

### 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  $15+3^2$ )
  - 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  $2x+x=12$  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

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### 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. In September, share your math journal with your seventh grade teacher.

#### Each journal entry should

- Have the date of the entry
- Have a clear and complete answer
- Be neat and organized

#### Math Tools You'll Need

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

#### Here is an example of a "seventh" journal entry:

July 23<sup>rd</sup>

Today's number is 144.

$12 \times 12 = 24 \times 6 = 48 \times 3$

$\frac{1}{1440} + 10 = 12 = \frac{1}{12}$

$143 + 1 = 121 + 23$

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

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## 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
<p><i>Exit Genius</i> by Catherine Jones  <i>Forever Changes</i> by Brendon Halpin  <i>Geek Abroad</i> by Piper Banks  <i>All of the Above</i> by Shelley Pearsall  <i>Hamish Duvoid</i> by Aqiele Griffin  <i>A Higher Geometry</i> by Sharelle Byars  <i>Moranville Guinness Book of Records</i> by Time Inc  <i>Mathematicians are People Too</i> by Luefka Reimer &amp; Wilbert Reimer</p>	<p><a href="http://www.fairmaths.org/index.html">http://www.fairmaths.org/index.html</a>  <a href="http://mathmaths.org/franchise">http://mathmaths.org/franchise</a>  <a href="http://www.annaccedemur.com/">http://www.annaccedemur.com/</a>  <a href="http://mathforum.org/index.html">http://mathforum.org/index.html</a>  <a href="http://www.coolmathkids.com/">http://www.coolmathkids.com/</a>  <a href="http://www.thinkingblocks.com/">http://www.thinkingblocks.com/</a>  <a href="https://illuminationsofmath.org/">https://illuminationsofmath.org/</a></p>

#### Student Accountability

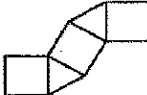
The intention is that your child spends at least 10 minutes a day, 4 to 5 times a week, practicing math. Your child should aim to complete at least 250 minutes of math practice over the course of the summer. When your child has completed the math requirements, please sign and return this paper to the sixth grade teacher with his/her journal.

Parent's signature \_\_\_\_\_

Date \_\_\_\_\_

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# July 2019 Entering Seventh Grade Mathematics Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
	What is the prime factorization of 32?	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.	Try a new activity at <a href="http://www.coolmath4kids.com/">http://www.coolmath4kids.com/</a> . Challenge yourself. What did you choose to do?	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?	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.	
7	8	9	10	11	12	13
	The temperature is $-28^{\circ}\text{F}$ in Anchorage, Alaska and $65^{\circ}\text{F}$ in Miami, Florida. How many degrees warmer is it in Miami than in Anchorage?	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?	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?	If the mean, median, and mode are all equal for the following set, what is the value of $x$ ? $\{3, 4, 5, 6, x\}$	Allisa had $1/2$ a liter of juice in a bottle. She drank $3/8$ liters of juice. What fraction of the juice in the bottle did Allisa drink?	
14	15	16	17	18	19	20
	Look up a math topic and read about the history. Who discovered it? How was it used? Ex. pi, gallons, metric, prime numbers...	Try "Beatacalc" at <a href="http://mathforum.org/index.html">http://mathforum.org/index.html</a>	What is the smallest number that is divisible by 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10? How do you know?	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?	Find two numbers that have 2, 3, and 5 as factors.	
21	22	23	24	25	26	27
	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.	Try one of the recommended websites. Record what you did.	Will this net form a triangular prism? 	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?	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?	
28	29	30	31			
	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?	Read Guinness Book of Records by Time Inc. What record surprised you the most? Why?	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.			

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# August 2019 Entering Seventh Grade Mathematics Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
				The Patriots beat the Giants in a football game. The sum of their scores was 44. The difference of their scores was 20. How many points did the Patriots score?	Choose an activity at Math Illuminations <a href="http://illuminations.nctm.org/activitysearch.aspx">http://illuminations.nctm.org/activitysearch.aspx</a>	
4	5	6	7	8	9	10
	Visit the website <a href="http://nlvm.usu.edu/en/nav/vi-brary.html">http://nlvm.usu.edu/en/nav/vi-brary.html</a> . Challenge yourself with fun activities! List them.	Play Sudoku from the newspaper. How did logic help you to solve the puzzle?	The average of six numbers is 4. A seventh is added and the new average is 5. Find the seventh number.	Sophia's dad paid \$43.25 for 12.5 gallons of gas. What is the cost of one gallon of gas?	Bryan sells candy bars at 4 for 50¢. How many candy bars must Bryan sell in order to make \$5.00?	
11	12	13	14	15	16	17
	Are $3(3x - y)$ and $12(x - 4y)$ equivalent expressions?	Try one of the recommended websites. Record what you did.	The lowest temperature ever recorded on earth was $-89^{\circ}\text{C}$ in Antarctica. The average temperature on Mars is about $-55^{\circ}\text{C}$ . Which is warmer? Write an inequality to support your answer.	What is the largest possible area (in square inches) for a rectangle with a perimeter of 120 inches?	If Terri swam 3 laps in 2.5 minutes, how long would it take her to swim 20 laps at the same rate?	
18	19	20	21	22	23	24
	What is a real life example of: $3/4 \div 1/2 =$	What is the smallest three digit number that is divisible by exactly three different prime numbers?	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.	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?	Find the sum of the first ten prime numbers.	
25	26	27	28	29	30	31
	A tank is 24 cm wide, and 30 cm long. It contains a stone and is filled with water to a height of 8 cm. When the stone is pulled out of the tank, the height of the water drops to 6 cm. Find the volume of the stone.	At Books Unlimited, 3 paperback books cost \$18. What would 7 books cost? How many books could be purchased with \$54?	If it took 7 hours to mow 4 lawns, then, at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?	Assuming that each day of the year is equally likely to be born on, what is the probability that someone is born on February 29th? How many people in the US would you expect to have been born on 2/29?	YOU DID IT! Please bring your journal to your seventh grade teacher on the first day of school!	

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# My Summer Math Journal

Name \_\_\_\_\_

Please decorate the cover of your journal with drawings or images that reflect you.

July recording sheet

Monday	Tuesday	Wednesday	Thursday	Friday
1	2	3	4	5
8	9	10	11	12
15	16	17	18	19
22	23	24	25	26
29	30	31		

August recording sheet

Monday	Tuesday	Wednesday	Thursday	Friday
			1	2
5	6	7	8	9
12	13	14	15	16
19	20	21	22	23
26	27	28	29	30

