Carle Place
Summer Math
Target:
Common Core Accelerated Algebra
(8th Grade)
July 1, 2019

Dear Parents:

“If you don’t use it, you lose it.”

We’ve all worked very hard to develop your child’s math skills. When I say “we” I mean you, your child, and your child’s math teacher. As teachers, we know that we can’t do it without you. Please help your son or daughter to work out the problems contained in this workbook and practice the skills necessary to solve them so he or she can “use it” and not “lose it.”

The New York State Education Department is determined to make our math students the best that they can be. Our students must now possess excellent basic skills, develop high level thinking skills and become independent problem solvers with the ability to address new problems effectively. **If your son or daughter is going into the 8th grade Accele rated mathematics program, Carle Place requires the completion of this workbook during the summer.** We have found that, without summer review, we lose far too much precious class time in September reacquainting students with the previous year’s material. We find that if a few minutes are spent, each week during the summer, doing a few problems, students will be able to maintain their math skills. We can then progress much more quickly in September; positively impacting your child’s performance in his or her 8th grade math class, the 8th Grade Assessment and the Common Core Algebra Regents.

**Please be aware that this workbook includes 100 problems. Please do not allow the book to be forgotten, until the last week of summer.** If it is left to the last week there is a smaller probability of retention of the skills and the anticipated good effects will be lost. Note that the answer key in the back of the book is to confirm your child’s answer. It does not provide a sufficient solution. You can help to check understanding by asking your child to explain how he or she came up with that answer and to SHOW THE WORK!! Please don’t allow use of a calculator to solve any of the problems.

The workbook will be checked for completion the first day of school in September. It will be reviewed and students will take their first math test of the new school year, based on the material from the workbook, at the end of September as noted in our school calendar.

Have a great summer!

Sincerely yours,

Joseph Malizia, Director of STEM
1) Factor: 3 - 12y

2) Factor: 12y - 8

3) Factor: 5y + 15

4) Factor: 5y - 25

5) Factor: 48 - 18d

6) Factor: 36 + 12z

7) Factor: 5y - 25

8) Which one of the following tables represents a proportional relationship?

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<th>x</th>
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C) 

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<td>12</td>
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</table>
9) The interest on a loan is in proportion with the rate. If the rate is halved, then the interest
   A) is multiplied by 4
   B) is doubled
   C) is halved
   D) remains the same

10) Which one of the following tables is an example of a proportional relationship?

   A) ![Table A]
   B) ![Table B]
   C) ![Table C]
   D) ![Table D]

11) Which one of the following graphs shows the relationship "as proportional"?

   A) ![Graph A]
   B) ![Graph B]
   C) ![Graph C]
   D) ![Graph D]

12) Which of the following is the correct graphic representation of the linear function \( f(x) = 2x + 1 \)?

   A) ![Graph A]
   B) ![Graph B]
   C) ![Graph C]
   D) ![Graph D]
13) Which of the following is the correct graphic representation of the linear function \( f(x) = 3x - 4 \)?

A) 

B) 

C) 

D) 

14) Which of the following is the correct graphic representation of the function \( f(x) = \frac{1}{2}x + 3 \)?

A) 

B) 

C) 

D)
15) What is an equation of the linear function that represents the following table of values?

<table>
<thead>
<tr>
<th>x</th>
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<tbody>
<tr>
<td>2</td>
<td>4</td>
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<tr>
<td>3</td>
<td>5</td>
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<td>4</td>
<td>8</td>
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</tbody>
</table>

A) \( f(x) = -2x \)  
B) \( f(x) = x - 2 \)  
C) \( f(x) = x + 2 \)  
D) \( f(x) = 2x \)

16) What is an equation of a linear function that represents the following table of values?

<table>
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<tr>
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<td>4</td>
<td>5</td>
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<td>5</td>
<td>6</td>
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</tbody>
</table>

A) \( f(x) = x + 1 \)  
B) \( f(x) = 2x \)  
C) \( f(x) = x - 1 \)  
D) \( f(x) = 1 - x \)

17) What is an equation of a linear function that represents the following table of values?

<table>
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<td>2</td>
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<td>3</td>
<td>5</td>
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<tr>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

A) \( g(x) = 2x \)  
B) \( g(x) = x - 2 \)  
C) \( g(x) = x + 2 \)  
D) \( g(x) = 2x - 1 \)

18) What is an equation of the linear function that represents the following table of values?

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td>2</td>
<td>-2</td>
</tr>
<tr>
<td>3</td>
<td>-3</td>
</tr>
</tbody>
</table>

A) \( g(x) = 1 - x \)  
B) \( g(x) = x - 1 \)  
C) \( g(x) = -x \)  
D) \( g(x) = x \)

19) What is the slope of the line containing points A(4,-1) and B(0,2)?

A) \(-\frac{4}{3}\)  
B) \(\frac{3}{4}\)  
C) \(\frac{4}{3}\)  
D) \(-\frac{3}{4}\)
20) The accompanying figure shows the graph of the equation \( x = 5 \).

\[
\begin{align*}
&y \\
&x = 5 \\
&x \\
&-7 \\
&7
\end{align*}
\]

What is the slope of the line \( x = 5 \)?
A) undefined  
B) 0  
C) -5  
D) 5

Questions 21 and 22 refer to the following:

Determine if the given linear function is increasing or decreasing.

21) \( h(x) = -\frac{1}{4}x - 5 \)

22) \( k(n) = \frac{1}{2}n + 3 \)

23) What is the slope of the line whose equation is \( y + 2x = 4 \)?
   A) \( \frac{1}{2} \)  
   B) -2  
   C) 4  
   D) 2

24) What is the slope of the graph of the equation \( y = \frac{1}{2}x - 7 \)?
   A) -7  
   B) 2  
   C) \( \frac{1}{2} \)  
   D) \( \frac{-7}{2} \)
25) What is the slope of the line shown in the diagram?

![Graph with points (0, -4) and (3, 0)]

A) $\frac{3}{4}$  
B) $-\frac{4}{3}$  
C) $-\frac{3}{4}$  
D) $\frac{4}{3}$

26) The graph of the line passing through the points (6, 7) and (4, 2) has a slope of

A) $\frac{2}{5}$  
B) $-\frac{1}{2}$  
C) $\frac{5}{2}$  
D) $-\frac{5}{2}$

27) Write 8,310 in scientific notation.

A) $8.31 \times 10^3$  
B) $8.31 \times 10^5$  
C) $8.31 \times 10^{-3}$  
D) $8.31 \times 10^{-1}$

28) Write 0.00532 in scientific notation.

A) $5.32 \times 10^{-3}$  
B) $5.32 \times 10^3$  
C) $5.32 \times 10^{-2}$  
D) $5.32 \times 10^2$

29) How would $411.2 \times 10^4$ be written in standard notation?

A) 4,112,000  
B) 411.200  
C) .04112  
D) .4112

30) How would $0.029 \times 10^6$ be written in standard notation?

A) .00000029  
B) 29,000  
C) 290,000  
D) .000000029

31) What is the value of $3^{-2}$?

A) -9  
B) 9  
C) $-\frac{1}{9}$  
D) $\frac{1}{9}$

32) The expression $2^3 \cdot 4^2$ is equivalent to

A) $2^7$  
B) $8^6$  
C) $2^{12}$  
D) $8^5$
33) If the number of molecules in 1 mole of a substance is \(6.02 \times 10^{23}\), then the number of molecules in 100 moles is
   A) \(6.02 \times 10^{22}\) \hspace{1cm} B) \(6.02 \times 10^{25}\) \hspace{1cm} C) \(6.02 \times 10^{24}\) \hspace{1cm} D) \(6.02 \times 10^{21}\)

34) \(x^4 - x^2\) is equal to
   A) \(x\) \hspace{1cm} B) \(x^2\) \hspace{1cm} C) \(x^8\) \hspace{1cm} D) \(x^6\)

35) \(10^9 \times 10^2\) is equal to
   A) 110 \hspace{1cm} B) 180 \hspace{1cm} C) \(10^{11}\) \hspace{1cm} D) \(10^{18}\)

36) \(10^6\) divided by \(10^1\) is equivalent to
   A) \(10^5\) \hspace{1cm} B) 50 \hspace{1cm} C) \(10^6\) \hspace{1cm} D) \(10^7\)

37) Convert \(\frac{5}{12}\) to a decimal. Round to the nearest hundredth.
   A) 0.44 \hspace{1cm} B) 2.4 \hspace{1cm} C) 0.38 \hspace{1cm} D) 0.42

38) Write 0.07 as a percent.
   A) 70% \hspace{1cm} B) 0.7% \hspace{1cm} C) 7% \hspace{1cm} D) 0.007%

39) Write 2.7% as a decimal.
   A) 0.027 \hspace{1cm} B) 2.7 \hspace{1cm} C) 0.27 \hspace{1cm} D) 270

40) Write 92.3% as a decimal.
   A) 0.923 \hspace{1cm} B) 0.0923 \hspace{1cm} C) 9.230 \hspace{1cm} D) 9.23

41) If Pete scores 3 out of every 25 shots on goal he takes, what percent of the time does Pete score?
   A) 6.5% \hspace{1cm} B) 7.5% \hspace{1cm} C) 12% \hspace{1cm} D) 15%

42) If the check at a restaurant comes to $21.50, how much money should be left for a 15% tip?
   A) $3.24 \hspace{1cm} B) $3.22 \hspace{1cm} C) $4.34 \hspace{1cm} D) $4.32

43) A small business buys a computer system for $8,650 and pays a sales tax which is 4.5% of the cost. What is the sales tax on the computer system?
   A) $1,922.22 \hspace{1cm} B) $379.25 \hspace{1cm} C) $369.15 \hspace{1cm} D) $389.25
44) A calculator can be purchased for $68, which is 40% of the cost three years ago. What was the cost of the calculator three years ago?
   A) $160  B) $170  C) $27.20  D) $180

45) A plumber's hourly wage was $14.60 before the plumber received a 6.5% raise. What is the new hourly wage? Round to the nearest cent.
   A) $1.95  B) $15.55  C) $15.54  D) $14.55

46) A sweater that costs $35.00 is on sale for 45% off. What will the sweater cost after the discount?
   A) $19.25  B) $13.55  C) $21.45  D) $15.75

47) A skateboard on sale costs $47.50. If it sold for $91.35 before it was marked down, what was the percent of the discount?
   A) 48%  B) 44%  C) 64%  D) 52%

48) Belinda purchased a telephone at 30% off the original price of $56. After Belinda bought the telephone and paid 5% sales tax on it, how much change did she get back from a $50 bill?
   A) $8.84  B) $19.60  C) $24.80  D) $19.60

49) Simplify: \(2x - 3y - 5x - 8y\)
   A) \(3x - 11y\)  B) \(-3x - 5y\)  C) \(-5x - 11y\)  D) \(-7x - 11y\)

50) Simplify: \(-7xy + 3xy - 4xy\)
   A) \(-14xy\)  B) \(-4xy - 4\)  C) \(-8xy\)  D) 0

51) Simplify: \(2x - 4(3 - 2x)\)
   A) \(10x + 12\)  B) \(10x - 12\)  C) \(-6x + 12\)  D) \(-6x - 12\)

52) Simplify: \(-7y - 3(6 - y) + 12\)
   A) \(-4y - 6\)  B) \(-6y + 30\)  C) \(-10y - 6\)  D) \(-4y + 6\)

53) Simplify: \(3x - 2(2 - x) + 2\)
   A) \(x + 4\)  B) \(2x + 4\)  C) \(2x + 6\)  D) \(x + 6\)
Questions 54 through 58 refer to the following:

Solve the equation for the given variable.

54) \(7r + 23 - 4r = -55\)
   A) -10  B) -19  C) -14  D) -26

55) \(-78 = 5y + 27 - 8y\)
   A) 17  B) 35  C) 21  D) 26

56) \(9r - 11 - 2r = 59\)
   A) 10  B) 6  C) 7  D) 8

57) \(2y - 27 = -17\)
   A) -22  B) 3  C) -5  D) 5

58) \(6z + 8 - 5z = 83\)
   A) 37  B) 75  C) 39  D) 91

59) Solve: \(3 = -\frac{1}{5}x\)
   A) \(-\frac{3}{5}\)  B) \(-\frac{2}{5}\)  C) -15  D) 15

60) Solve: \(4(3 - x) + 2x = -12\)
   A) -8  B) 0  C) 12  D) 8

61) Solve: \(4 - 2(x - 3) = 5\)
   A) \(\frac{1}{2}\)  B) \(-\frac{1}{2}\)  C) \(\frac{1}{2}\)  D) \(-\frac{3}{2}\)

62) Solve: \(3(x - 2) + 7 = 5\)
   A) \(\frac{2}{3}\)  B) \(\frac{3}{4}\)  C) \(\frac{1}{3}\)  D) 6
63) The value of a house this year is $114,000. This is three times its value eight years ago. Find its value eight years ago.
   A) $28,000  B) $342,000  C) $48,000  D) $38,000

64) A sporting goods store sells fishing rods for $65 each. This price includes the store's cost for the fishing rod plus a markup rate of 25%. Find the store's cost for a fishing rod.
   A) $42  B) $52  C) $81.25  D) $56

65) A cement contractor charges $45 travel expenses plus $18 for each yard of cement. How many yards of cement can be purchased for $261?
   A) 12 yards  B) 14 yards  C) 14.5 yards  D) 17 yards

66) What is "$1.92 for 8 peaches" written as a unit rate?
   A) 32¢/peach  B) 24¢/peach  C) $1.92/peach  D) 28¢/peach

67) Which of the following is a valid proportion?
   A) \( \frac{3}{2} = \frac{90}{60} \)  B) \( \frac{2}{5} = \frac{9}{18} \)  C) \( \frac{3}{2} = \frac{40}{65} \)  D) \( \frac{17}{51} = \frac{12}{8} \)

68) Solve for \( x \):
   \( \frac{2}{9} = \frac{x}{27} \)
   A) 6  B) 18  C) 16  D) 8

69) The ages of Kim and her father are in a 2:5 ratio. If Kim is 14, how old is her father?
   A) 25  B) 23  C) 35  D) 33

70) Jared bought a 20 piece pizza for $15.00. At that price, how much did he spend for each piece of pizza?
   A) $1.33  B) $1.49  C) $8.5  D) $7.5

71) If a box of 24 pencils sells for $3.84, how much would 5 pencils cost?
   A) $1.77  B) $6.3  C) $8.0  D) $1.55
72) In the accompanying figure, what is one pair of alternate interior angles?

A) \( \angle 1 \) and \( \angle 2 \)  
B) \( \angle 4 \) and \( \angle 6 \)  
C) \( \angle 6 \) and \( \angle 8 \)  
D) \( \angle 4 \) and \( \angle 5 \)

73) On the graph below, which point has the coordinates (2,3)?

A) I  
B) H  
C) J  
D) K

74) Which graph is represented by the open sentence \( x \leq 5 \) ?

A) [Graph A]  
B) [Graph B]  
C) [Graph C]  
D) [Graph D]

75) Which open sentence is represented by the number line below?

A) \( x \geq -1 \)  
B) \( x \leq -1 \)  
C) \( x > -1 \)  
D) \( x < -1 \)

76) What is the supplement of a \( 117^\circ \) angle?

A) \( 73^\circ \)  
B) \( 243^\circ \)  
C) \( 27^\circ \)  
D) \( 63^\circ \)

77) Find the complement of a \( 12^\circ \) angle.

A) \( 348^\circ \)  
B) \( 168^\circ \)  
C) \( 88^\circ \)  
D) \( 78^\circ \)
78) Two angles of a triangle are 40° and 80°. Find the measure of the third angle of the triangle.
   A) 60°  B) 120°  C) 30°  D) 80°

79) What are a pair of vertical angles in the diagram below?

```
 1 2
 3 4
 7 6
 8 5
```

A) 1 and 2  B) 5 and 6  C) 6 and 7  D) 3 and 4

80) Find the diameter of a circle with a radius of 9 centimeters.
   A) 4.5 cm  B) 18 cm  C) 27 cm  D) 28.26 cm

81) Find the circumference of a circle with a radius of 12 cm. Use 3.14 for \( \pi \).
   A) 73.68 cm  B) 57.36 cm  C) 75.36 cm  D) 37.68 cm

82) Using the formula \( A = \pi r^2 \), what is the area of a circle with a radius of 7? (Use \( \pi = 3.14 \))
   A) 153.86  B) 43.86  C) 143.56  D) 43.96

83) What is the area of a circle with a diameter of 26?
   A) 52\( \pi \)  B) 676\( \pi \)  C) 13\( \pi \)  D) 169\( \pi \)

84) Find the mean of the following numbers:
   6, 17, 5, 4, 14, 14
   A) 14  B) 8  C) 10  D) 11

85) Find the median of the following numbers:
   11, 16, 12, 11, 13
   A) 11  B) 13  C) 14  D) 12

86) Find the mode of the following numbers:
   9, 8, 5, 9, 6, 2
   A) 6  B) 8  C) 9  D) 5
87) Find the range of the following numbers:

8, 12, 2, 16, 7

A) 14  B) 8  C) 18  D) 9

88) Create a stem-and-leaf plot for the following numbers:

6, 17, 5, 4, 14, 14

89) What is the volume of the solid below?

![Diagram of a 3D cube with dimensions 5 m x 6 m x 11 m]

A) 132 m³  B) 22 m³  C) 330 m³  D) 165 m³

90) *Selina’s Cell Phones* sells cell-phone contracts. They charge $20.00 per month plus $0.18 per minute of airtime. If \( x \) represents the number of minutes used in a month, what is an equation that can be used to represent the cost \( (m) \) per month?

A) \( m = 20 + 0.18 \)  
B) \( m = 20 + 0.18x \)  
C) \( m = 20x + 0.18 \)  
D) \( m = 20.18 \)

91) Norb is a waiter in a diner. He earns $4.00 per hour plus 95% of his tips. What is a literal equation that can be used to determine his salary, \( S \), if he works \( t \) hours and earns \( d \) dollars in tips?

A) \( S = 0.4t + 9.5d \)  
B) \( S = 95t + 4d \)  
C) \( S = 4t + 0.95d \)  
D) \( S = 4t + 9.5d \)

92) What is an inequality that represents the statement, "twice a number \( x \) decreased by 13 is less than or equal to 39 inches?"

A) \( 13 - 2x \leq 39 \)  
B) \( 2x - 13 < 39 \)  
C) \( 13 - 2x \geq 39 \)  
D) \( 2x - 13 \leq 39 \)

93) An industrial plant increased its number of employees from 3,200 to 3,680. What was the percent increase in the number of employees?

A) 15%  
B) 13%  
C) 18%  
D) 85%
94) At the start of a speedreading course, a student's reading speed was 250 words per minute. The student's speed increased 40% during the course. What was the student's reading speed at the end of the course?
A) 380 words per minute  C) 320 words per minute
B) 350 words per minute  D) 100 words per minute

95) Tony put $450 into his checking account. His account earns 5\(\frac{1}{2}\)% interest per year. How much interest will the money earn in a year?
A) $247.50  B) $36.50  C) $24.75  D) $3.65

96) A real estate broker receives a commission of 4% of the selling price of a house. Find the commission received by the broker for selling a house for $94,500.
A) $3,780  B) $2,362  C) $2,780  D) $3,870

97) In the accompanying diagram, what type of transformation makes triangle 2 the image of triangle 1?

A) dilation  B) rotation centered at the origin  C) reflection in the y-axis  D) translation

98) A rotation of a figure can be considered
A) a slide of the figure  C) an enlargement or a reduction of the figure
B) a turning of the figure about some fixed point  D) a mirror image of the figure

99) What type of transformation is represented by the illustration?

A) rotation  B) translation  C) reflection  D) dilation
100) In the accompanying diagram, what point may be the image of point A after a line reflection in the x-axis?

A) D          B) B          C) C          D) E
1) \(3(1 + 4y)\)
2) \(4(3y - 2)\)
3) \(3(x + 5)\)
4) \(5(y - 5)\)
5) \(9(5 - 2x)\)
6) \(12(3 + 2)\)
7) \(5(y - 5)\)

18) C  19) D  20) A

21) decreasing

22) increasing

28) A  29) C  30) B  31) D  32) A
33) B  34) D  35) C  36) A  37) D
38) C  39) A  40) A  41) C  42) A
43) D  44) B  45) B  46) A  47) D
48) A  49) C  50) C  51) B  52) A
53) D  54) D  55) B  56) A  57) D
63) D  64) B  65) A  66) B  67) A
68) A  69) C  70) D  71) C  72) D
73) B  74) A  75) B  76) D  77) D
78) A  79) B  80) B  81) C  82) A
83) D  84) C  85) D  86) C  87) A
88) 0  4, 5, 6
1  4, 4, 7
89) C  90) B  91) C  92) D  93) A
94) B  95) C  96) A  97) D  98) B
99) D  100) A