Name: ____________________

CLA Summer 2018

Rising 6th STEM Stretch Packet

□ Week One (5/29-6/2)
  o PI: __________
  o Addition + Subtraction
  o Multiplication + Division

□ Week Two (6/5-6/9)
  o PI: __________
  o Decimal Division
  o Rounding

□ Week Three (6/12-6/16)
  o PI: __________
  o Prime + Composite
  o Exponents

□ Week Four (6/19-6/23)
  o PI: __________
  o Greatest Common Factor
  o Least Common Multiple

□ Week Five (6/26-6/30)
  o PI: __________
  o Prime Factorization
  o Comparing Fractions

□ Week Six (7/3-7/7)
  o PI: __________
  o Order of Operations

□ Week Seven (7/10-7/14)
  o PI: __________
  o Geometry

□ Week Eight (7/17-7/21)
  o PI: __________
  o Fraction Operations

Parents, please initial (PI) next to each week once you’ve checked your scholar’s work for completion and correctness. Keep up to date on the content each week by checking CLA’s website weekly for math videos and hints as we move through the Summer.
All rising 5th grade scholars are required to complete the STEM summer stretch packet attached along with this letter. Scholars have been assigned different activities and skills based on their strengths and weaknesses in math from their past year in grade 5. It’s therefore very important to complete this packet thoroughly, completely and to the best of your ability. It also is designed to help your scholars keep their mathematical muscle exercised, with different activities to guide them along in their work each week over the summer break.

- Each week, a practice of a concept scholars learned in 5th grade is assigned for review. The top half of each sheet reviews the concept, while the bottom asks your scholar to practice this skill. Visit CLA’s website or Khan Academy.org for direct links to these supports.

This packet is due on the first day of school as the first mastery grade in math class. Students must complete the packet in its entirety (every question should be answered and every blank should be filled in, including work being shown). Students who continue to push themselves academically during breaks do the best in all of their classes; accordingly, students should be thinking, doing, or practicing mathematics in one form or another every day of the summer.

Please contact the office at 216-229-8185 or e-mail michael.slopnick@citizensleadership.org if you have any questions or concerns. Check out CLA’s website for weekly math tips and hints aligned to the packets, and check back frequently for updates on Summer math sessions at CLA. Have a wonderful summer and enjoy the puzzlers!

Sincerely,

Ms. Gruhin and Mr. Slopnick

Parents, please initial (PI) next to each week once you’ve checked your scholar’s work for completion and correctness. Keep up to date on the content each week by checking CLA’s website weekly for math videos and hints as we move through the Summer.
Addition
Find the sum of the two numbers in each problem. Show all work.

Example:

\[
\begin{array}{c}
1 \quad 1 \\
+ & \quad 4 \quad 4 \quad 8 \\
--- \\
6 \quad 3 \quad 6 \\
\end{array}
\]

1. 652  
   + 345  
   997 

2. 203  
   + 525  
   728 

3. 726  
   + 268  
   994 

Decimal Addition:
Remember to line up the decimals before adding. Bring the decimal straight down in your answer.

4. 7.75  
   + 1.46  
   9.21 

5. 51.4 + 2.86  

6. .1274 + 8.25  

Subtraction
Find the difference between the two numbers in each problem. Show all work.

Example:

\[
\begin{array}{c}
7 \quad 4 \quad 3 \\
- & \quad 2 \quad 1 \quad 8 \\
--- \\
5 \quad 2 \quad 5 \\
\end{array}
\]

7. 407  
   - 198  
   209 

8. 7,007  
   - 2,426  
   4,581 

9. 3,414  
   - 1,218  
   2,196 

Decimal Subtraction:
Remember to line up the decimals before subtracting. Bring the decimal straight down in your answer.

10. 338.38  
     - 149.27  
     189.11 

11. 80.401 - 44.23  

12. 75.89 - 9.4  

Multiplication
Find the product of the two numbers in each problem. Show all work.

Example:
\[
\begin{array}{c}
54 \\
\times 16 \\
\hline
324 \\
+540 \\
\hline
864
\end{array}
\]

\[
\begin{array}{c}
65 \\
\times 4 \\
\hline
260
\end{array}
\]
\[
\begin{array}{c}
42 \\
\times 8 \\
\hline
336
\end{array}
\]
\[
\begin{array}{c}
84 \\
\times 39 \\
\hline
3314
\end{array}
\]

Decimal Multiplication:
Multiply as you would with whole numbers. Count the decimal places in each factor. The product (answer) has the same number of decimal places.

16. 17. 18.
\[
\begin{array}{c}
.13 \\
\times 70 \\
\hline
9.1
\end{array}
\]
\[
\begin{array}{c}
5.1 \\
\times 2 \\
\hline
10.2
\end{array}
\]
\[
\begin{array}{c}
.103 \\
\times 2.5 \\
\hline
.2575
\end{array}
\]

Division
Find the quotient in each problem. If there is a remainder, state the remainders as R=___. Show all work. Feel free to use a separate sheet of paper.

19. 20. 21.
\[
\begin{array}{c}
7 \div 591 \\
\hline
75.1
\end{array}
\]
\[
\begin{array}{c}
12 \div 264 \\
\hline
22
\end{array}
\]
\[
\begin{array}{c}
43 \div 2815 \\
\hline
0.07
\end{array}
\]
Decimal Division:
If the divisor (outside number) is a decimal, you must move the decimal point (using multiplication) to the right until it becomes a whole number. Then, move the decimal in the dividend (inside number) the same number of times. Divide to find your answer (quotient).
Then, move the decimal straight up from the dividend to the quotient. Remember, no remainders.

22. \[3 \div 1.8\]
23. \[.5 \div 7.45\]
24. \[.12 \div 12.24\]

Rounding
Underline the given place value. Look to the right. If this digit is 5 or greater, increase the underlined digit by 1. If the digit to the right is less than 5, keep the underlined digit the same.

Round to the nearest...

25. tenth
0.3479

26. hundredth
0.7553

27. whole number
3.268

28. ten
162.21

29. thousandth
0.0036

30. hundred
990.54

Compare the decimals.

31. 0.205 \(\bigcirc\) 0.21
32. 1.03 \(\bigcirc\) 0.03
33. 0.04 \(\bigcirc\) 0.050

34. 0.1 \(\bigcirc\) 0.1000
35. 0.52 \(\bigcirc\) 0.500
36. 0.41 \(\bigcirc\) 0.405
**Prime Number:** A whole number greater than 1 that has only two factors, 1 and itself. Examples: 2, 3, 5, 7, 11, 13, 17, and 19 are all prime numbers.

**Composite Number:** A whole number greater than 1 that has more than two factors. Example: 8 is a composite number since its factors are 1, 2, 4, 8.

Determine if the following numbers are prime or composite. If the numbers are composite, please list all of the factors.

37. 27: ________________________________

38. 39: ________________________________

39. 43: ________________________________

40. 49: ________________________________

**Exponents**
A way to show repeated multiplication by the same factor is to use an exponent. In this example: $2^3 = 2 \times 2 \times 2 = 8$. The small raised three is the exponent. It tells how many times the number 2, called the base, is multiplied by itself.

Solve the following expressions by writing the expanded notation (repeated multiplication) and find the value.

41. $6^2$  
42. $2^6$  
43. $3^4$

44. eight squared  
45. five cubed
Greatest Common Factor
The greatest factor that two or more numbers have in common (GCF).
1. List all the factors of four in order
2. List all the factors of twenty in order
3. List the common factors
4. Write the greatest common factor

Finding Common Factors:
4: 1, 2, 4
20: 1, 2, 4, 5, 10, 20
Common Factors: 1, 2, 4 GCF: 4

List all the factors for each number. Circle the common factors.

46. 18: 

30: 
Common Factors: 
Greatest Common Factor: 

47. 60: 

45: 
Common Factors: 
Greatest Common Factor: 

48. 23: 

29: 
Common Factors: 
Greatest Common Factor: 

49. 56: 

72: 
Common Factors: 
Greatest Common Factor: 
Least Common Multiple
The smallest nonzero multiple that two or more numbers have in common.

1. List the first 6 multiples of 4
2. List the first 6 multiples of 6
3. List the common multiples
4. Write the least common multiple.

Finding Common Multiples:
4: 4, 8, 12, 16, 20, 24
6: 6, 12, 18, 24, 30, 36
Least Common Multiple: 12

50. 8: __________________________

12: __________________________

Common Multiples: ______________________ Least Common Multiple: ______

51. 7: __________________________

11: __________________________

Common Multiples: ______________________ Least Common Multiple: ______

52. 25: __________________________

10: __________________________

Common Multiples: ______________________ Least Common Multiple: ______

53. 24: __________________________

36: __________________________

Common Multiples: ______________________ Least Common Multiple: ______
Prime Factorization is a composite number renamed as a product of prime numbers. You may make a factor tree to find the answer. Put final answer in exponent form.

Find the prime factorization of 36.

\[
\begin{array}{c}
36 \\
/ \\
6 \times 6 \\
/ \ \\
2 \times 2 \times 3 \times 3
\end{array}
\]

54. 180

55. 525

56. 91

57. 48
Comparing Fractions
Compare each pair of numbers. Write the correct comparison symbol (<, >, =) in each circle. Make sure you have common denominators before comparing numerators.

Example:
\[
\begin{align*}
\frac{1}{3} & \quad \bigcirc \quad \frac{3}{4} \\
\downarrow & \quad \downarrow \\
\frac{4}{12} & \quad \frac{9}{12}
\end{align*}
\]

58. \[\frac{3}{8} \quad \bigcirc \quad \frac{5}{8}\]
59. \[\frac{3}{4} \quad \bigcirc \quad \frac{3}{8}\]
60. \[\frac{1}{2} \quad \bigcirc \quad \frac{4}{8}\]

61. \[\frac{3}{7} \quad \bigcirc \quad \frac{1}{4}\]
62. \[\frac{3}{5} \quad \bigcirc \quad \frac{5}{6}\]
63. \[\frac{7}{8} \quad \bigcirc \quad \frac{3}{4}\]

Ordering Fractions
Order the following fractions from least to greatest.

64. \[\frac{3}{8} \quad \frac{5}{8} \quad \frac{4}{8} \quad \frac{2}{8} \quad \frac{7}{8}\]
65. \[\frac{1}{5} \quad \frac{4}{5} \quad \frac{1}{10} \quad \frac{6}{10} \quad \frac{7}{10}\]

66. \[\frac{1}{2} \quad \frac{1}{4} \quad \frac{1}{6} \quad \frac{1}{3} \quad \frac{1}{5}\]
67. \[\frac{1}{2} \quad \frac{5}{16} \quad \frac{30}{64} \quad \frac{3}{8} \quad \frac{9}{32}\]
Order of Operations
Solve the following problems. Show your work. Be sure to follow the order of operations.

Parenthesis
Exponents
Multiplication or Division: Which ever comes first from left to right.
Addition or Subtraction: Which ever comes first from left to right.

Example: \[ 8 - 4 \div 2 + 2 = \]
\[ 8 - 2 + 2 = \]
\[ 6 + 2 = \]
\[ 8 \]

68. 15 \times 8 - 3 =
69. 36 \div 4 \times 3 =
70. (30 + 8) \times 6 - 1 =

71. (30 + 8) \times (6-1) =
72. (29 - 18) \div 2 + 6 =
73. 64 \div 8 \times 2

74. 36 - 5 (16 - 11) =
75. 25 + 18 \div 6 - 1 =
76. 24 + 6^2 - 1^4 =
Geometry - Who am I?
Use the following shapes to answer the questions below.

77. I am a 2 dimensional shape that has four sides. I have four 90 degree angles. I have two sets of parallel lines. I also have two sides that are one length, and my other two sides are a different length.

Who am I?_______________________

78. I am a 2 dimensional shape that has three acute angles. All of my sides are the same length. I have no parallel sides.

Who am I?_______________________

79. I am a 2 dimensional shape that has four sides. I have two obtuse angles and two acute angles. I have two different sets of parallel sides. I also have two sides that are one length, and my other two sides are a different length.

Who am I?_______________________

80. I am a 2 dimensional shape that has 5 obtuse angles. I do not have any sides that are parallel.

Who am I?_______________________

81. I am a 2 dimensional shape that has four 90 degree angles. I have four sides that are all the same length. I have two different sets of parallel lines.

Who am I?_______________________

82. I am a 2 dimensional shape. My perimeter is also known as a circumference.

Who am I?_______________________
**Simply Fractions**
Simplify the following fractions. If the fractions are improper, change them to mixed numbers then simplify.

Example: \( \frac{10}{5} = \frac{2}{1} \)
\( \frac{25}{5} = \frac{5}{1} \)

83. \( \frac{14}{28} \)
84. \( \frac{15}{55} \)
85. \( \frac{12}{51} \)

86. \( \frac{34}{48} \)
87. \( \frac{17}{4} \)
88. \( \frac{80}{25} \)

**Adding Fractions and Mixed Numbers**
Add the following fractions. Make sure you have common denominators before adding. Remember, you only add the numerator (top number) and you keep the denominator (bottom number) the same! Simplify your final answers.

Example:
\[ \frac{1}{3} + \frac{1}{5} = \]
\[ \frac{5 + 3}{15 + 15} = \frac{8}{30} = \frac{4}{15} \]

89. \( \frac{6 + 3}{10} = \)
90. \( \frac{2 \frac{3}{8} + 1 \frac{2}{8}}{8} = \)
91. \( \frac{1 + \frac{5}{6}}{9} = \)
92. \( \frac{1 + \frac{2}{3}}{12} = \)
**Subtracting Fractions**

Subtract the following fractions. Make sure you have common denominators before subtracting. Remember, you only subtract the numerator (top number) and you keep the denominator (bottom number) the same! Simplify your final answers.

<table>
<thead>
<tr>
<th>Example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ \frac{5}{6} - \frac{1}{3} = ]</td>
</tr>
<tr>
<td>[ \frac{5}{6} - \frac{2}{6} = \frac{3}{6} = \frac{1}{2} ]</td>
</tr>
</tbody>
</table>

93. \[ \frac{5}{6} - \frac{3}{6} = \]

94. \[ 2\frac{8}{12} - 1\frac{3}{12} = \]

95. \[ \frac{7}{10} - \frac{2}{4} = \]

96. \[ 3\frac{4}{5} - \frac{1}{4} = \]

**Multiplying Fractions**

Multiply the following fractions. Multiply the numerators; then multiply the denominators. Simplify, if necessary.

<table>
<thead>
<tr>
<th>Example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ \frac{3}{5} \times \frac{5}{9} = \frac{15}{45} = \frac{1}{3} ]</td>
</tr>
</tbody>
</table>

97. \[ \frac{3}{4} \times \frac{1}{3} = \]

98. \[ \frac{2}{3} \times \frac{5}{8} = \]

99. \[ \frac{1}{3} \times \frac{2}{5} = \]

100. \[ \frac{7}{8} \times 2 = \]