



## **Grade 7 → 8 Summer Homework Math Package**

It is important that you keep practicing your mathematical Knowledge over the summer to be ready for **8<sup>th</sup> grade**. In this Package you will find a calendar of activities for the month of July and August.

What should you do?

- Take a new notebook for every-day practice. For each day you will need 2 pages;
- Start each day with vocabulary words: copy each word from the given day-list, find and write the meaning of each word in your notebook on the front page (pages 1,3,5, . . . and so on):

[www.amathsdictionaryforkids.com/dictionary.html](http://www.amathsdictionaryforkids.com/dictionary.html)

- Use the internet to find the meaning of each word you do not know;
- Solve the problem of the day and write the solution with full explanation on the back page (pages 2,4,6,. . . and so on);
- Have the date of the entry. Have a clear and complete answer. Be neat and organize.
- Do not forget to bring your notebook to school on September 1, 2015 - the first school day.

**Have a Great Summer!!**


# Big Apple Academy


# Mathematics Department

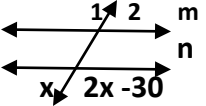
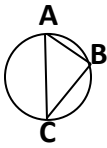
<div style="background-color: black; color: white; padding: 5px; display: inline-block;"><b>July</b></div> <b>7 → 8</b>  <b>Monday 29</b> <b>Tuesday 30</b> <b>Wednesday 1</b> <b>Thursday 2</b> <b>Friday 3</b> <b>Saturday 4</b>		Counting numbers Whole numbers Integers Rational numbers Order of operation	Inequalities Rules for inequalities	Unit Price Markup Markdown Commissions	Prime numbers Prime factorization	Pythagorean theorem Area	<b>Incoming 8<sup>th</sup> Grade</b>
Expression Evaluation of the expression  <b>6</b>	Monomials Binomials Trinomials Factoring  <b>7</b>	System of equations Substitution Elimination Solution  <b>8</b>	Perimeter Square Rectangle  <b>9</b>	Variable Input Output Function  <b>10</b>	Range Mean Mode Median Central tendency  <b>11</b>	<b>Summer Home Work VOCABULARY</b>	
Slope y-intercept Slope-intercept form Linear equation Rate of change  <b>13</b>	Divisibility Divisibility rules Proof  <b>14</b>	Area of the triangle Coordinate plane Quadrant  <b>15</b>	Number line Graphing the solution of inequality  <b>16</b>	Write 3 distinct integers, 3 distinct rational numbers and 3 distinct irrational numbers.  <b>17</b>	Consecutive Angles of the triangle Postulates Theorems  <b>18</b>		
Like terms Polynomials  <b>20</b>	Percent Discount  <b>21</b>	Scientific notation Negative exponent  <b>22</b>	Equation Roots  <b>23</b>	Circle Inscribed circle Radius Circumference  <b>24</b>	Average Sum  <b>25</b>		
Line Line segment Distance  <b>27</b>	Factor Common Factor Factoring formulas  <b>28</b>	Algebraic expression Evaluation of algebraic expression  <b>29</b>					

# Big Apple Academy

# Mathematics Department

<div style="background-color: black; color: white; padding: 5px; text-align: center; font-weight: bold; font-size: 1.5em;">July</div> <p style="text-align: center; font-weight: bold; font-size: 1.2em;">7 → 8</p> <p style="text-align: center;">Monday 29      Tuesday 30      Wednesday 1      Thursday 2      Friday 3      Saturday 4</p>	<p>Simplify: <math>2^4 - 3 - (8 - 1) \cdot 4</math></p>	<p>What is the value of k, if <math>0.6 &lt; (k \div 7) &lt; 0.8</math></p>	<p>What is the better price? (A) 15 oz for \$1.81 (B) 12 oz for \$1.52</p>	<p>Find the sum of the first 11 prime numbers.</p>	<p>Find the area of the right triangle with the hypotenuse of 13 inches and one leg of 5 inches.</p>	<h2 style="margin: 0;">Incoming 8<sup>th</sup> Grade</h2>															
<p>Place parenthesis in the following equation to make it true: <math>7+7-7 \div 7 +7 \cdot 7 = 7</math></p> <p style="text-align: right;"><b>6</b></p>	<p>Solve for x: <math>3x^2 - 5x - 2 = 0</math></p> <p style="text-align: right;"><b>7</b></p>	<p>Solve graphically the system of equations: <math>Y = 2x^2 - 2x + 5</math> <math>Y + 2x = 6</math></p> <p style="text-align: right;"><b>8</b></p>	<p>Find the area of the square which has the same perimeter as a rectangle 12 by 2.</p> <p style="text-align: right;"><b>9</b></p>	<p>Express the variable W in terms of all other variables, if <math>h - 2W = kn + 1</math></p> <p style="text-align: right;"><b>10</b></p>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td style="padding: 2px;">2</td><td style="padding: 2px;">6</td><td style="padding: 2px;">8</td><td style="padding: 2px;">8</td><td style="padding: 2px;">9</td></tr> <tr><td style="padding: 2px;">3</td><td style="padding: 2px;">0</td><td style="padding: 2px;">1</td><td style="padding: 2px;">7</td><td></td></tr> <tr><td style="padding: 2px;">4</td><td style="padding: 2px;">2</td><td style="padding: 2px;">4</td><td style="padding: 2px;">5</td><td></td></tr> </table> <p>Find the range, the mean and the median.</p> <p style="text-align: right;"><b>11</b></p>		2	6	8	8	9	3	0	1	7		4	2	4	5	
2	6	8	8	9																	
3	0	1	7																		
4	2	4	5																		
<p>Write the equation of the line QR, if Q(-1, 2) and R(-4, -4).</p> <p style="text-align: right;"><b>13</b></p>	<p>Show that <math>n^3 - n</math> is divisible by 6 for any integer n.</p> <p style="text-align: right;"><b>14</b></p>	<p>The line <math>2y + 3x = 0</math> cut the triangle out of the 1<sup>st</sup> quadrant. Find the area of this triangle.</p> <p style="text-align: right;"><b>15</b></p>	<p>Graph the solution for <math>2x - 4 \leq 8</math> and <math>x + 5 &gt; 7</math>.</p> <p style="text-align: right;"><b>16</b></p>	<p>Write 3 distinct integers, 3 distinct rational numbers and 3 distinct irrational numbers.</p> <p style="text-align: right;"><b>17</b></p>	<p>Angles of the triangle ABC is the consecutive even numbers. Find the measure of the largest angle.</p> <p style="text-align: right;"><b>18</b></p>																
<p>Subtract <math>4x^2 - x - 1</math> from <math>3x^2 + 6x - 7</math>.</p> <p style="text-align: right;"><b>20</b></p>	<p>The price of the I-phone is \$595 after the discount of 15%. What was the original price?</p> <p style="text-align: right;"><b>21</b></p>	<p>Write in scientific notation form the product of <math>(1.3 \cdot 10^4)</math> and <math>(2.5 \cdot 10^3)</math>.</p> <p style="text-align: right;"><b>22</b></p>	<p>Sam has 20 coins, some of them are dimes and other are nickels. How many dime if the total is \$1.55?</p> <p style="text-align: right;"><b>23</b></p>	<p>The circle is inscribed into an isosceles trapezoid with bases 4 and 16. Find the radius of the circle.</p> <p style="text-align: right;"><b>24</b></p>	<p>The average of 11 consecutive integers is 37. Find the largest integer of the set.</p> <p style="text-align: right;"><b>25</b></p>																
<p style="text-align: center;"> <math>\frac{\cdot}{\cdot} \quad \frac{\cdot}{\cdot} \quad \frac{\cdot}{\cdot} \quad \frac{\cdot}{\cdot}</math>              A      B    C    D              If <math>18 = AC = 3CD</math> and <math>BD = 8</math>, find AB.         </p> <p style="text-align: right;"><b>27</b></p>	<p>Factor completely: <math>16a^2 - 81</math>.</p> <p style="text-align: right;"><b>28</b></p>	<p>If <math>3a = 7</math> and <math>b \div 3 = 1</math>, find the product ab.</p> <p style="text-align: right;"><b>29</b></p>																			

<p><b>August</b></p> <p><b>7 → 8</b></p> <p><b>Monday</b></p>	<p><b>Tuesday</b></p>	<p><b>Wednesday</b></p>	<p><b>Thursday 30</b></p>	<p><b>Friday 31</b></p>	<p><b>Saturday 1</b></p>	<p><b>Incoming 8<sup>th</sup> Grade</b></p>
<p>Simple Interest Compound interest</p> <p><b>3</b></p>	<p>Double inequality Triangular Rule</p> <p><b>4</b></p>	<p>Graphing of the system of inequalities:</p> <p><b>5</b></p>	<p>Exponents Negative exponents Operations with exponents</p> <p><b>6</b></p>	<p>Rate of change Average speed</p> <p><b>7</b></p>	<p>Box-and-whisker plot Quartile Inter-quartile range</p> <p><b>8</b></p>	<p><b>Summer Home Work VOCABULARY</b></p>
<p>Parallel lines Perpendicular lines</p> <p><b>10</b></p>	<p>GCF LCM</p> <p><b>11</b></p>	<p>Parallel lines Transversal Corresponding Interior angles Exterior angles Same side</p> <p><b>12</b></p>	<p>Statement Converse Inverse Contrapositive</p> <p><b>13</b></p>	<p>Probability Frequency Simple event Compound events Tree diagram</p> <p><b>14</b></p>	<p>Quadratic equation Roots of QE</p> <p><b>15</b></p>	
<p>FOIL Simplification</p> <p><b>17</b></p>	<p>The difference of two squares</p> <p><b>18</b></p>	<p>Additive inverse</p> <p><b>19</b></p>	<p>Linear equation</p> <p><b>20</b></p>	<p>Absolute value Exponent</p> <p><b>21</b></p>	<p>Proportion Scale factor Means terms Extremes terms</p> <p><b>22</b></p>	
<p>Central angle Diameter Chord</p> <p><b>24</b></p>	<p>Sequence Terms Arithmetic and Geometric sequences</p> <p><b>25</b></p>	<p>Digit At least At most</p> <p><b>26</b></p>	<p>Perfect squares Square root Cube root Radical Irrational numbers</p> <p><b>27</b></p>	<p>Set Closed set</p> <p><b>28</b></p>	<p>Part Fraction</p> <p><b>29</b></p>	

<b>August</b>							<b>Incoming 8<sup>th</sup> Grade</b>
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<p>If 3% of the number is 27, what is 37% of the same number?</p> <p style="text-align: right;"><b>3</b></p>	<p>What is the value of z, if z is an integer and <math>1 \leq 5 - 2z &lt; 3</math></p> <p style="text-align: right;"><b>4</b></p>	<p>Solve graphically the system of inequalities:  <math>Y \leq -3x - 5</math>  <math>Y &gt; 2x + 4</math></p> <p style="text-align: right;"><b>5</b></p>	<p>By what percent is the price increase from \$4.50 to \$5.40?</p> <p>Simplify:  <math>(-3a^4b^6)^2 =</math>  <math>(-2m^6n^3)^2 =</math></p> <p style="text-align: right;"><b>6</b></p>	<p>Find the sum of the first 5 positive composite numbers.</p> <p>Ann drove 1 hr first 40 mi and the next 60 mile with the speed 30 mph. Find her average speed for the total trip.</p> <p style="text-align: right;"><b>7</b></p>	<p>Find the area of the circle if the sides of the rectangle inscribed into the circle are 3 and 4.</p> <p>2,5,6,6,8,11,16,18            Make a box-and-whisker plot for the given set. Find the interquartile range.</p> <p style="text-align: right;"><b>8</b></p>		<b>Summer Home Work for FUN</b>
<p>Write the equation of the line AB, if AB is perpendicular to CD: <math>y = 5x - 2</math> and <math>A(-5, 2)</math>.</p> <p style="text-align: right;"><b>10</b></p>	<p>Find the greatest common factor and the least common multiple of 735 and 294.</p> <p style="text-align: right;"><b>11</b></p>	 <p><math>m \parallel n</math>;            Find the measure of angle 2.</p> <p style="text-align: right;"><b>12</b></p>	<p>If I will try, I will do it on time. Write converse, inverse and contrapositive for the given statement. Make a truth table.</p> <p style="text-align: right;"><b>13</b></p>	<p>Bob tossed the fair coin and got 80 heads and 19 tails. What is his chance to get a head for the next toss?</p> <p style="text-align: right;"><b>14</b></p>	<p>If 2 and -3 are the roots of the equation <math>x^2 - ax + b = 0</math>, find a + b.</p> <p style="text-align: right;"><b>15</b></p>		
<p>Multiply <math>x^2 - x - 1</math> by <math>x^2 - x + 1</math>.</p> <p style="text-align: right;"><b>17</b></p>	<p>What is the value: <math>2.87^2 - 7.13^2</math></p> <p style="text-align: right;"><b>18</b></p>	<p>Solve algebraically:  <math>x - 5y = 7</math>  <math>x + 2y = 2</math></p> <p style="text-align: right;"><b>19</b></p>	<p>Solve for h:  <math>3(h - 2) - 3(h + 1) = h</math></p> <p style="text-align: right;"><b>20</b></p>	<p>Find the value:  <math> 2 - 11  - 4^2 + 3</math></p> <p style="text-align: right;"><b>21</b></p>	<p>If c% of 420 is 63, what is c?</p> <p style="text-align: right;"><b>22</b></p>		
 <p>AC is a diameter            Find <math>m\angle B</math></p> <p style="text-align: right;"><b>24</b></p>	<p>-3, -1, 1, 3, 5, . . . .            Find the 10<sup>th</sup> term of the sequence.</p> <p style="text-align: right;"><b>25</b></p>	<p>How many four-digits numbers has at least 1 digit 4?</p> <p style="text-align: right;"><b>26</b></p>	<p>Find the numerical value of the square root out of 1%.</p> <p style="text-align: right;"><b>27</b></p>	<p>Find at least one number set of 3 integers, which is closed under division.</p> <p style="text-align: right;"><b>28</b></p>	<p>.....            0 x 0.2            All marks are equally spaced.            Find x.</p> <p style="text-align: right;"><b>29</b></p>		