

# MATH ED MATTERS

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## Math Teachers' Circles: What Makes a Good One?

by Angie Hodge

**Math Teachers' Circles** (MTCs) bring together middle school math teachers and professional mathematicians to enrich the teachers' experience of mathematical problem solving and to build mathematical community. Free math club-like events, MTCs give teachers the chance to have fun doing math three or four times per semester.

MTCs strive to:

1. increase the confidence of middle school math teachers in their problem-solving ability;
2. deepen teachers' content knowledge through exploring mathematically rich problems and developing an arsenal of techniques for solving unfamiliar and challenging problems;
3. form long-term professional relationships between teachers and mathematicians through regular, highly interactive meetings; and
4. provide support for teachers who want to bring richer mathematical experiences to their students.

Teams interested in starting a Math Teachers' Circle in their area should contact AIM at [circles@aimath.org](mailto:circles@aimath.org). Six teams of four or five teachers attended workshops on [How to Run a Math Teachers' Circle](#) in 2014. At the 2014 workshop in Washington, D.C., the teams were asked to answer two questions:

1. What makes a good Math Teachers' Circle session?
2. What makes a good Math Teachers' Circle problem?

Workshoppers were asked to brainstorm with a focus on "quantity versus quality," and they came up with quite a list. Just perusing it gives even someone unfamiliar with MTCs a pretty good idea of what they're all about:

### What makes a good Math Teachers' Circle session?

Snack break  
 Good snacks  
 Engaging problems  
 Aha! Moment  
 Leader ready to scaffold/backfill/support  
 Leader ready to give next challenge  
 Focus on math  
 Out of comfort zone  
 All participants feel comfortable with math and other participants  
 Safe environment for failure  
 Discussion and collaboration  
 Entertaining/enjoyable  
 Buy-in for participants  
 Community  
 Group of common professionals  
 Relaxed, non-threatening atmosphere  
 Classroom connections without focus on classroom  
 Interesting presentation of problems  
 All levels of mathematics  
 Overplanning  
 All participants are involved

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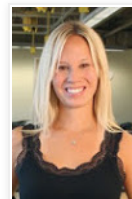
### Math Ed Matters

*Math Ed Matters* is a monthly column sponsored by the Mathematical Association of America and authored by Dana Ernst and Angie Hodge. The column explores topics and current events related to undergraduate mathematics education. Posts will aim to inspire, provoke deep thought, and provide ideas for the mathematics—classroom. The coauthors' interest in and engagement with inquiry-based learning will color the column's content.

*This column does not reflect an official position of the Mathematical Association of America.*

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Contact [Dana](#) (Twitter) or [Angie](#).



Generate enthusiasm  
 Participants explain and present  
 Variety of participant backgrounds  
 Pacing good  
 Memorable  
 Wine  
 No whine  
 Different presenter personalities  
 Appropriate amount of room  
 Good number of participants  
 Humor/laughter  
 Make friends  
 Noncompetitive  
 Supportive  
 Multiple strategies  
 Include failure  
 Hook

Not lecture-y  
 Celebrate discovery  
 Good flow  
 Participants sharing discoveries  
 End loving/wanting more  
 SWAG (Sell your MTC by advertising it!)  
 Climate of respect  
 Knowledgeable leaders  
 Focus  
 Critiquing mathematics/solutions (safe for people)  
 Providing resources to learn more  
 Inter-workshop closure, info, etc.  
 Leader's love of math is transmitted  
 Plenty of time  
 Time flies  
 T-shirts  
 Time to explore  
 Time to fail before seeing solution  
 Good entry/exit  
 Freedom to digress/follow tangents/not too fixed a goal  
 Individualized closure

#### What makes a good Math Teachers' Circle problem?

Hands on  
 Engaging  
 Knobbifiable (problems can be made harder or easier)  
 Low-level entry  
 Multisensory/multimodal  
 Mystery  
 Leads to more questions  
 Out of the box  
 Initially simple  
 Folkloric  
 Variety of strategy and/or tactics  
 Minimal lecture  
 Lets participants get to board  
 Novelty to participants  
 Not textbook  
 Good lead-in  
 More than an hour to solve  
 Interesting to different groups  
 Some element of fun  
 Joy of math  
 Physical/"crafty"  
 Abstract/thoughtful  
 Has a hook  
 Clear parameters  
 Real world  
 Not too intimidating  
 Challenging  
 Easy to generate data  
 Strategies embedded  
 Associated with a lesson  
 Moral to the story  
 Cognitive dissonance  
 Surprise



Participants in the workshop in Washington, D.C. (photo Hana Silver)

#### Links

- [The IBL Blog](#)
- [Mathematical Association of America](#)
- [Dana's webpage](#)
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Some closure  
 Some open endedness  
 Group or individual  
 Multilayered problems  
 Opportunities for discussion  
 Little intro prep/setup  
 Patterns  
 Connections within mathematics  
 Multiple pathways  
 Gives participants something to bring home



*The list in its original form (photo Hana Silver)*

Reasoning/argumentation  
 Memorable problems  
 Spatial  
 Games  
 Intro fun  
 Not too much tedium  
 Aha! moment

For the MTC veterans out there, do the items on the lists above square with your experience of what makes a good Math Teachers' Circle?

Note: This exercise was given as a way to create closure for the How to Run a Math Teachers' Circle workshop. Participants had been working problems in MTC sessions all week and this gave them a chance to reflect on the experience. I think this exercise of thinking about good problems and a good class session could also be used in other mathematics courses. Imagine your own classes generating lists about what makes a good student, a good teacher, a good exam, a good problem set, etc. The possibilities are endless! Happy list generating!!!

Posted by [Mathematical Association of America](#) at 6:18 AM



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