

Summer Math Learning Packet

Students Entering Grade 7

Discover mathematics all around you this summer!!! Just as with reading, regular practice over the summer with problem solving, computation, and math facts will maintain and strengthen the mathematical gains you made over the school year.

Attached to this letter, you will find creative mathematics activities to explore at home. The goal is for you to have fun thinking and working collaboratively to communicate mathematical ideas. While you are working, ask how the solution was found and why a particular strategy was chosen.

The Summer Math Learning Packet consists of 2 calendar pages, one for July and one for August, as well as directions for math games to be played at home. Literature and websites are also recommended to explore mathematics in new ways. We encourage you to complete at least 15 math days each month. Keep track of your math in a journal.

Fun math books to read	Fun websites to explore
<u>Evil Genius</u> by Catherine Jinks <u>Forever Changes</u> by Brendan Halpin <u>Geek Abroad</u> by Piper Banks <u>All of the Above</u> by Shelley Pearsall <u>Hannah Divided</u> by Adele Griffin <u>A Higher Geometry</u> by Sharelle Byars <u>Moranville Guinness Book of Records</u> by Time Inc <u>Mathematicians are People Too</u> by Luetta Reimer & Wilbert Reimer	http://www.figurethis.org/index.html http://nrich.maths.org/frontpage http://www.khanacademy.org/ http://mathforum.org/index.html http://www.coolmath4kids.com/ http://www.thinkingblocks.com/ http://mathplayground.com/ NCTM Illuminations Virtual Manipulatives More Virtual Manipulatives Which one does not Belong

Grade 6 Learning Goals

*In grade six, children learn the concept of rates and ratios and use these tools to solve word problems. Students work on quickly and accurately dividing multi-digit whole numbers and adding, subtracting, multiplying, and dividing multi-digit decimals. Students extend their previous work with fractions and decimals to understand the concept of rational numbers—any number that can be made by dividing one integer by another, such as $\frac{1}{2}$, 0.75, or 2. Students also learn how to write and solve equations—mathematical statements using symbols, such as $20+x = 35$ —and apply these skills in solving multi-step word problems. Activities in these areas include:

- Understanding and applying the concepts of ratios and unit rates, and using the correct language to describe them (for example, the ratio of wings to beaks in a flock of birds is 2 to 1, because for every 2 wings there is 1 beak)
- Building on knowledge of multiplication and division to divide fractions by fractions
- Understanding that positive and negative numbers are located on opposite sides of 0 on a number line
- Using pairs of numbers, including negative numbers, as coordinates for locating or placing a point on a graph
- Writing and determining the value of expressions with whole-number exponents (such as $15+32$)
- Identifying and writing equivalent mathematical expressions by applying the properties of operations. For example, recognizing that $2(3+x)$ is the same as $6+2x$
- Understanding that solving an equation such as $2+x = 12$ means answering the question, “What number does x have to be to make this statement true?”
- Representing and analyzing the relationships between independent and dependent variables
- Solving problems involving area and volume

Looking Ahead to Seventh Grade

In grade seven, students will further develop their understanding of rates and ratios, using tables, graphs, and equations to solve real-world problems involving proportional relationships. Students will also work on quickly and accurately solving multi-step problems involving positive and negative rational numbers—any number that can be made by dividing one integer by another, such as $\frac{1}{2}$, 0.75, or 2. Additionally, students will expand their knowledge of geometry and apply the properties of operations to solve real world problems involving the measurement of multi-dimensional objects. Activities in these areas will include:

- Determining whether two quantities are in a proportional relationship and using knowledge of rates, ratios, proportions, and percentages to solve multi-step problems
- Identifying the unit rate of change (the constant rate at which the value of a variable changes) in tables, graphs, equations, and verbal descriptions
- Calculating the unit rates associated with ratios of fractions, including quantities measured in different units (for example, the ratio of $\frac{1}{2}$ a mile for every $\frac{1}{4}$ of an hour means that you travel 2 miles in an hour)
- Solving problems using equations to find the value of one missing variable
- Applying the properties of operations to generate equivalent mathematical expressions
- Solving multi-step word problems by adding, subtracting, multiplying, and dividing positive and negative rational numbers in any form (including whole numbers, fractions, or decimals)
- Understanding that numbers cannot be divided by 0
- Converting rational numbers to decimals using long division
- Describing situations in which positive and negative quantities combine to make 0
- Finding the area of two-dimensional objects and the volume and surface area of three-dimensional objects

*Adapted from *Parent Roadmaps* by Council for Great City Schools

Grade 7

Summer Math Ideas

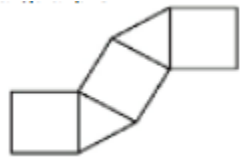
DIRECTIONS: Do your best to complete as many of these summer math activities as you can! Record your work in your math journal every day.

Games to play: Checkers, Othello, Memory, Set, jigsaw puzzles, Parcheesi, Crazy Eights, Connect Four, Legos, etc.

Math Tools You'll Need:

- Notebook for math journal
- Pencil
- Crayons
- Regular deck of playing cards
- Coins
- Dice

July 2024 Entering Seventh Grade Mathematics Calendar

Day 1 What is the prime factorization of 32?	Day 2 Some kids like to ride their bikes to and from school. Let d be the distance in miles from a kid's home to school. Write 2 expressions to represent how far a kid travels by bike in 4 weeks.	Day 3 Try a new activity at http://www.coolmath4kids.com/ Challenge yourself. What did you choose to do?	Day 4 List all the factors of 48. List all the factors of 64. What are the common factors of 48 and 64? What is the greatest common factor of 48 and 64?	Day 5 Write an expression to represent the situation. The skating rink charges \$100 to reserve and then \$5 per person. Write an expression to represent the cost for any number of people.
Day 6 The temperature is -28°F in Anchorage, Alaska and 65°F in Miami, Florida. How many degrees warmer is it in Miami than in Anchorage?	Day 7 Seth wants to buy a new skateboard that costs \$169. He has \$88. If he earns \$7.25 an hour pulling weeds, how many hours will he have to work to earn the rest of the money needed?	Day 8 Lin rode a bike 20 miles in 150 minutes. If she rode at a constant speed, how far did she ride in 15 minutes? How long did it take her to ride 6 miles? How fast did she ride in miles per hour?	Day 9 If the mean, median, and mode are all equal for the following set, what is the value of x? {3,4,5,8,x}	Day 10 Alisa had $\frac{1}{2}$ a liter of juice in a bottle. She drank $\frac{3}{8}$ liters of juice. What fraction of the juice in the bottle did Alisa drink?
Day 11 Look up a math topic and read about its history. Who discovered it? How was it used? Ex. pi, gallons, metric, prime numbers...	Day 12 Try "Beatcalc" at http://mathforum.org/index.html	Day 13 What is the smallest number that is divisible by 1,2,3,4,5,6,7,8,9 and 10? How do you know?	Day 14 Mia walks her dog twice a day. Her evening walk is two and a half times as far as her morning walk. At the end of the week she says she walked her dog 30 miles. How long is her morning walk?	Day 15 Find two numbers that have 2,3, and 5 as factors.
Day 16 The temperature in Alaska was 23 degrees below zero and in Maine was 14 degrees below zero. Ben wrote Maine was colder because $-14 < -23$. Is Ben correct? Explain your answer.	Day 17 Try one of the recommended websites. Record what you did.	Day 18 Will this net form a triangular prism? 	Day 19 In trail mix, the ratio of cups of peanuts to cups of chocolate candies is 3 to 2. How many cups of chocolate candies would be needed for 9 cups of peanuts?	Day 20 Denver's elevation is 5280 feet above sea level. Death Valley's is -282 feet. Is Death Valley located above or below sea level? Explain. How many feet higher is Denver than Death Valley?
Day 21 Amy has a fish tank that is a rectangular prism, 20 cm by 20 cm by 16 cm. What is the volume of the tank? If Amy only fills the tank $\frac{3}{4}$ of the way, what will be the volume of the water in the tank?	Day 22 Read Guinness Book of Records by Time Inc. What record surprised you the most? Why?	Day 23 Alexis is painting 4 exterior walls of a rectangular barn. The length is 80 feet, width is 50 feet, and height is 30 feet. The paint costs \$28 per gallon, and each gallon covers 420 sq. feet. How much will it cost? Explain.	Day 24 The Patriots beat the Giants in a football game. The sum of their scores was 44. The difference between their scores was 20. How many points did the Patriots score?	Day 25 Choose an activity at Math Illuminations http://illuminations.nctm.org/activitysearch.aspx

August 2024 Entering Seventh Grade Mathematics Calendar

Day 1 Visit the website http://nlvm.usu.edu/en/nav/vlibrary.html. Challenge yourself with fun activities! List them.	Day 2 Play Sudoku from the newspaper How did logic help you to solve the puzzle?	Day 3 The average of six numbers is 4. A seventh is added and the new average is 5. Find the seventh number	Day 4 Sophia's dad paid \$43.25 for 12.5 gallons of gas. What is the cost of one gallon of gas?	Day 5 Bryan sells candy bars at 4 for 50¢. How many candy bars must Bryan sell in order to make \$5.00?
Day 6 Are $3(3x - y)$ and $12(x - 4y)$ equivalent expressions?	Day 7 Try one of the recommended websites. Record what you did.	Day 8 The lowest temperature ever recorded on earth was -89°C in Antarctica. The average temperature on Mars is about -55°C. Which is warmer? Write an inequality to support your answer.	Day 9 What is the largest possible area (in square inches) for a rectangle with a perimeter of 120 inches?	Day 10 If Terri swam 3 laps in 2.5 minutes, how long would it take her to swim 20 laps at the same rate?
Day 11 What is a real life example of: $3/4 \div 1/2 =$	Day 12 What is the smallest three digit number that is divisible by exactly three different prime numbers?	Day 13 Given an expression such as $3x + 2y$, find the value of the expression when x is equal to 4 and y is equal to 2.4.	Day 14 Suppose ABCD is a number in the thousands and $ABCD \times 4 = DCBA$. What is the value of A, B, C, and D if they are each a different digit?	Day 15 Find the sum of the first ten prime numbers.
Day 16 Amy has a fish tank that is a rectangular prism, 20 cm by 20 cm by 16 cm. What is the volume of the tank? If Amy only fills the tank $3/4$ of the way, what will be the volume of the water in the tank?	Day 17 Read Guinness Book of Records by Time Inc. What record surprised you the most? Why?	Day 18 Alexis is painting 4 exterior walls of a rectangular barn. The length is 80 feet, width is 50 feet, and height is 30 feet. The paint costs \$28 per gallon, and each gallon covers 420 sq. feet. How much will it cost? Explain.	Day 19 The Patriots beat the Giants in a football game. The sum of their scores was 44. The difference between their scores was 20. How many points did the Patriots score?	Day 20 YOU DID IT! Make a list of at least three of your favorite activities to share on your first day of school.