What is the virtual math teachers’ circle?

Math Teachers’ Circles are communities of teachers and mathematicians who meet regularly to work on rich mathematics problems. They provide an opportunity for teachers of all grade levels to enrich their own knowledge and experience of mathematics, while building long-term, meaningful partnerships with other teachers and mathematicians.

The “virtual” math teachers’ circle replaces face-to-face gatherings with online discussions. New problems will be posted monthly.

Should I participate in the virtual circle?

Are you a teacher who teaches math in any grade level in Montana?
Do you like to solve and discuss math problems with your colleagues?
Are you interested in being part of a state-wide mathematical community?

If so, you should participate!

How to join the virtual circle

The virtual circle is hosted by the Montana Learning Hub:

http://learninghub.mrooms.net/course/view.php?id=237

Any teacher in Montana can participate. To access the virtual circle:

- Make sure you have an account at the Montana Learning Hub. To create an account, go to the URL above, and click the “create new account” button on the bottom right of the page
- Get the enrollment key by emailing Hilary Risser at: HRisser@mtech.edu.

How to participate

There are two ways to participate in the virtual circle. Participants work on problems, share their problem-solving approaches, and engage in mathematical discussion. Guest facilitators curate responses, organize discussion threads, and facilitate mathematical discussions. Each month there are new guest facilitators. You can sign up to be a guest facilitator on the website. Detailed technological help is available via the website.

OPI renewal units

Participants can earn up to 12 OPI renewal units each year. Participants earn 2 renewal units each month (up to 12). Guest facilitators earn 3 renewal units for the month they facilitate.
Monthly schedule

Our goal with the virtual circle is to replicate the experience of a face-to-face math teachers’ circle. A face-to-face gathering usually has five phases:

1. Problem introduced
2. Group work time
3. Public sharing
4. Discussion
5. Extensions

We will replicate those phases in the virtual circle as follows:

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Problem</td>
<td>Participant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>introduced</td>
<td>work time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Participants</td>
<td>post</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>post approaches by Monday</td>
<td>discussion board</td>
<td>Facilitators summarize approaches and post threads for discussion</td>
<td>Discussion, continued work time, and extensions</td>
<td>participants continue discussion in threads posted by facilitators</td>
<td>Discussion, continued work time, and extensions</td>
</tr>
<tr>
<td></td>
<td>Discussion</td>
<td>&amp; extensions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&amp; extensions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These phases are described in detail on the next page.
Detailed description of phases

Phase 1: 1st Monday of the month

The problem will be posted on the first day of the month.

Phase 2: Seven days

Participants will work on the problem for 7 days. They will share their approaches to the guest facilitators by 2nd Monday of each month, via the website. Once a participant shares their approach, they will be able to see all of the other approaches.

Participants should share their approach by the 2nd Monday of the month.

By the 2nd Monday of the month, all participants should have shared their approach with the facilitators. The approach does not have to be a fully-realized solution. It should detail the ideas and strategies that were used, and document the progress made.

Phase 3: Three days

The guest facilitators will curate the approaches, and organize them into 2-5 discussion threads. Threads may contain possible solutions, possible partial solutions, and a combination of some work that is mathematically valid and some that is not. The point of the discussion threads is to encourage mathematical discussion, and to facilitate further problem-solving.

Phase 4: Remainder of the month

For the remainder of the month, participants will engage in group problem-solving and mathematical discussion via the discussion threads. Participants can:

- build on an approach by sharing ideas that spur-on solutions or steps towards solutions
- discuss or critique an approach, including providing a mathematical rationale for the critique
- ask new questions (extensions), and explore those extensions

Participants should participate in the discussion during days 13-31

Schedule and responsibilities for guest facilitators:

Guest facilitators will receive the problem one weeks early.

- One week early: Guest facilitators receive the problem. They work on the problem to anticipate the approaches that participants might use.
- Phase 2: Guest facilitators receive problem-solving approaches from participants.
- Phase 3: Guest facilitators discuss the approaches and curate them into 2-5 discussion threads.
- Phase 4: Guest facilitators facilitate discussions, including: Participating in the activity, posting questions to keep the discussion moving, and helping to make sure the discussion stays focused.

A detailed “guide for guest facilitators” is available on the website. The guide will be sent to all guest facilitators along with the month’s problem, one week early.
Technology stipend

A limited number of stipends are available to enable participants to buy technology or training that will facilitate their participation in the virtual circle.

Commitment for participants who receive the technology stipend

Recipients of the technology stipend commit to:
1. Participate in the virtual circle for a full calendar year, including working on the monthly problem, sharing problem-solving approaches, and engaging in mathematical discussion each month
2. Serve as a guest facilitator for one month.
3. Submit a receipt or receipts for technology purchases that will help you participate in the virtual circle
4. Encourage colleagues to join the virtual circle

If you are interested in the technology stipend

Please email Frederick.Peck@umontana.edu to determine if stipends are still available.

How to get reimbursed for technology or training

For those who receive the stipend, we need a completed W9 form (https://www.irs.gov/pub/irs-pdf/fw9.pdf) and receipts for your purchases in order to process your reimbursement.

Save your receipts and send them along with a completed W9 form to Indy Singh via email or post at:

Email: Indy.Singh@mso.umt.edu

Post: Indy Singh
UM Math Sciences
32 Campus Drive #0864
Missoula MT 59812.

Specify that the reimbursement is for the Montana Math Teachers’ Circle.

Please allow 6-8 weeks for reimbursement.