Northern Colorado Math Teachers’ Circle

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University of Northern Colorado
Northern Colorado MTC

• Leadership team formed by March 2011 (2 UNC faculty and 3 district teachers).

• Attended 2011 MTC workshop at AIM in Palo Alto, CA.

• 2011-2012: Planning meetings, grant writing.

• Our sponsors: State Farm, BBVA Compass, MSRI, AIM.

• 2012-2013: Evening sessions, Summer Workshop, grant writing
Evening Sessions

• Second Monday of each month, 5:30-8:00 (no meeting in December & January)

• A sample warm up problem:
  String around the earth

• Guest speaker: Dr. Oscar Levin

• Varying participation rate
Summer Workshop
June 24-27, 2013

- YMCA-Estes Park, CO
- 24 teachers -- 5th to 10th grade
- Varied geographic locations
- Intense 4-day schedule
## Workshop Schedule

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
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</thead>
<tbody>
<tr>
<td>10:30-11:00</td>
<td>8:30-10</td>
<td>8:30-10</td>
<td>8:30-10</td>
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<tr>
<td><strong>Welcome participants; Pre-Survey</strong></td>
<td><strong>Taxicab Geometry</strong></td>
<td><strong>Mathematical Games</strong></td>
<td><strong>Number Theory</strong></td>
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<tr>
<td>11:00-12:00</td>
<td>10:30-12:00</td>
<td>10:30-12:00</td>
<td>10:30-12:00</td>
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<td><strong>Ice Breaker Problem</strong></td>
<td><strong>Taxicab Geometry</strong></td>
<td><strong>Mathematical Games</strong></td>
<td><strong>Number Theory</strong></td>
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<td>12-1 Lunch</td>
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<tr>
<td>1:00-2:30</td>
<td>1-3:00</td>
<td>1-2:30</td>
<td>1-2:30</td>
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<tr>
<td><strong>Intro to Problem Solving</strong></td>
<td><strong>Transformational Geometry</strong></td>
<td><strong>Mathematical Magic</strong></td>
<td><strong>Fractions</strong></td>
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<tr>
<td>2:30-3:00 Break</td>
<td>3:00-3:30 Break</td>
<td>2:30-3:00 Break</td>
<td>2:30-4:00</td>
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<tr>
<td>3:00-5:00</td>
<td>3:30-5:00</td>
<td>3:00-5:00</td>
<td><strong>Closing: Overall Wrap-Up &amp; Door prizes</strong></td>
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<tr>
<td><strong>Intro to Problem Solving</strong></td>
<td><strong>Conway's Rational Tangles</strong></td>
<td><strong>Mathematical Magic</strong></td>
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<tr>
<td>5:00-6:00 Free</td>
<td>5:00-6:00 Outdoor Dinner (BBQ)</td>
<td>5:00-6:00 Free (Hiking)</td>
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<tr>
<td>6:00-7:00 Dinner</td>
<td>6:00-7:30 Hiking</td>
<td>6:00-7:00 Dinner</td>
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<tr>
<td>7:00-8:30</td>
<td>7:30-9:30</td>
<td>7:00-9:00</td>
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<tr>
<td><strong>Games &amp; Refreshments by the campfire</strong></td>
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Invited Speaker, Paul Zeitz, came for Wednesday and Thursday
FUNSTRATION!
Summer Workshop
Sample Problems

• Intro to Problem Solving
  Find the number of shortest paths from the lower left corner to the upper right corner in the 3x4 grid below.

Resource: http://mathteacherscircle.org/resources/sessionmaterials.html
On a boring rainy day you play the following solitaire game in your garage. You start with a stack of 20 boxes. For any turn, you select a pile, make it into two piles, the take the product of the numbers of boxes in each of the two new piles and add to your score. This process continues until you have 20 piles of one box each. What is the highest score you can get? Can you explain why?
• Transformational Geometry Problems

A triangle is cut at random from a piece of paper and a vertex is folded to the midpoint of the opposite side. What figures can result, and what determines which one appears?


Lessons Learned

• Adjusting your schedule and perspective as you go.
• Better planning of evening session of summer workshop.
• Communication of expectations in advance.
• Improved application process.
• In general – be in communication with district administrators on a regular basis.
• “Every workshop that I have ever attended, at some point, became boring, but this workshop was mentally intensive and fun. I was never bored. I would like to attend this workshop again.”

• “It was an amazing [workshop]. It stretched my ability in math and gave me many different ways to think about problem solving.”
“Well, I thought it was very challenging. It has been decades since I’ve been put to task to solve harder math problems, much less put so much thought into it, which makes me realize how much I need to be aware of this for my students. Think time ..Funstration”
Northern Colorado MTC

• Our website:
  - http://www.unco.edu/nhs/mathsci/mtc/
• Start on Monday, September 9, 2013.
• 6 evening sessions.