



Summer Math Learning Packet

Students entering Pre-Algebra-8

The daily activities in this summer math packet will review math concepts and skills of the grade that has just been completed during the prior school year. Just a few minutes each day spent “thinking and talking math” will help reinforce the math that has been learned and begin to bridge the foundation for extending to the concepts that will be developed next year. 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 math practice in this summer packet addresses the Fairfield Public School Curriculum for Mathematics which incorporates the Common Core Standards addressing these 4 critical areas in the Math-7 course:

- 1) Developing understanding of and applying proportional relationships
- 2) Developing understanding of operations with rational numbers and working with expressions and linear equations
- 3) Solving problems involving scale drawings and informal geometric constructions, and working with two- and three dimensional shapes to solve problems involving area, surface area, and volume
- 4) Drawing inferences about populations based on samples.

The packet consists of 2 calendar pages, one for June/July and one for August, as well as directions for math games to be played at home. Literature, worksheets, APPs 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.

Educational and Fun APPS and Websites to Practice Math

Student Accountability

I spent at least 10 minutes a day, 4 to 5 times a week, practicing math. I completed at least 250 – 300 minutes of math practice over the course of the summer. I recorded my minutes on the tracking sheet. I returned the recording sheet to my 8th grade math teacher. I also showed my teacher my journal where I kept track of my mathematical thinking.

Student Signature

Date

Websites:	Great Math Books to Read:
<p>Here are websites that you can access at the Fairfield Public Library if you do not have a computer at home. You can record your activity on the "Create Your Own Summer Math Calendar!" sheet provided.</p> <p>http://www.ixl.com/ 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.figurethis.org/index.html http://www.thinkingblocks.com/ http://mathplayground.com/ http://illuminations.nctm.org/activitysearch.aspx</p>	<p><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 Moranville <u>Guinness Book of Records</u> by Time Inc <u>Mathematicians are People Too</u> by Luetta Reimer & Wilbert Reimer</p>

APPS to Practice Math!

This is a great, fun way to get practice with math skills on a smartphone or iPad. Many of these Apps are free or inexpensive. There are lots of other apps out there, but these are some of our favorites.

<p>APPS Nine Gaps Khan Academy Math Zombie Math Bingo Math Hunt Symmetry Shuffle Kakooma Deep sea duel Pick a path Lobster diver Math matrix Middle School Math HD</p>	<p>APPS iCut Deluxe Math Doodles Flash to Pass Sumdog Sushi Monster, Slice It! Ratio rumble Chicken coop fractions Zoom math Super 7 Pizza shop and slide 1000</p>
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Worksheets to Practice Math

<http://www.commoncoresheets.com/>

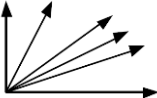
Pre-Algebra-8 Summer Work Calendar

June/July

End of June/First Week of July	<p>Day 1 Mia's cell phone plan: \$15 a month plus free texts plus \$0.20 per minute of call time. Mia made 30 minutes of calls this month, and 110 texts. How much does she have to pay?</p>	<p>Day 2 Which is a better price? Why? a. 15oz. for \$1.79 b. 12 oz. for \$1.49</p>	<p>Day 3 33.3% is the answer. What could the question possibly be? Challenge yourself to think of more questions.</p>	<p>Day 4 Go to website: http://nrich.maths.org/public/leg.php?code=71&cl=3&cldcmpid=5864 and use reasoning and proof to solve the problems.</p>	<p>Day 5 Place the numbers -2, -1, 0, 1, 2 in the circles in the diagram so the sum of the numbers in each direction is the same.</p> <div style="text-align: center;"> $\begin{array}{ccc} \bigcirc & \bigcirc & \bigcirc \\ & \bigcirc & \\ & & \bigcirc \end{array}$ </div>
Week 2	<p>Day 6 There are three choices of jellybeans: <i>grape, cherry and orange</i>. If the probability of getting a grape is $\frac{3}{10}$ and the probability of getting cherry is $\frac{1}{5}$, what is the probability of getting orange?</p>	<p>Day 7 Twice a number (n) minus nine is ninety-five. Find the number (n).</p>	<p>Day 8 Try a new activity at http://www.coolmath4kids.com/. Challenge yourself. What did you chose to do?</p>	<p>Day 9 A menu has these options for sandwiches: 3 types of bread, 4 meat choices, 5 topping choices. How many possible sandwiches can be made? Can you create a different menu with the same outcome?</p>	<p>Day 10 Solve: $45 \div (-9) =$ $(-105) \div (-15) =$</p>
Week 3	<p>Day 11 Look up a math topic and read about the history. Who discovered it? How was it used? Ex. pi, gallons, metric...</p>	<p>Day 12 Joe has an 80:1 scale-drawing of the floor plan of this house. On the floor plan, the dimensions of his rectangular living room are $1\frac{7}{8}$ inches by $2\frac{1}{2}$ inches. What is the area of the living room in square feet?.</p>	<p>Day 13 Write an expression for the sequence of operations. Add 3 to x, subtract the result from 1, then double what you have.</p>	<p>Day 14 Visit the website http://nlvm.usu.edu/en/nav/vlibrary.html . Challenge yourself with fun activities! List them.</p>	<p>Day 15 If the product of 6 integers is negative, at most how many of the integers can be negative?</p>
Week 4	<p>Day 16 Games Unlimited buys video games for \$10. The store increases the price 300%. What is the price of the video game?</p>	<p>Day 17 Go to http://nrich.maths.org/public/leg.php?code=218&cl=3&cldcmpid=5864 website, and play a probability game.</p>	<p>Day 18 Using a grocery store receipt, figure what percentage of the bill was spent on vegetables, meat, drinks, junk food ...</p>	<p>Day 19 Can a triangle have more than one obtuse angle? Will three sides of any length create a triangle?</p>	<p>Day 20 Describe situations in which opposite quantities combine to make 0.</p>
Week 5	<p>Day 21 The pages of a book are numbered consecutively from 1 to 275. How many times is the digit 8 used in numbering the pages?</p>	<p>Day 22 Add: $2 + (-3) =$ $(-2) + (-3) =$ $(-2) + 3 =$</p>	<p>Day 23 A circle has a circumference of 28π centimeters (cm). What is the area, in cm, of this circle? Show all work necessary to justify your response.</p>	<p>Day 24 Choose a favorite professional athlete and research his/her annual salary. How much does s/he earn in a month? A day?</p>	<p>Day 25 Choose a geometry activity at Math Illuminations http://illuminations.nctm.org/activitysearch.aspx Record what you did.</p>

Pre-Algebra-8 Summer Work Calendar

August

Week 6	Day 26 Using a receipt, find the mean, median, and mode of the prices of the items on the receipt from a store (grocery, clothing ...)	Day 27 Solve: $3w + 2 = 20$ Can you write a real world problem that this equation represents?	Day 28 Joe has a bag containing 8 red sweets, 9 yellow ones and 11 green. He takes out a sweet and eats it, then, he takes out a second sweet. What is the probability that both the sweets are red?	Day 29 Visit the website: http://nrich.maths.org/secondary-lower and play a game with positive and negative integers	Day 30 Play a strategy game. Ex. Monopoly, Parcheesi, Mancala, Connect Four ... What strategy did you use?
Week 7	Day 31 Look up a famous math person and read about him/her. What did s/he discovered? How was it used? Ex. Fibonacci, Pythagoras ...	Day 32 Play Sudoku from the newspaper How did logic help you to solve the puzzle?	Day 33 Visit the website Figure this and look for a real life math challenge. http://www.figurethis.org/index.html	Day 34 George's weekly pay rate is \$455 per week. He receives a 20% raise. What is his new weekly wage rate?	Day 35 $m\angle A = 13^\circ$ and $m\angle B = 77^\circ$ Are the angles complementary?
Week 8	Day 36 visit the website: http://nrich.maths.org/5864 and play <i>Connect Three</i> with positive & negative integers..	Day 37 Calculate: $7 \times 8 =$ $(-7) \times 8 =$ $(-7) \times (-8) =$	Day 38 Find the area of a circle if the diameter is 20 feet.	Day 39 Dave buys 2 pineapples and some bananas. One pineapple is \$2.99. Bananas are \$0.67 per lb. He wants to spend less than \$10.00. Write an inequality that represents the number of pounds of bananas, b , he can buy.	Day 40 Dan's salary is \$70 less than Sam's, whose weekly salary is \$50 more than Jen's. If Jen earns \$280 per week, how much money does Dan earn per week?
Week 9	Day 41 In the following equation, a and b are both integers, find their value: $a(3x - 8) = b - 18x$	Day 42 Make a paper airplane and fly it several times. Find the mean, median, and mode of the distance your plane can fly.	Day 43 May 1st Jay's mom gives him 1 cent. Each day, she pays double the amount she paid the day before. How much money did Mike earn in total by May 15?	Day 44 How many pairs of adjacent angles occur in this configuration of 6 rays? Explain your results. 	Day 45 YOU DID IT! Please bring your journal to your eighth grade teacher on the first day of school!

Date	Website (Give Name)	Activity	Content Focus	Book Name (Give Name)	Minutes Worked	Parent Initial
7/2/14	nrich.maths.org	Coin Tossing Game	Experimental Probability	---	15 minutes	PLR

Date	Website (Give Name)	Activity	Content Focus	Book Name (Give Name)	Minutes Worked	Parent Initial
8/5/14	nrich.maths.org	Flippin' Discs	Experimental Probability	----	15 minutes	PLR

Pre-Algebra-8 Answer Key

Answers will vary for many of the activities depending on the choices students make. Here are the answers for activities with specific solutions.

Day 1

$$15 + (0.20 \times 30) = 21$$

$$15 + 6 = 21$$

She has to pay the phone company \$21

Day 2

15 oz. for \$1.79 is a better value as it is \$0.11 per oz. and 12 oz. for \$1.49 is \$0.12 per oz.

Day 3

Example: A store is having a $\frac{1}{3}$ off all merchandise sale. What percent off would that be?

Day 5

Possible answer:

$$-2 \quad 0 \quad 2$$

$$1$$

$$-1$$

Day 6

The probability of getting an orange jelly bean is $\frac{1}{2}$.

Day 7

$$2n - 9 = 95$$

$$n = 52$$

Day 9

There are 60 possible sandwiches. Use the counting principle ($3 \times 4 \times 5 = 60$), or make a table, or tree diagram.

Answers will vary for creating a different menu.

Examples:

$$2 \times 2 \times 15$$

$$2 \times 3 \times 10$$

Day 10

$$45 \div (-9) = -5$$

$$(-105) \div (-15) = 7$$

Day 12

The dimensions of the real living room in inches are:

$$80 \times 1 \frac{7}{8} = 150$$

$$80 \times 2 \frac{1}{2} = 200$$

The area of the real living room is $150 \text{ in} \times 200 \text{ in} = 30,000 \text{ in}^2$.

To convert square inches to square feet, you have to divide by $12^2 = 144$.

$$30,000 \div 144 = 208 \frac{1}{3}$$

So the area of the living room is $208 \frac{1}{3} \text{ ft}^2$.

Day 13

$$2[1 - (x + 3)]$$

Day 15

Any ODD number of negative integers will lead to a negative answer, therefore with the limit being 6, the answer will be 5.

Day 16

Using proportional reasoning, if \$10 is 100% then what amount would be 300%? Since 300% is 3 times 100%, \$30 would be \$10 times 3. Thirty dollars represents the amount of increase from \$10 so the new price of the video game would be \$40.

Day 19

No, a triangle cannot have more than one obtuse angle. An obtuse angle is a measurement that is greater than 90 degrees. When all the interior angles of a triangle are added together, they must add up to 180 degrees. No, the sum of the two smaller sides must be larger than the third side.

Day 20

Example:

You borrow \$10 from a friend and then you pay your friend back.

Day 21

The number 8 will occur 47 times.

Day 22

$$2 + (-3) = -1$$

$$(-2) + (-3) = -5$$

$$(-2) + 3 = -1$$

Day 23

First, find the radius: $r = 28\pi/2\pi = 14 \text{ cm}$.

Then find the area:

$$A = \pi(14^2) = 196\pi \text{ cm}^2.$$

OR

$$A \approx (3.14)(14^2) \approx 615.44 \text{ cm}^2.$$

Day 27

$$w = 6$$

Day 28

$$8/28 \times 7/27 = 8/108$$

Day 34

$$\$455 \times 1.20 = \$546.00$$

Day 35

The two angles are complimentary. Complimentary angles add up to 90 degrees.

Day 37

$$7 \times 8 = 56$$

$$(-7) \times 8 = -56$$

$$(-7) \times (-8) = 56$$

Day 38

The area of the circle would be 314 ft²

Day 39

$$b < 6$$

Day 40

Dan earns \$260 per week

Day 41

$$a = -6$$

$$b = 48$$

Day 43

$$2^{16} - 1 = 165,535$$

Day 44

Notice that adjacent angles are not all composed from adjacent rays. But a pair of adjacent angles is determined by three rays and each collection of three rays determines a different pair of adjacent angles. Thus, each small angle has four adjacent angles. In all, there are 20 adjacent angles.