problem. It explains the problem and offers a solution as well. It is clear and easy to understand. I used this in class to introduce networks. My students liked this topic a lot, and I believe relating networks to a real life problem helped motivate the subject.

3. http://www-groups.dcs.st-and.ac.uk/~history/Miscellaneous/Konigsberg.html

This page contains real maps of the town Konigsberg. This can be used to put real life context to the Konigsberg Bridge Problem.

4. http://matti.usu.edu/nlvm/nav/index.html

This is the National Library for Virtual Manipulatives for Interactive Mathematics sponsored by Utah State University. This site contains on line manipulatives for different mathematics subjects for all grade levels. I use this site in class again and again. As we know, manipulatives can be very powerful in engaging students and getting them to "see" mathematics.

5. http://www.setgame.com/

This is a website for the game "Set" as well as other games by Set Enterprises. This site includes a daily set game you can play online. You can also order games from this site.

6. http://www.ams.org/mathmoments

This site contains a series of pdf files that you can download, print and use to decorate your room and/or office. These files contain different applications of mathematics to educate as well as decorate.

7. http://turnbull.mcs.st-and.ac.uk/~history/Mathematicians/

This site contains a large index of mathematicians' biographies. Putting mathematics into a historical

context sometimes gets students more interested.

8. http://incompetech.com/beta/plainGraphPaper/

This very handy site contains many types of downloadable and printable grid, graph and dot paper.

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Reports from Affiliates

Lexington Council Teachers of Mathematics

The Lexington Council of Teachers of Math will have their "Spring Math Madness" professional development session on Thursday, February 17, 2005 from 4:00 - 7:00 p.m. at the Tates Creek High School Library in Lexington. Sessions for primary, intermediate, middle and high school math will be offered. For questions or more information, contact Natalee Feese.

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Greater Louisville Council of Teachers of Mathematics

The GLCTM-LATTICE-Tech Alliance Joint Winter Meeting is scheduled for January 10th, 2005, 5:30 to 8:30pm, at Newburg Middle School. (The snow date is January 24th, same time and location.) For mathematics teachers of all grade levels, the meeting will focus on how to use Jeopardy (similar to the one seen on TV) to teach students, get them ready for CATS, SAT/ACT testing, Chapter 10, etc. There will be 3 sessions: two that will demonstrate how to incorporate Jeopardy into the classroom and one on how to develop content appropriate questions for use in a Jeopardy classroom. A light supper will be served at 5:30pm. Donations will be graciously accepted. Three hours of professional development credit will be available, along with the opportunity to join any one or all 3 organizations. The meeting is open to any teacher or student pursuing undergraduate or graduate level studies in education. Directions: From the Watterson Expressway, proceed south on Newburg Road 1.6 miles to the traffic light at Indian Trail. Turn right on Indian Trail. Proceed 2 blocks and then turn left onto Exeter Avenue. School is on the left. No need to RSVP. Just be there!

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