COVER LETTER
Dear Lower Elementary Community,

Salutations Learning at Home Families,

We have made it into the home stretch of our fabulous and snowy Northern Michigan winter. The days are growing noticeably longer and lighter. Hopefully soon we will see the days grow warmer as we look forward to the approach of spring.

Within the Montessori Cosmic Curriculum there are 5 Great Lessons. The next big installment is the 5th Great Lesson, or The Story of Numbers. We hope you have been enjoying all the wonderful history and science within these lessons. Keep in mind we do not end here! This is only the beginning. Throughout the next few months and over the course of the 3 year cycle of the multiage classroom environments, we will continue to review these stories and learn new lessons within them.

Thank you so much for keeping up with our two-way communication throughout the weeks. It is something we all look forward to.

Working together,

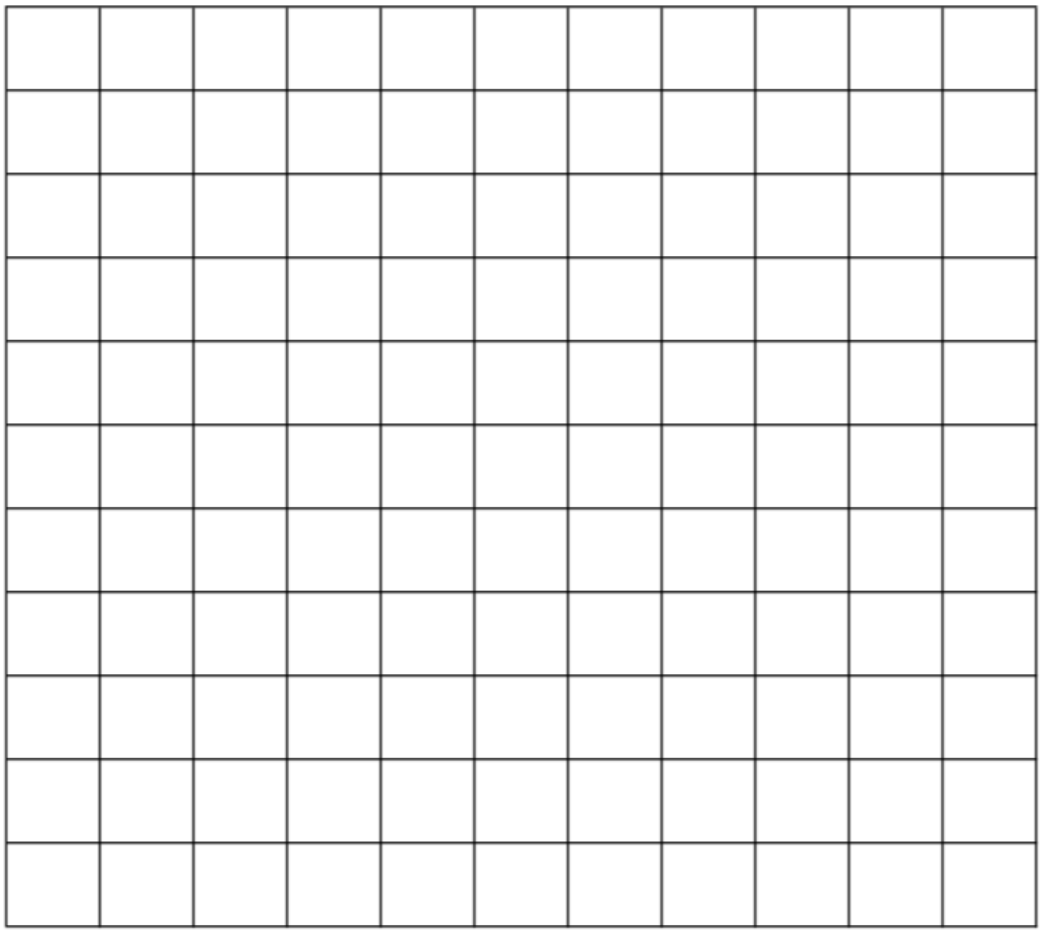
Megan, Rebekah, Deb, Arden, and Lisa
Lower Elementary Guides

Math and Geometry

- **Daily Math Practice** - Khan Academy: Please use our class code so that we are able to monitor your progress and practice.

- **Math Facts** - Does your child understand the concept of multiplication and multiples? If so, then they are ready to start memorizing their multiplication facts of 1 to 10. Multiplication grids are alive in the classroom right now for students who have mastered the concept of multiplying. Students are using their grids to first memorize the multiplication fact in order (called ‘skip counting’). After this, then the child starts to memorize the multiplication fact out of order, just using the multiplier.

Multiplication Table Grid



How to prepare and use this grid:

- First complete the grid using your best handwriting. Start with the vertical and horizontal access. These are the two multipliers.

- Once all multiplications have been done correctly (good editing and checking is needed), decorate the grid so that it is colorful and beautiful.

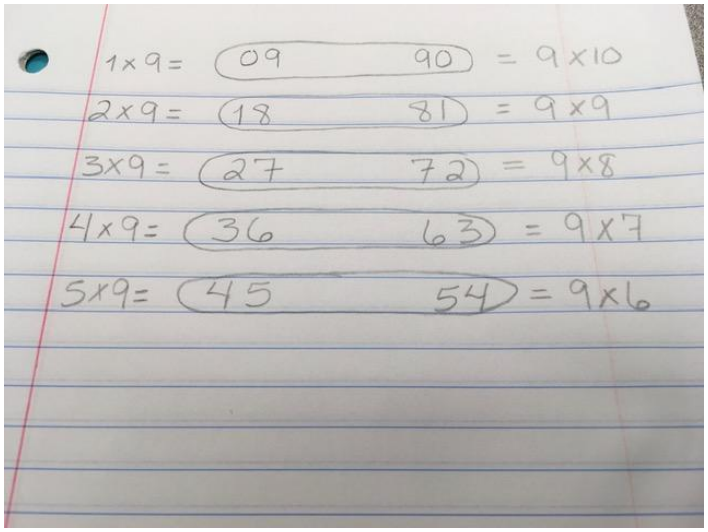
- Use the grid to learn the skip counting. For example, the skip counting for the multiplication fact of 3 is 3, 6, 9, 12, 15, 18, 21, 27, 30.
- Next, start to memorize the fact out of order. For example, 3 taken 9 times is? 27!

- At the start students will use different methods to recall the multiplication fact. They can skip count, use their fingers, count in their head. Recalling the multiplication fact should come quicker and quicker. The eventual goal is that the recall of the multiplication fact becomes instantaneous.
- Once a student has a fact memorized with instantaneous recall then a sticker or some type of mark on the grid can be placed. This signifies that the fact is mastered. Caution, do not mark a fact mastered until it is consistently and reliably recalled by the student.

Some ideas on how to memorize the grid:

- Start with the 'easy' ones:
    - 1 table
    - 10 table
    - 5 table
    - 2 table

      "Wow, you already know a lot of multiplication facts?"
- Learn the 'doubles' - 2x2, 3x3, 4x4, etc.
- Learn the ones that have a common product
    - 6x2 and 3x4 both equal 12
    - 6x4 and 3x8 both equal 24
- Find the funky patterns in the 9 table (student should be encouraged to explore and find these as a challenge. Helpful hints given if needed :-)
    - The two numbers of all 9 table products equal 9. For example,
        - 9 x 2 = 18 (1 + 8 = 9)
        - 9 x 3 = 27 (2 + 7 = 9)
        - 9 x 4 = 36 (3 + 6 = 9)
    - The products of 9 mirror each other in ascending and descending order:



Note: This grid is only one tool for students to memorize multiplication facts. Some students like it because it has everything in front of them, which they can slowly chisel away at. For other students, making the grid is the only exercise they use it for; they may not return to it for their memorization activity. Doing a variety of activities and applications (using multiplication in the real world) is the road for multiplication memorization for many students.

- **Fractions**

  Material
  Here is a link to a digital version of the Montessori fraction pieces. You can use this tool for doing much of this work. Another option is to cut out 10 full circle pieces and then to divide the whole circle into equal parts (2 pieces, 3 pieces, 4 pieces, etc.). Use a protractor to ensure the pieces are divided evenly.

  Introduction
  Your child is familiar with the single golden bead. This bead is one unit.

When teaching fractions we talk about how we'd like to break this unit into smaller parts, but it is not possible with this golden bead material. So, in order to show the unit broken into smaller and equal parts we need to use another piece of equipment, the fraction circles.


=

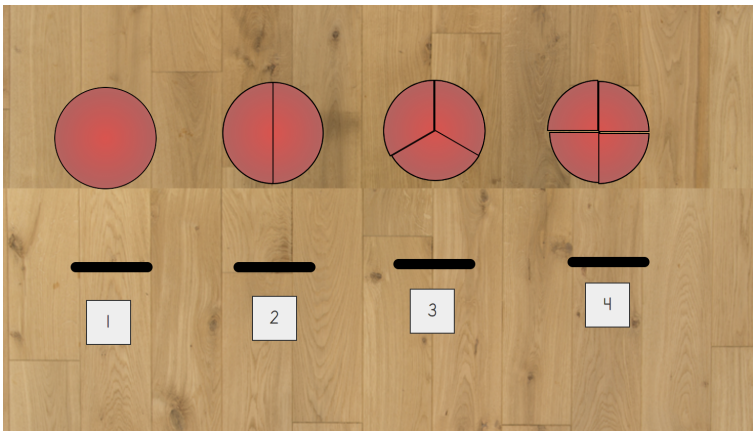
(These are both one unit)

Symbolize and Name

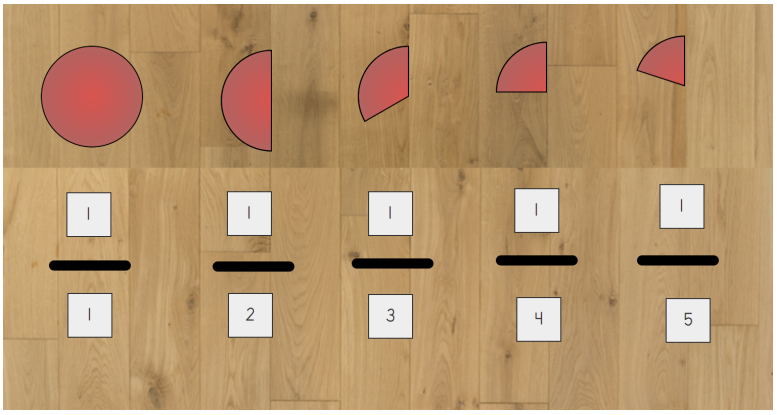
Once the student understands that the red whole circle is equal to one unit, then we can start to break the unit and to name and to symbolize the pieces.

- Symbolize

  Each of these units are divided into even pieces. This unit is divided into 2 pieces. This next one is divided into 3 pieces, etc. The number of pieces a unit is divided into is called its family. The family number is written under this strip/bar. This is called the <u>denominator</u>.



  Next we will take just one piece from each of these units. We will write this one piece at the top of this bar. This is called the <u>numerator</u>.

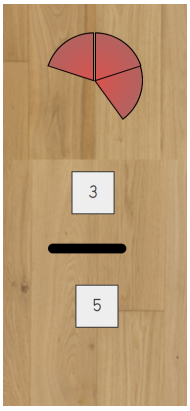


The numerator is at the top. In this case, all of the numerators are 1. The denominator is at the bottom. These are the family names.

- Name
  Each of these pieces not only have a symbol (½), but they also have a name. From left to right the names are:
  - Whole
  - Half
  - Thirds
  - Fourths (or quarters)
  - Fifths
  - (sixths - tenths)

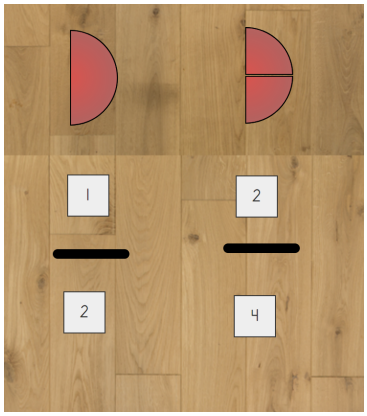
  On a piece of paper the student can:
  - draw the circles
  - write the associated number symbol (i.e. ½),
  - write the name of the piece (i.e. half)

Symbolize and Name with different Numerators
Using the Montessori Tools Fraction Circle pieces tool create fractions with different numerators. Symbolize the fraction (⅗), and label the name (three fifths). Repeat this with many other fraction circle examples.

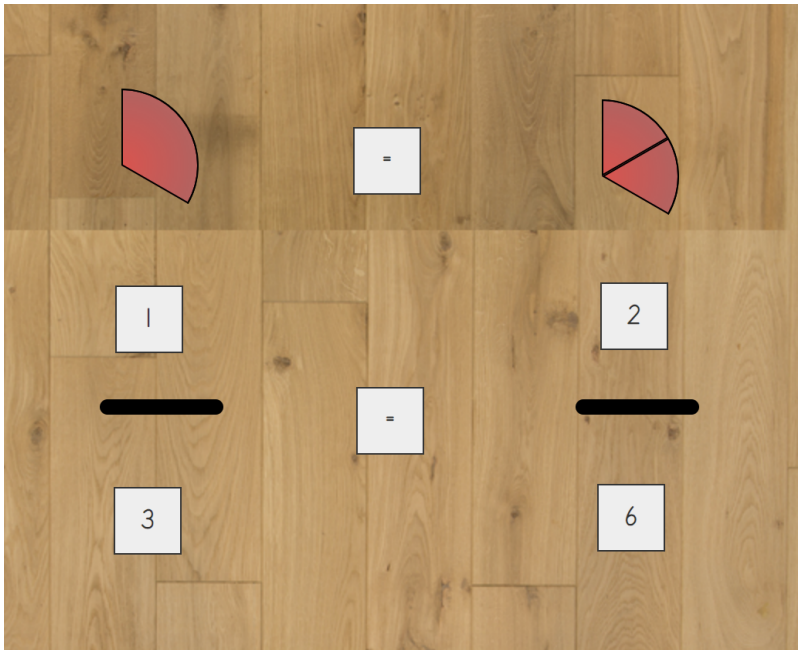


Equivalents

Using the Montessori Fraction Circle pieces, or your own circle pieces at home, start to explore the concept of equivalence. Pull down one half. Now try to fit other pieces onto the one half so that they fit exactly into the space. Only pieces that match the one half exactly are equivalent.



Try other pieces and find more equivalents. Use the equal sign to show these are equivalent.

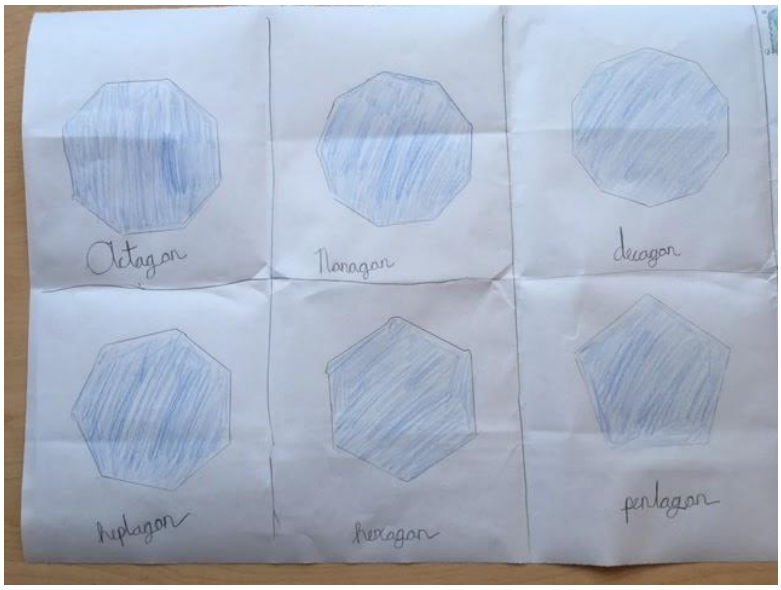


You can find in the Additional Resources folder some exercises on paper which can reinforce these concepts.

Geometry:

Angles are everywhere! Winter is the perfect time to observe tree branches and the shapes they make. Here are some lovely pictures of birch and apple trees in winter. What kind of angles can you find? How many acute, obtuse or even right angles do you see? Maybe you have some really nice trees in your yard to try this with. Next put how many of each kind in a graph to compare.

Other geometry work to inspire your student: Polygons named according to the number of sides.



Science and Culture

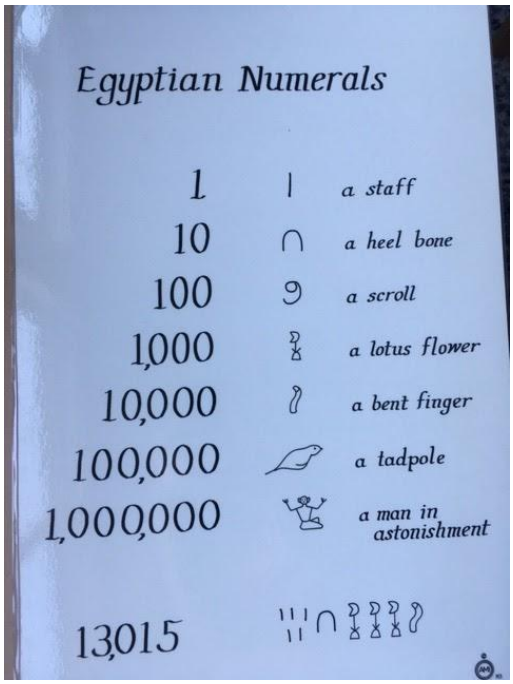
- **Encyclopedia Britannica**- This is an amazing resource for science and culture for inspiration on research projects. Leelanau Montessori has a subscription for you to enjoy! Login with the following:
  User ID: leelanau
  PW: school
  Science | Britannica LaunchPacks
  https://packs.eb.com/science

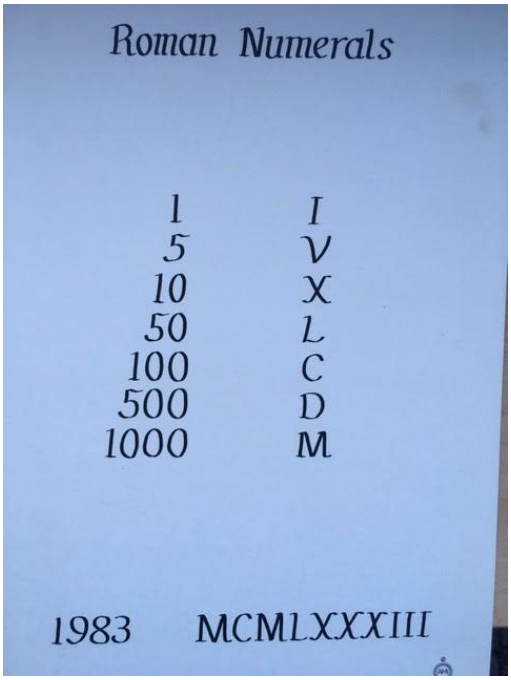
- **Story of our Numerals**

(Preface)
We have been slowly unraveling the story of EVERYTHING over the past few months. It started with the story of the universe and the laws which particles follow (solid, liquid, gas). Then we talked about a very special particle that appeared a long, long time ago in the water which could make more of itself...this was the beginning of life on earth. We have studied all sorts of life on earth over time and one very special species...humans. Humans have three unique gifts: their hands which can make useful tools; their brains which can solve complex problems to fulfill their fundamental needs; and finally, their capacity to love and care for each other. It was human's capacity to love and care for each other that led to communication and language and eventually to writing and to the alphabet which we use today. This all leads us to our fifth great story in our series which is…

The Story of our Numerals

(Summary)
We are now exploring the history of our numbers. The story shares how humans used numbers to fulfill their need for food and shelter. The story then touches on the systems used in ancient civilizations of the Sumerians, Babylonians, Egyptians, Greeks and Romans.





However, our number system can be most directly linked to the trading done between Arabians and Hindis. The early number system, in what is now India, was very sophisticated. It was easy to write and use for calculations. Europeans were using Roman numerals which were long and cumbersome to write with and to do calculations. The Arabians appreciated the Hindi system and eventually merged the two systems. A very important Arabic contribution to the number system was the use of zero. Zero was not yet found in other systems up to this point. About a thousand years ago a book by an Arabic author made its way to Europe which explained Hindu-Arabic numeral system. Slowly and eventually this system was adopted by European scholars and eventually replaced the use of Roman numerals.

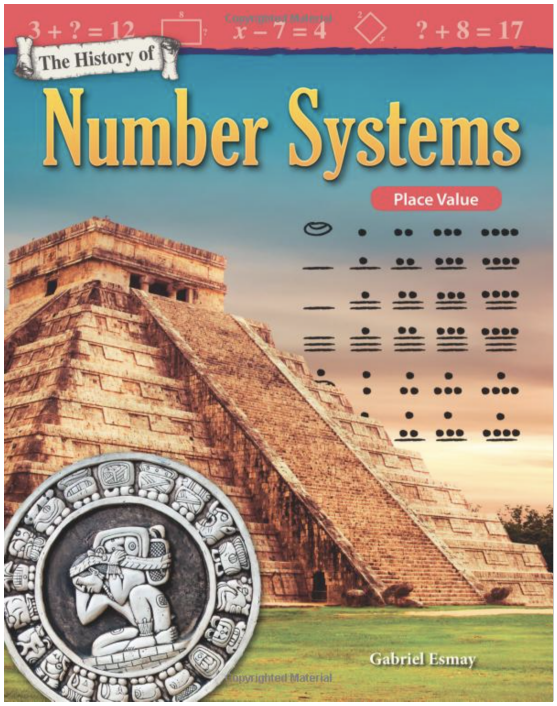
The image below is the Hindu-Arabic numeral system as it appeared a thousand years ago, compared with our modern system we use today.

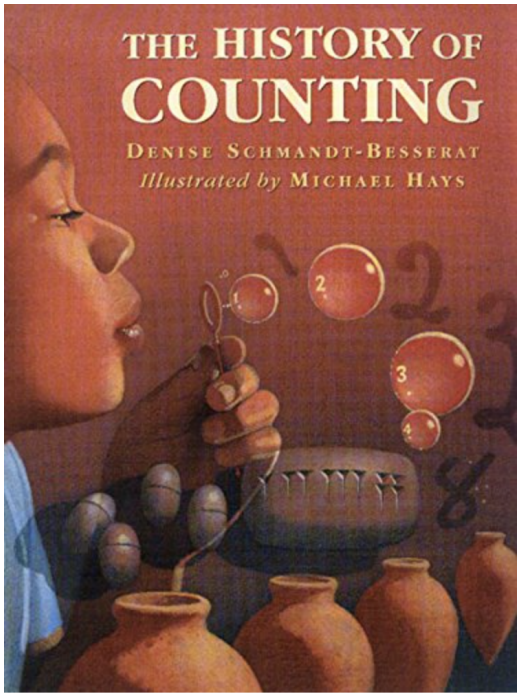
١	٢	٣	٤	٥	٦	٧	٨	٩	٠
1	2	3	4	5	6	7	8	9	0

This very abridged version of the Story of Numerals, is intended to give you the main ‘players’ in the history so that you can conduct further research. The child can pick up

their inquiry at any point in the story. They may want to learn about the counting system of the Sumerians (who used cuneiform tablets), or the Egyptians who used Hieroglyphic pictures. Writing large numbers in Roman numerals is a fun exercise for many students.

Go to the library and pick up some books on the history of numbers.



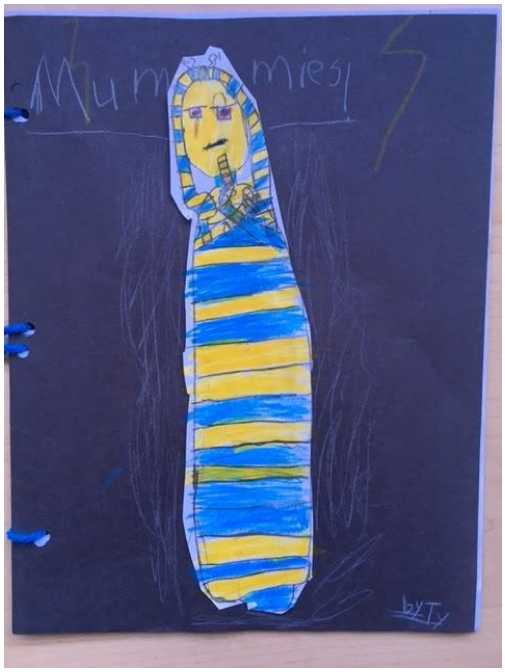


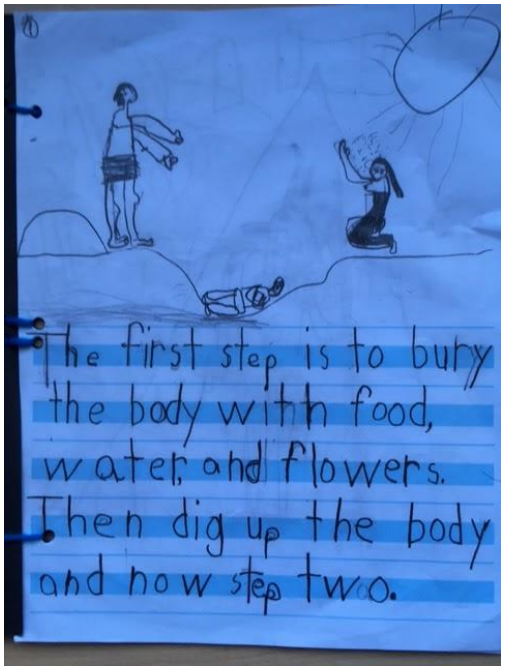
Following up on our story of writing, here is an interesting BBC series on the history of writing:

https://www.bbc.co.uk/programmes/m000mtml/episodes/guide?fbclid=IwAR1a2hG0qCDGLwPnLO-yhyylk7StXEgVuTNq5hWJLO5WYYTS_IouroP9ukg

Civilization Studies

Studies and research projects are the heart of the Montessori Cosmic Education. Below is a portion of a recent student research work on the Ancient Egyptian's practice of mummification. This is to help inspire your student's work.





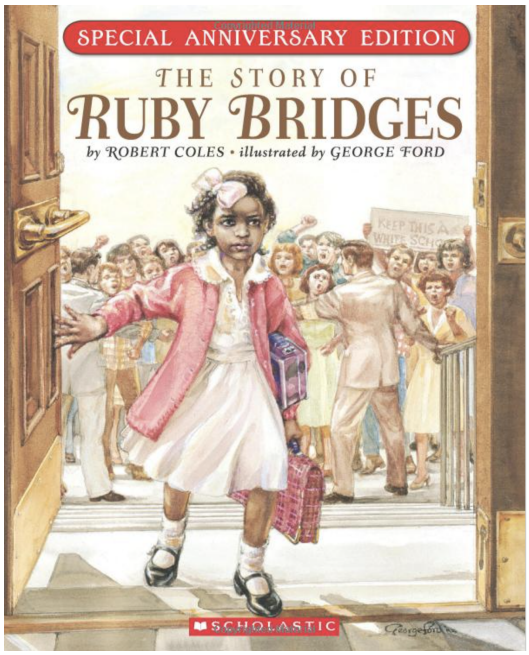
<u>This is a guideline for independent research</u>

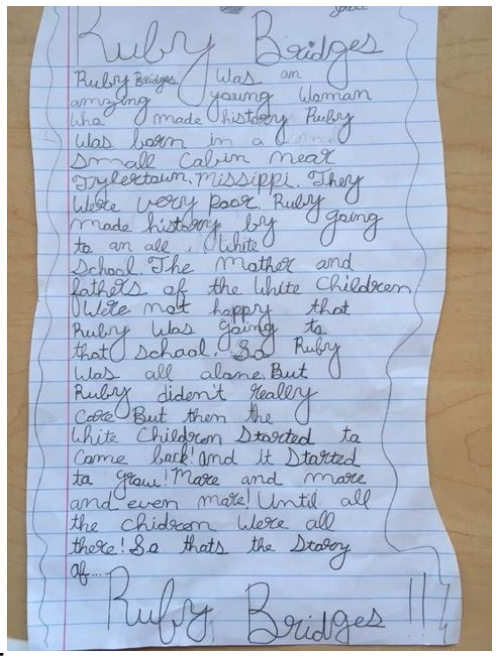
1) Find resources on the chosen topic
2) Read through the resources and decide which facts to include
3) Write down the facts you've learned (note cards, notebook, slip of paper)
4) Have the notes edited
5) Write a first draft of your research paper
6) Have the first draft edited
7) Write the final draft on special paper
8) Put together visuals which support what you have written
9) Package the text and visuals together in a format to share with someone. In the example above, a front cover was designed, and the illustrated pages were bound together using a hole punch and knotted yarn.
10) Practice presenting your work by introducing the topic. Read your text loudly and clearly. Show your illustrations by turning the work toward the audience. Conclude by asking the audience if they have any questions.

11) Present to a small group, or large group. If you like presenting, find other groups of people who would be interested to hear your presentation. Distant family or friends on Zoom?

American History

In class we read, “The Story of Ruby Bridges”, which is the real story of Ruby Bridges who became the first Black student to integrate an elementary school in the South.



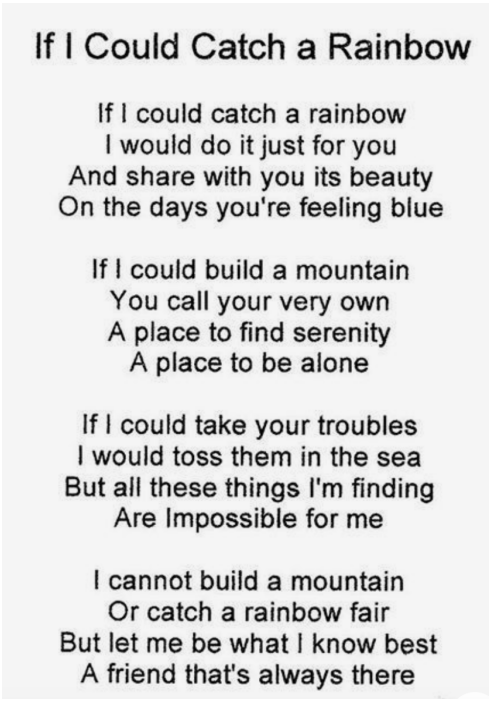


After reading it, your student can write a summary of the story in their own words.

Language Arts

- **Poetry**

  Read this poem, “If I could catch a Rainbow,” by Maya Angelou.



If I Could Catch a Rainbow

If I could catch a rainbow
I would do it just for you
And share with you its beauty
On the days you're feeling blue

If I could build a mountain
You call your very own
A place to find serenity
A place to be alone

If I could take your troubles
I would toss them in the sea
But all these things I'm finding
Are Impossible for me

I cannot build a mountain
Or catch a rainbow fair
But let me be what I know best
A friend that's always there

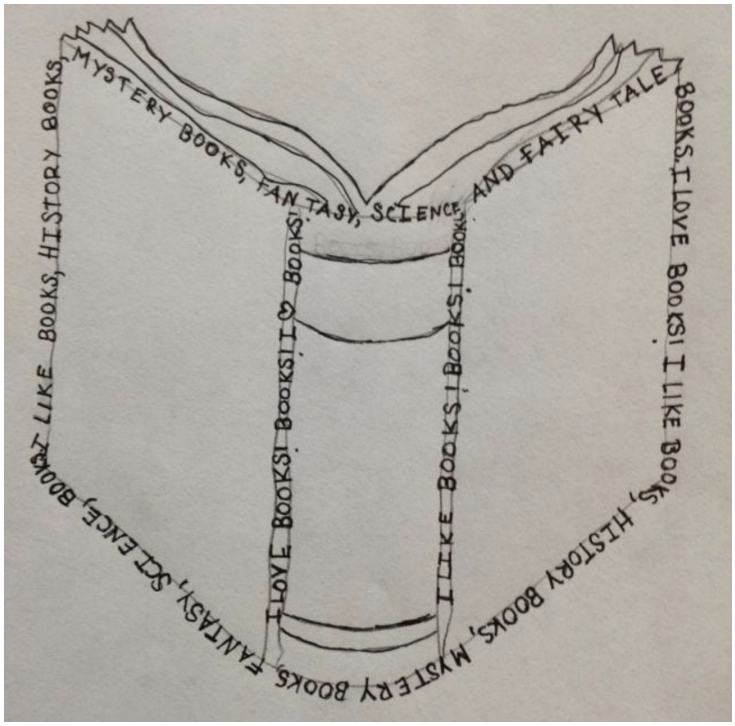
  Analyze and beautify:

  - What is the rhyming scheme? Write down the pairs of rhyming words for each stanza (paragraph). For example, ‘you’ and ‘blue’ rhyme in the first stanza.
  - What images does she describe? Draw a picture to accompany each stanza.
  - Re-create this poem and give to a special person in your life.
    - Re-write the poem using your best handwriting on special paper. (Use lines to make your writing straight. Draw lines using a ruler if there aren’t any on the paper).
    - Cut out your re-written poem and glue it to another sheet of paper to give a contrast in color, shape, or texture.
    - Decorate with your drawings of the images Ms. Angelou describes or other images that you think your special person would like.

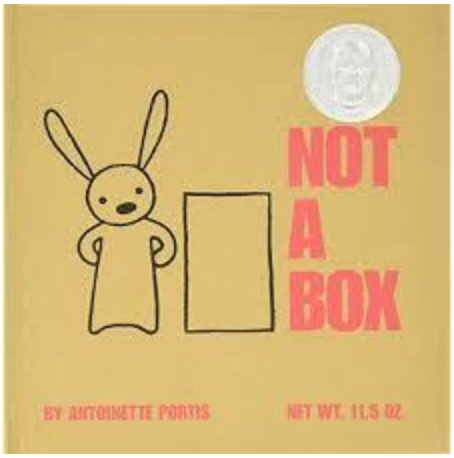
Create Your Own Poetry:

Object Poetry

Write a poem about an object or thing that you have affection for, like a plant, a favorite pair of socks, a pet, or a favorite snack! The poem can describe the thing physically. It can describe your relationship with the object. It can also describe emotion that you, or the thing, experience. The poem does not need to rhyme. After you write the poem, you can make a large line drawing of this thing/object, and then write the poem in and around the object.



“Not a box”, by Antoinette Portis

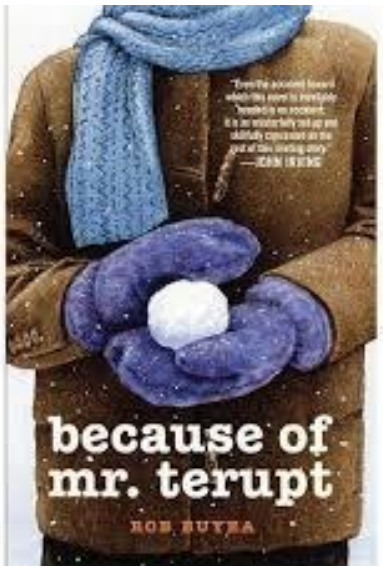


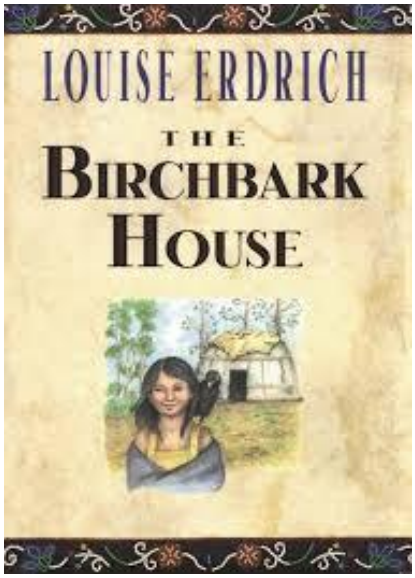
- Even though we love going outside in these winter months, sometimes we just want to stay cozy and warm inside. Check out this book from your local library! It is loads of fun to create things from boxes, big and small. Do you need some boxes? Let us know and we can get some for you.
- Write up a summary of your creative process, and post it to the Google classroom.

Parts of Speech

- Keep working with those grammar symbols. In the past several weeks we have talked about the noun family which includes the: article, adjective and noun.
- Plus we’ve been working with the verb family which includes the: verb and adverb. If needed, see the previous week’s plans for a refresher on which symbols go with which parts of speech and how to use them.

Read Alouds - The Apple Environment has been reading “Because of Mr. Terupt” by Rob Buyea. The Birch Environment has been reading “The Birchbark House” by Louise Erdrich. See if you can pick one of them up at the library and join in.





Movement, Music, Enrichment

- We need our exercise especially in the winter when we do not get as much sun and Vitamin D as our body needs to stay healthy. Here is a website with 5 different Yoga for Kids videos which the whole family will love: https://awakeandmindful.com/best-kids-yoga-videos-on-youtube/
- Here is a copy of the poster “The ABC’s of Yoga” from the peace area in the Birch Environment. Try these poses out as well.

- After yoga, take a five-minute savasana or seated meditation. If you have a guided visualization that you like, play it for yourself. Or simply just relax in corpse pose (lying down in savasana) letting gravity take your weight completely.

- Creating a Mandala and Yoga - After a calming yoga practice, try creating some art. With your materials handy, go right into your creative process. Start drawing

or painting in the center of the mandala and work your way out. Feel free to go outside of the circle and do not judge the process, be open to what comes up. Stay present to your breath as you create marks on the paper. Have some good music playing, and experiment with syncing the movement of your hand to the music.

- Here is a link to some relaxing music. Here are other links if you prefer something else: https://www.youtube.com/watch?v=IioH3S5jDSY