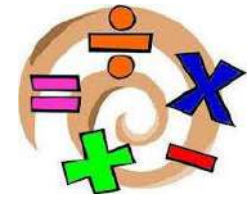




## Summer Math Activities for Students Entering Grade 6 Gates Middle School



Dear Rising 6th Grader,

We are excited for you to be coming to the Gates Middle School in September! The following problems and websites are designed to allow you to practice your math skills throughout the summer in an effort to keep your skills sharp so you will be ready to start 6th grade math with a fresh math brain!

The questions correspond to the Massachusetts Mathematics Curriculum Frameworks that you studied in 5th grade: Operations and Algebraic Thinking, Number and Operations in Base Ten, Number and Operations-Fraction, The Number System, Measurement and Data, and Geometry.

The questions also focus on the processes and proficiencies of becoming a successful mathematician called The Standards for Mathematical Practice:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

The problems are designed so you work on them gradually over the course of the summer, rather than waiting until the end of August or doing them all at the beginning of July. For every week in July and August there are 5 activity questions on the calendar plus 1 multi-step performance task. If done gradually, the activities and tasks should be very manageable, so please plan accordingly. You may use additional paper to work on problems if you need to do so. **Please do your best and show all your work; remember this work will be our first glimpse of who you are as a student!**

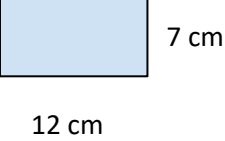
If you need help with any of the math concepts a few good math websites are: [www.mathisfun.com](http://www.mathisfun.com), [www.mathplayground.com](http://www.mathplayground.com), [www.virtualnerd.com](http://www.virtualnerd.com), and [www.khanacademy.com](http://www.khanacademy.com).

Completed packets are due the first day of school and they will count toward your first trimester grade. Additionally, there will be an assessment on this material after students have had a chance to correct answers and ask questions.

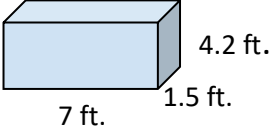
We hope you have a relaxing and safe summer and we look forward to meeting you in the fall!

Sincerely,  
*The Gates Grade 6 Math Teachers*

## July Summer Math Calendar - Rising 6th Graders

	<u>Monday</u>	<u>Tuesday</u>	<u>Wednesday</u>	<u>Thursday</u>	<u>Friday</u>	
	<b>Activity 1</b> Order these fractions from least to greatest:  $\frac{7}{8}, \frac{3}{5}, \frac{4}{6}, \frac{1}{2}$	<b>Activity 2</b> Simplify: $(2 \times 4) + 300 \div 5$	<b>Activity 3</b> The <i>perimeter</i> of a square is 52 cm. What is the length of each side?	<b>Activity 4</b> Jen is 12. Amy is 13. In 25 years, what will be the <i>product</i> of their ages?	<b>Activity 5</b> Write 347,392 in <i>expanded form</i> .	
	<b>Activity 6</b> List all the <i>factors</i> of: 18  54	<b>Activity 7</b> Write this mixed number as an <i>improper fraction</i> :  $2\frac{4}{5}$	<b>Activity 8</b> Express each fraction as a <i>decimal</i> :  $\frac{4}{10}, \frac{37}{100}, \frac{13}{1,000}$	<b>Activity 9</b> What is the <i>value</i> of the 7 in the number 472,085?	<b>Activity 10</b> Evaluate: $5.7 + 6.09 =$  $9.03 - 1.5 =$  $5.5 - 3.01 =$	
	<b>Activity 11</b> Round to the place value highlighted in <b>bold</b> :  <b>6</b> ,708 8. <b>9</b> 6 8 <b>0</b> 3,985 0.7 <b>4</b> 4	<b>Activity 12</b> Multiply:  $\frac{4}{6} \times 2 =$	<b>Activity 13</b> Write in <i>standard form</i> :  $(6 \times 100) + (5 \times 10) + (3 \times 1) + (4 \times \frac{1}{10}) + (3 \times \frac{1}{100})$	<b>Activity 14</b> Find the <i>area</i> :  	<b>Activity 15</b> Order the following from least to greatest:  0.03, 1.01, 0.9, 0.905	
	<b>Activity 16</b> If 1,000 pencils cost \$20, how much would ten pencils cost?	<b>Activity 17</b> Solve:  $\begin{array}{r} 324 \\ \times 4.5 \\ \hline \end{array}$	<b>Activity 18</b> What is the largest multiple of 4 that is less than 30?	<b>Activity 19</b> $1\frac{3}{4}, 3\frac{1}{2}, 7, \underline{\quad}, 28$  In the pattern above, what number belongs between 7 and 28?	<b>Activity 20</b> Simplify: $\frac{6}{8} =$  $\frac{15}{25} =$ $\frac{8}{24} =$	

## August Summer Math Calendar - Rising 6th Graders

	<u>Monday</u>	<u>Tuesday</u>	<u>Wednesday</u>	<u>Thursday</u>	<u>Friday</u>	
	<b>Activity 1</b> You have a \$10 gift card to spend on iTunes. You buy an app for \$4.99 and a new music single for \$2.99. How much should be left on the card?	<b>Activity 2</b> Tyler and Madison buy a pizza that is cut into 8 equal slices. If Bill eats $\frac{1}{8}$ , and Carol eats $\frac{1}{4}$ , how many eighths of the pizza are left?	<b>Activity 3</b> I bought a bag of 60 lollipops. I kept 3 and gave the rest to my 3 friends. They divided the lollipops equally among themselves. How many did each friend get?	<b>Activity 4</b> Find the <b>area</b> of a square with a perimeter of 20 inches.	<b>Activity 5</b> $3,477 + b = 3,500$ What is the value of <b>b</b> ?	
	<b>Activity 6</b> Write the decimals as fractions in <b>simplest form</b> .  0.55      3.5      2.42	<b>Activity 7</b> If 4 mint chocolates cost \$1.00, how many can you get for \$5.00?	<b>Activity 8</b> Calculate the <b>volume</b> :  7 ft.      1.5 ft.      4.2 ft.	<b>Activity 9</b> Devin bought a roll of ribbon to make bows for his gift boxes. There were 132 inches of ribbon. How many <b>feet</b> of ribbon is that?	<b>Activity 10</b> Solve: $\begin{array}{r} 460 \\ \times 50 \\ \hline \end{array}$	
	<b>Activity 11</b> Solve: $7\frac{1}{5} - 2\frac{4}{15} =$	<b>Activity 12</b> Six friends have 4 sandwiches to share. What fraction of a sandwich will each person get?	<b>Activity 13</b> Place <b>parentheses</b> in the following equation to make it <b>true</b> : $6 + 6 \div 6 \times 6 - 6 = 0$	<b>Activity 14</b> Tom built a pen for his new puppy. The length of the pen was $6\frac{1}{4}$ meters and the width was 4 meters. What is the <b>area</b> of the pen?	<b>Activity 15</b> Solve: $25.5 \div 0.5 =$	
	<b>Activity 16</b> Box A is 2 cm high, 3 cm wide, and 5 cm long. Box B has twice the height, 3 times the width and the same length as Box A. What is the difference in <b>volume</b> of the 2 boxes?	<b>Activity 17</b> You have $2\frac{5}{8}$ pizzas to share equally with 3 people. How much pizza will each person get?	<b>Activity 18</b> A California condor has an approximate wingspan of 108 inches. How many <b>yards</b> is that?	<b>Activity 19</b> If you buy 3 books at \$3.95 each, how much change would you get from a twenty dollar bill?	<b>Activity 20</b> Evaluate: $2 \times (5 + 3 \times 2 + 4)$	
	<b>Activity 21</b> On Saturday $\frac{3}{4}$ of a 5th grade class went to see a movie. If $\frac{1}{2}$ of the class went to the afternoon show, what fraction of the class went in the evening?	<b>Activity 22</b> If you spend \$100.00 a day, how many days will it take to spend 1 million dollars?  About how many <b>years</b> is that?	<b>Activity 23</b> Is a 3 gallon pitcher large enough to hold 25 pints of lemonade? <b>Explain.</b>	<b>Activity 24</b> A rectangle is twice as long as it is wide. Its width is $5\frac{1}{2}$ cm. Find the <b>area</b> of the rectangle.	<b>Activity 25</b> Susie has 3 cups of almonds. She splits the 3 cups into $\frac{1}{3}$ -cup servings. What is the total number of servings Susie has?	

# July Summer Math Calendar ANSWERS - Rising 6th Graders

<u>Monday</u>	<u>Tuesday</u>	<u>Wednesday</u>	<u>Thursday</u>	<u>Friday</u>
Activity 1	Activity 2	Activity 3	Activity 4	Activity 5
Activity 6	Activity 7	Activity 8	Activity 9	Activity 10
Activity 11	Activity 12	Activity 13	Activity 14	Activity 15
Activity 16	Activity 17	Activity 18	Activity 19	Activity 20

## August Summer Math Calendar ANSWERS - Rising 6th Graders

<u>Monday</u>	<u>Tuesday</u>	<u>Wednesday</u>	<u>Thursday</u>	<u>Friday</u>
Activity 1	Activity 2	Activity 3	Activity 4	Activity 5
Activity 6	Activity 7	Activity 8	Activity 9	Activity 10
Activity 11	Activity 12	Activity 13	Activity 14	Activity 15
Activity 16	Activity 17	Activity 18	Activity 19	Activity 20
Activity 21	Activity 22	Activity 23	Activity 24	Activity 25

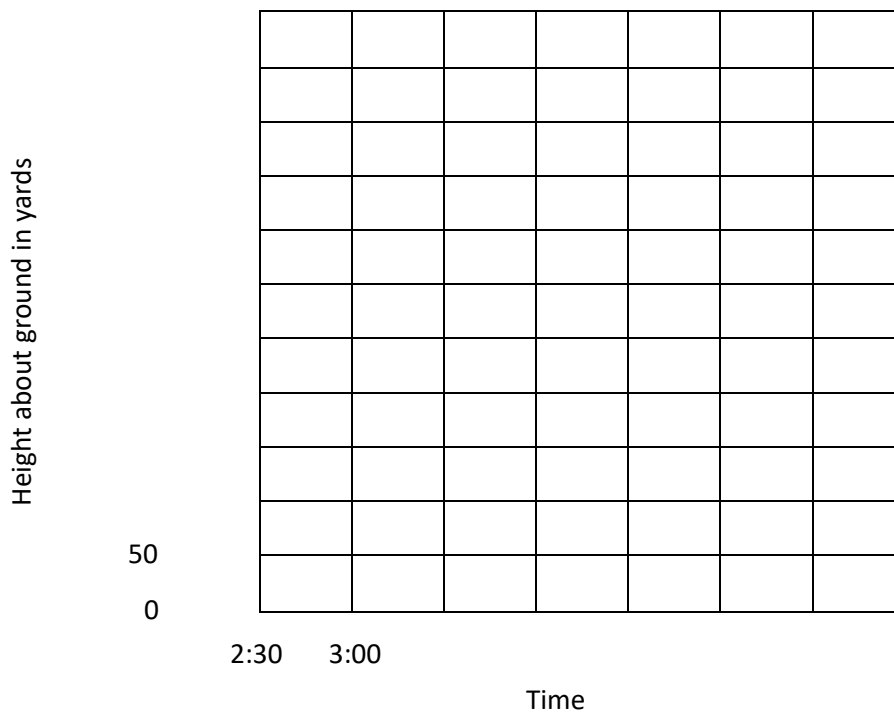
# WEEK 1 - PERFORMANCE TASK

## Grandma's Balloon Trip

On her eightieth birthday, Sarah's grandma went for a trip in a hot air balloon. The table below shows the schedule of the trip.

Time	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00
Height above the ground in yards	0	150	250	350	500	250	100	0

1. Finish labeling the axes and draw a line graph to show the balloon trip.



2. For about how long did the balloon stay above 250 yards? \_\_\_\_\_

3. At about what time do you think the balloon rose to 400 yards? Explain how you figured this out.

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4. At about what height do you think the balloon was at 5:50? Explain how you figured this out.

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## WEEK 2 - PERFORMANCE TASK

### It's Pay Day!



Mr. Harvey would like to offer you a job. He will hire you for ten days. He will pay you one of three ways:

1. \$2.00 the first day, \$4.00 the second day, \$6.00 the third day, and so on.
2. \$0.50 the first day, \$1.00 the second day, and each day after will be double the day before.
3. \$6 a day for each of the ten days.

Which way would you choose? Explain why and show the work you completed to reach your decisions.

## WEEK 3 - PERFORMANCE TASK

### It's Cookie Time!

A recipe for chocolate chip cookies makes 4 dozen cookies and calls for the following ingredients:



$1\frac{1}{2}$  C margarine

12 oz chocolate chips

$1\frac{3}{4}$  C sugar

2 eggs

1 t vanilla

$\frac{1}{4}$  t salt

$3\frac{1}{4}$  C flour

1 t baking soda

1. How much of each ingredient is needed to make 3 recipes? How many cookies will 3 recipes make?

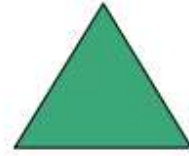
2. How much of each ingredient is needed to make  $\frac{3}{4}$  of a recipe? How many cookies will  $\frac{3}{4}$  of a recipe make?



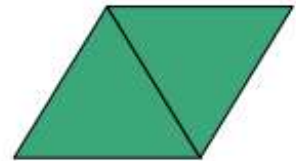
## WEEK 4 - PERFORMANCE TASK

### Rearrange the Room!

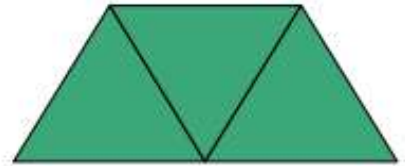
Your classroom has triangular shape tables.  
Three students can sit around one table.



1. Two tables can be pushed together so that two sides are adjacent. How many students can sit around the tables in this arrangement? \_\_\_\_\_



2. Tables can be added to the arrangement by pushing together tables so that each additional table is adjacent to one side of the row of tables. The arrangement may grow to be a long row of tables. How many students can sit around three tables in this arrangement? \_\_\_\_\_



3. How many students can sit around five tables in a row arrangement?

4. Determine how many students can sit around twelve desks in a row without drawing the arrangement. Explain how you figured it out.

5. How many tables in a row would you need to seat 105 students?

## WEEK 5 - PERFORMANCE TASK

### Sewing Station

Amy is sewing some pants for herself. This is the rule for how much fabric she needs to buy:

- Measure from your waist to the finished length of the pants
- Double this measurement
- Add 8 inches



1. Amy's measurement from her waist to the finished length of the pants is 35 inches.

How many inches of fabric does she need? \_\_\_\_\_

2. Fabric is actually not sold in inches, but it is sold in yards. Each yard is 36 inches. The smallest amount you can buy is a quarter of a yard. If you want one yard and 25 inches of fabric, you have to buy one and three quarter yards.

How much fabric must Amy buy for the pants? \_\_\_\_\_

3. Chris is also making some pants and buys fabric, thread, buttons and a zipper. Complete Chris' bill below:

	\$
$2\frac{1}{4}$ yards of fabric at \$5 per yard	
2 spools of thread at 35 cents per spool	
3 buttons at 25 cents each	
1 zipper at 60 cents each	
Total before sales tax	
Sales tax at 6.25% (round to the nearest cent)	
<b>TOTAL</b>	

## WEEK 6 - PERFORMANCE TASK

### Meerkat Manor!

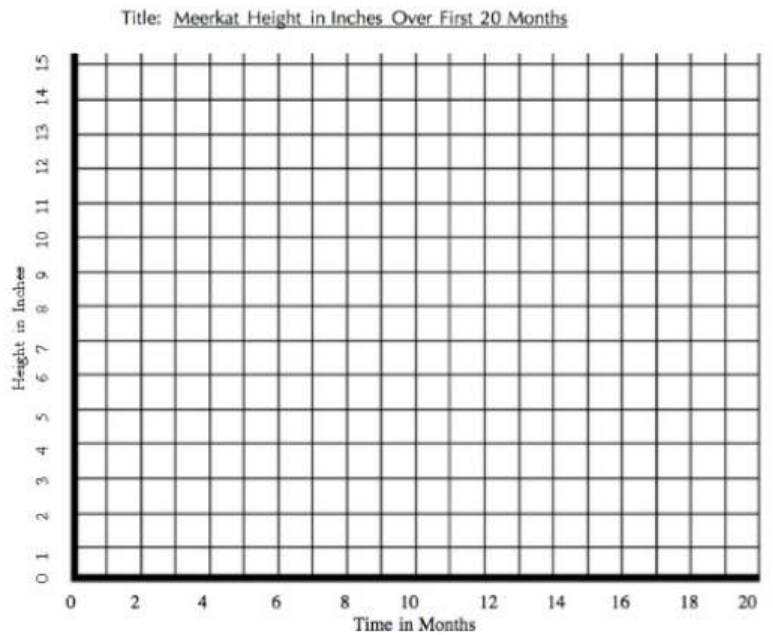
Greetings from the Kalahari Desert in South Africa where the meerkats live, Kalahari's most playful residents!

1. The following ordered pairs show the height of a typical meerkat at different times during the first 20 months of life. Graph the corresponding points and see what you can discover about meerkats. Once you have graphed them all, connect the points in the order they are given to form a line graph.



See if you can graph these ordered pairs:

- (0 months, 3 inches)
- (2 months, 5 inches)
- (4 months, 6 inches)
- (6 months, 7 inches)
- (8 months, 8 inches)
- (10 months, 9 inches)
- (12 months, 10 inches)
- (14 months, 12 inches)
- (16 months, 12 inches)
- (18 months, 12 inches)
- (20 months, 12 inches)



2. What does the point (0 months, 3 inches) mean for a typical meerkat's height?
3. How tall do you think a typical meerkat gets? Why?
4. At what age do meerkats reach their full height? How do you know from this graph?
5. If this graph were about a human instead of a meerkat, at what age do you think the height would stop getting larger?

## WEEK 7 - PERFORMANCE TASK

### Carla's Cats

Carla has 3 cats: Sammy, Tommy and Suzi



1. Carla feeds them Cat Crunchies. Each day Sammy eats  $\frac{1}{2}$  of the box, Tommy eats  $\frac{1}{8}$  of the box and Suzi eats  $\frac{1}{4}$  of the box. What fraction of a whole box do the cats eat, in all, each day? \_\_\_\_\_ Show how you figured this out.

2. Tommy and Suzi spend much of each day sleeping. Tommy sleeps for  $\frac{3}{5}$  of the day and Suzi sleeps for  $\frac{7}{10}$  of the day. Which of the two cats sleeps for longer? \_\_\_\_\_

How much longer does the cat sleep each day? \_\_\_\_\_

Show how you figured this out.

3. Carla's cats often share a carton of cat milk. Sammy always drinks  $\frac{1}{3}$  of the carton, Tommy always drinks  $\frac{5}{12}$  of the carton, and Suzi always drinks  $\frac{1}{6}$  of the carton. What fraction of the carton of cat milk is left over? \_\_\_\_\_

Show how you figured this out.



## WEEK 8 - PERFORMANCE TASK



### London Olympics

The table below shows the results of the Men's 100 Meter Freestyle Final at the London 2012 Olympics.

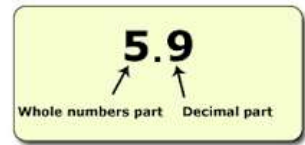
Country	Time (in seconds)
Australia	45.53
Brazil	47.92
Canada	47.8
Cuba	48.04
France	47.84
Netherlands	47.88
Russia	48.44
United States	47.52

1. Put the countries in order from first to last place.
2. Mackenzie said that if Michael Phelps had swum this race with a time of 48.5 seconds, he would have gotten the gold medal. What misconception does Mackenzie have? Explain.
3. Who was faster Russia or Netherlands? By how much?
4. Who was slower Brazil or Canada? By how much?
5. What was the average racing time?



## WEEK 9 - PERFORMANCE TASK

### Number Ninja



1. Look at the following number, answer the questions about it, and explain your reasoning: 3.462

- Is it closer to 3 or 4?
- Is it closer to 3.4 or 3.5?
- Is it closer to 3.46 or to 3.47?

2. Use a number line to record all of the numbers below.

3.462    3    4    3.4    3.5    3.46    3.47

3. Is 7.5 closer to 7 or 8? Would you round this number to 7 or 8? Why?

4. A number rounded to the nearest hundredth place is 5.64. Make a list of at least 8 possible numbers that can round to 5.64. Explain your thinking