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| **DAY ONE**  Begin with asking the students “How do you feel about Math and why?” Have them write their responses on a sticky note.  Then, put up a line spectrum with negative on one end and positive on the other. Each child that wish can share aloud their thoughts and then put the stick where they believe it fits on the line. Idea from Graeme Anshaw. Listen carefully to build your understanding of who your students are and how they see themselves as mathematicians.  Ask the students what the graph tells about the community of mathematicians. What generalizations can be made? Ask “Why do we have these feelings about Mathematics?” Teacher should share their own personal stories about their histories with Mathematics.  Discuss the goals for the year (e.g., Discover the beauty of Mathematics and where it lives in the world. Develop a positive mindset towards Mathematics. Identify as Mathematicians).  Share Jo Boaler’s video “Everyone can do Math”. Start the video below at .26 seconds | **DAY TWO**  Begin with a class brainstorm to the question “What is Mathematics?”. Use a specific coloured marker and date the colour.  Read aloud  On a Beam of Light: A Story of Albert Einstein by Jennifer Berne (2013)  Focus on what Einstein loved to do…  Imagine, question, wonder, figure, observe, notice.  Split into a couple of groups with a teacher in each group (depending on the class context) and spend some time on a Math Hunt. Let the students know that they are free to wonder, notice, and to ask questions. “Where do they see math in their world?”  Have the groups of students share out with the class as a whole by connecting the iPad to a projector. Using a different coloured mark, ask the students if they would like to add any new information to the class anchor chart “What is Mathematics?”  Ask students to look at home for an object that represents Mathematics and bring it in tomorrow. | **DAY THREE**  Begin by looking at the chart created yesterday. Share with the students that through looking at the artifacts they brought from home, we hope to broaden our understanding of what Mathematics is.  In small groups, have the students share what they brought and discuss the Mathematics in the object. As a teacher, I would bring several items in for those students who forgot.  After small group sharing, the students could do a gallery walk and look at all the items or students could bring each of their items to a collaborative circle space. At this point, together as a class, revisit the question “What is Mathematics”. Using a different coloured marker add the new suggestions students offer.  Next, I would discuss that today our goal is to brainstorm/discuss ways we will work together to build a positive, safe, mathematical community. Follow Jo Boaler’s activity “Good Group Work” and co-construct anchor charts for the class. You may also want to ask if there are prickly words that others use that shut them down (e.g., Tracy Zager’s six thorny words – easy, hard, slow, fast, right, wrong, etc.) Brainstorm phrases to replace these. | **DAY FOUR**  Begin by asking “Who In Here Believes They Are A Mathematician?”  Give short book talks on each of the following books and videos. Ask students to form a group of four and choose a particular book or video. Remind them about the class norms for working in small groups and  Books:   * Infinity and Me by Kate Hosford * Blockhead: The Life of Fibonacci by Joseph D’Agnese * The Boy Who Loved Math: The Improbable Life of Paul Erdos by Deborah Heiligman   Videos:   * Vi Hart (mathematician) - Binary Hand Dance, How to Snakes, Math Improv: Fruit byt the Foot * Neil deGrasse Tyson videos – Falling through the centre of earth * Numberphile Video on the Rubik’s cube   Give each group a set of coloured markers and a large 11 x 17 piece of paper to record their ideas. Encourage them to record their ideas using words and/or pictures. | **DAY FIVE**  Have students share about what they learned Mathematicians do. While students are listening ask if there is anything they would like to add to the class chart either titled “Mathematicians…” or “What does it mean to DO Math?”  Explain that today we are going to begin a new routine called Number Talks. Share that you will be sharing an image of dots with the students and that their job is to ask themselves:  How many do I see?  How do I see them?  Do a few number talks with the students and then revisit the class anchor chart about what it means to do mathematics. Ask the students to discuss in small groups what they were doing in the Number Talk. Then using a new coloured marker, ask if there is anything the students would like to add to the chart (e.g., visualize, communicate, etc.)  If time permits, read aloud The Last To Finish: A Story about the Smartest Boy in Math Class or watch Jo Boaler’s video “Speed Is Not Important” |

MATHEMATICS: What is it? What does it mean to do math? Where does it live in the world?

A week of building understanding! Ideas take from Tracy Zager’s “Becoming the Math Teacher You Wish You’d Had”, Graeme Anshaw, and Jo Boaler’s Weeks of Math



Learning Intentions:

* I believe everyone is a Mathematician.
* I understand that learning is developmental and my identity as a mathematician will grow and change.
* I am developing my understanding of what Mathematics is.

Resources:

* Graeme Anshaw’s example of student’s histories with Mathematics. <http://mathematicalenquiries.blogspot.ca/2015/08/what-sort-of-mathematicians-are-in-our.html>
* Jo Boaler’s Video “Everyone Can Do Math” <https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/06/Day-1-Mindset-8.mp4>
* Vi Hart Videos and other Mathematician videos: <http://sites.stenhouse.com/becomingmathteacher/chapter-2/>
* Information about Number Talks - http://www.meaningfulmathmoments.com/number-talks.html
* <https://www.amazon.ca/Last-Finish-Story-about-Smartest/dp/1603364560>
* Jo Boaler’s Speed is Not Important video - <https://www.youcubed.org/resources/speed-not-important-video/>

Good Group Work Activity: (written by Jo Boaler - <https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/WIM-Day-1-gr-3-4-vF.pdf>

I always use this activity before students work on math together as it helps improve group interactions. Teachers who have tried this activity have been pleased by students’ thoughtful responses and found the students’ thoughts and words helpful in creating a positive and supportive environment. First, I ask students to reflect on things they don’t like people to say or do in a group when they are working on math together. Students come up with quite a few really important ideas, such as not liking people to give away the answer, or to rush through the work, or to ignore other people’s ideas. After they have thought of a few of the ideas I ask them to think of the converse – what DO they like people to do and say when working in a group. When students have had enough time in groups brainstorming the teacher then collects the ideas. I usually do this by making a “What we don’t like” list/poster and asking each group to contribute one idea, moving around the room until a few good ideas have been shared (usually about 10). Ten I do the same for the “what we do like” poster/list. I usually present the final posters to the class as our agreed upon classroom norms that we will refer back to through the year. If any student shares a negative comment, such as “I don’t like waiting for slow people” do not put it on the poster, instead use it as a chance to discuss the issue. This rarely or never happens and students are usually very thoughtful and respectful in the ideas they share.