

# Summer Math

**Attention all students entering Grades 5-8:**

Summer Math is **REQUIRED** for you!  
**It will count as your first homework grade and will be an easy way to start the year off great in math!!**

You will select a *minimum* of **two** activities, although you are welcome to choose more than that. You may also choose to work with a buddy or even a group to get outside and have some fun!!

During the summer months, skills become rusty and you can even lose some of what you learned this year. By participating in Summer Math, you will keep your math knowledge fresh and be better prepared to be successful next year.

The activities have been designed to help you connect the math you learn in school to the real world around you. You can click on the links to explore loads of digital resources to help you, and use digital photos or video to help document what you do. Have fun with it!

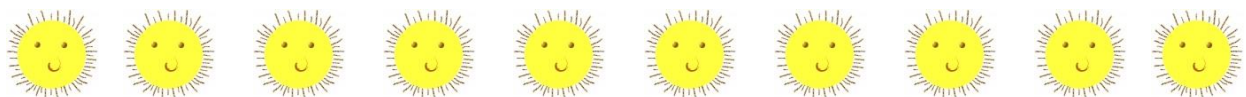
## **WHAT DO YOU HAND IN WHEN YOU RETURN IN SEPTEMBER??**

Your product can be a journal/notebook where you have completed your tasks, a Powerpoint where you show what you did and reveal your solutions, a video where you show and tell what you found....get creative!


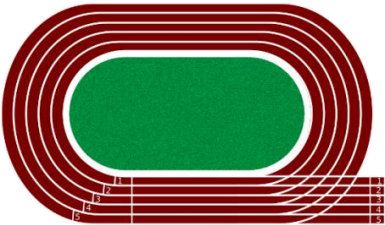

As long as you complete at LEAST 2 of the activities and show your work and solutions, you will receive credit! Remember that this product will be the first piece of work that your teacher will get from you, make sure it is neat, complete, well done, and has your name on it!!

Be sure to indicate which activities you selected. For example:  
Choice #1: Shopping with Unit Rates / Choice #2: Track Steps and Ratios

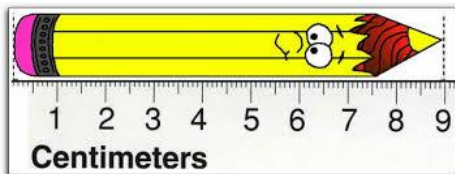
**HAVE A WONDERFUL SUMMER AND STAY SAFE!!!**



**Where is the Math in Your World?**  
**Entering Grade 8 2018 Summer Math Projects – Ahern Middle School**  
 (Complete at least 2 projects - due first week of school)

Project Title	Directions	Entering Grade 8
<p><b>1 <u>Geometric Figures in Our World</u></b></p> 	<p>Find the Geometric figures (see grade list) in the outdoors. Describe and explain the dimensions and purpose of figure. (things at the playground, in the backyard or school)</p>	<p>1. Find the volume and surface area of a prism that you use or that you identify in your home or outside. An example would be a rectangular or triangular prism.</p> <p><b>Online Ruler:</b> <a href="https://www.printablerulers.net/click2.php">https://www.printablerulers.net/click2.php</a></p> <p><b>Volume:</b>  <a href="https://www.youtube.com/watch?v=JijhDDJvExo">https://www.youtube.com/watch?v=JijhDDJvExo</a></p> <p><b>Surface Area:</b>  <a href="https://www.youtube.com/watch?v=agIV623B3nc">https://www.youtube.com/watch?v=agIV623B3nc</a></p> <p>2. Find the area and circumference of a circle that you see in your home or outside.          3. Find the area, surface area or volume of a composite figure in the real world. For some ideas please watch:  <a href="https://www.youtube.com/watch?v=vqoTudvn5rA">https://www.youtube.com/watch?v=vqoTudvn5rA</a></p>
<p><b>2. <u>Track Steps and Ratios</u></b></p> 	<p>Measure the distance of the Middle School running track as outlined by grade.</p>	<p>Running around the inside edge of the track is 400 meters. Each lane is 1 meter wide. The turns of the track are perfect semicircles.          The length of the straightaways are 100 meters long. There are 6 lanes in total on the track.</p> <p>1. Sketch the track and label all the dimensions you will need in order to find the area.          2. What is the area of the track?          3. What is the total length of all the lines?</p> <p>Use this video to review finding the area of a composite figure. <a href="https://youtu.be/V3qNnGWI-pM">https://youtu.be/V3qNnGWI-pM</a></p>
<p><b>3. <u>Numbers in Nature</u></b></p> 	<p>Find natural object in nature. Classify and explore number relationships as outlined by grade level.</p> <p><a href="https://youtu.be/wTlw7fNcO-0">https://youtu.be/wTlw7fNcO-0</a></p> <p><a href="https://youtu.be/kkGeOWYOFoA">https://youtu.be/kkGeOWYOFoA</a></p> <p><a href="https://youtu.be/-GVQ2-3Nv2s">https://youtu.be/-GVQ2-3Nv2s</a></p>	<p>Fibonacci Numbers and the Golden Triangle and Pascal's Triangle.</p> <p>1. Explain how Fibonacci Numbers are connected to the Golden Triangle. Find two examples in nature or architecture. Watch video:  <a href="https://youtu.be/dREpRHgkjsg">https://youtu.be/dREpRHgkjsg</a></p> <p>2. Explain how Fibonacci Numbers are connected to Pascal's Triangle. Draw Pascal's Triangle as part of your explanation.  <a href="https://youtu.be/24u3Em5Ro_k">https://youtu.be/24u3Em5Ro_k</a></p> <p>3. Research to find one other pattern or series that can be connected to Fibonacci Numbers. Explain and give an example.</p>

#### 4. Metric and Customary Systems of Measurement



Measure an outdoor figure and provide measurements in both systems as outlined by grade level.

Find an object outside that you can measure or record the distance from your home to a place you visit this summer. Some places to look for objects are outside your home, at a playground, the beach or a park. An outing might be to visit a relative, a trip to the beach or park or a vacation (just somewhere that you traveled away from home).

Create a table to show the dimension that you measured (length, width or distance) in a unit that makes sense for the object or distance. For example: A large object would probably be measured in feet or an outing would probably be measured in miles.

Convert the unit of measure into additional units of measure so your table reflects all of these units of measure:

Feet, Inches, Yards, Miles (for distance only), Millimeters, Centimeters, Meters, Kilometers (for distance only).

**Video for metric system review:**

[https://learnzillion.com/lesson\\_plans/7014](https://learnzillion.com/lesson_plans/7014)

**Video for customary system review:**

[https://learnzillion.com/lesson\\_plans/5003-compare-and-convert-customary-units-of-length](https://learnzillion.com/lesson_plans/5003-compare-and-convert-customary-units-of-length)

**Converting Measurements:**

<https://www.youtube.com/watch?v=CKD1ei-Yfbs>

**Online Rulers:**

<https://www.printablerulers.net/click2.php>

#### 5. Graphs & Tables



Online research demonstrating the use of graphs in tables in the world. (as outlined by grade level)

Find a graph online for a topic that you might be interested in finding out more about. You can google “News articles with graphs and charts” to help you locate a graph that interests you. In a well written paragraph, please describe the topic of the graph, the type of graph that represents the data and the story of the data that the graph is informing readers about.

**OR**

Create a line plot for a set of data that you develop based on your interests. Some examples of questions to generate your data would be:

1. What is the snowfall in January for Foxboro for the last 10 years?
2. What is the favorite ice cream flavor for each person in your family and each of your friends?
3. What is the average temperature in July in Foxboro for the last 10 years?
4. What is the height of 10 people that you know?
5. How many different types of plants do you find in your flower and/or vegetable garden and what is the number of plants for each type?
6. What is the length of at least 10 pencils that you can find in your backpack or around your house?

## Graphs & Tables Continued

7. Find at least 15 pennies. Sort them by the decade that they were made and develop your line plot using this data.

**You can develop data based on any topic you would like. The only requirement is that you create a line plot based on at least 10 data points.**

**Online Ruler:** <https://www.printablerulers.net/click2.php>

**Videos to help:**

[https://learnzillion.com/lesson\\_plans/4782](https://learnzillion.com/lesson_plans/4782)

[https://learnzillion.com/lesson\\_plans/6972](https://learnzillion.com/lesson_plans/6972)

## 6. Shopping with Unit Rates!



Compare unit rates (as outlined by your grade level) of products you purchase either online or in the store.

Think about an activity you are doing or would like to do this summer. An example would be a going to a sporting event, a concert, an amusement park, playing miniature golf or any other activity that requires you to purchase admission. Find the total cost of the outing and figure out the rate and unit rate based on the amount of people that went on the outing. You can do research on the internet instead of going to the actual event if you would like.

Make a table and a graph that includes the cost for 7 different amounts of people including the amount of people that went to the outing with you.

Is the total cost of the outing proportional to the cost per person?

Please explain your thinking in a well written paragraph.

**Review of Unit Rates**

[https://www.youtube.com/watch?v=liW\\_ALj4Qj8](https://www.youtube.com/watch?v=liW_ALj4Qj8)

**Online Graph Paper**

<https://incompetech.com/graphpaper/plain/>

## 7. Library Numbers

Explore Decimals using the Dewey Decimal Numbering System that is used in the library

Visit the library or use the online catalog for the library to find a non-fiction book on a topic of your choice. Some suggested topics and books are:

- **Math Theme Books**

Career Ideas for Kids Who Like Math

Real Life Math Series

Fun With Roman Numerals

See Symmetry

- **Space Theme Books**

Books about Planets

- **Sports Theme Books**

The History of \_\_\_\_\_ (Basketball related)



NFL Today – The Story of \_\_\_\_\_ (Baseball related)

Pro Sports Hall of Fame

- Craft Theme Books
- Cooking Theme Books

**SAILS online catalog**

<http://www.sailsinc.org/>

**Please note you can use any Non-Fiction book for the activity as long as it has a decimal number for its' catalog number.**

**Please answer the following questions related the book's Dewey Decimal Number:**

1. What is the name of the book you chose and the Dewey Decimal Number associated with this book?
2. Write the book's number in expanded notation.
3. What would be the equivalent mixed number for the books' decimal catalog number?
4. Compare the number of your book to the following decimal numbers using (<, =, >):  
352.1, 650.01, 452.60
5. Add 2,356 to the book's number.
6. Subtract the book's number from 2,356.
7. Multiply the number by 25.1
8. Divide the number by 25.1. Is the quotient a whole number, a terminating decimal or a repeating decimal? If it is not one of these 3 choices, what kind of number is it?
9. Multiply the book's number by  $10^3$ .
10. Divide the book's number by  $10^2$ .
11. Round the book's catalog number to the nearest whole number and the nearest tenth.

**If you having trouble locating a book, please ask the librarian for help.**

Converting decimals to fractions:

[https://learnzillion.com/lesson\\_plans/6185-convert-decimals-to-fractions-to-the-hundredths-place-using-visual-aids](https://learnzillion.com/lesson_plans/6185-convert-decimals-to-fractions-to-the-hundredths-place-using-visual-aids)

Comparing decimals:

[https://learnzillion.com/lesson\\_plans/6024](https://learnzillion.com/lesson_plans/6024)

Decimals in Expanded Notation:

[https://learnzillion.com/lesson\\_plans/8001-write-decimals-in-expanded-notation](https://learnzillion.com/lesson_plans/8001-write-decimals-in-expanded-notation)

Rounding Decimals:

[https://learnzillion.com/lesson\\_plans/5889-round-decimals-to-the-nearest-whole-number](https://learnzillion.com/lesson_plans/5889-round-decimals-to-the-nearest-whole-number)

[https://learnzillion.com/lesson\\_plans/6848-round-decimals-to-the-nearest-tenth](https://learnzillion.com/lesson_plans/6848-round-decimals-to-the-nearest-tenth)

Multiplying and Dividing by Powers of 10:

[https://learnzillion.com/lesson\\_plans/4766](https://learnzillion.com/lesson_plans/4766)

Online Hundredths Grid Paper:

<https://www.eduplace.com/math/hmcam/tools/blms/g5/5hmmca-mc48-mc.pdf>

