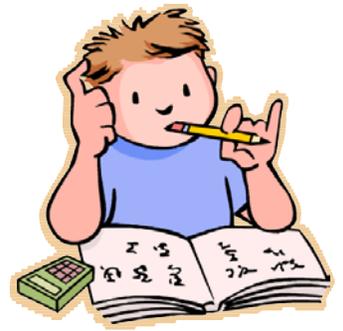**Algebra 1 Summer Packet**

Packet Due Date: August 24-25, 2015

Dear Carver students and parents,

 This summer, we encourage you to continue to practice your mathematics at home. Being actively involved in mathematical activities enhances learning.

In preparation for the 2015-2016 school year, students are provided with a summer review packet. This packet focuses on some of the prerequisite concepts and skills necessary for student success in Algebra 1 Honors. The packet may be graded at the teacher's discretion, and may receive extra credit.

While completing the review packet, we recommend that students:

- Complete each problem, and show all steps used to arrive at the final answer.

- Show all work neatly in the actual packet, if it is printed.
    (Additional lined paper may be added if necessary.)

- If packet is not printed, then make sure to number each page and problem as it appears on the packet. All work must be neatly presented.

- Box your final answers.

- Label answers when necessary.

- Use a calculator IF necessary.

- Do not rush! Use time wisely.

- If you are stuck on particular problems, check out of the math websites posted below. Parents may also be able to help. If you are still having difficulty, circle the problem number and be prepared to ask questions in class in August.

HELPFUL APP:	HELPFUL WEBSITES:
"Virtual Nerd Mobile"	http://www.khanacademy.org/
	http://www.aplusmath.com http://math.com
Requirements: iOS 6.0 or later; compatible with iPhone, iPad, and iPod Touch	
Features: Virtual Nerd's on-screen instructors provide clear and approachable explanations; students can mark "favorite" videos so that they can instantly return to them in the future.	
Price: Free	

Have a fun and productive summer.

Regards,
G. W. Carver Mathematics Department

I.   Use order of operation to determine each answer:

1) $4 \bullet 16 + 8 - 0 \div 5$ _____

2) $8 \, (3 + 4) - 2 \bullet 8 \div (5 - 3)$ _____

3) $(8^2 + (13 - 4)^2) \div 5$ _____

II.   Insert parenthesis to make the following equation true:

4) $8 + 12 \div 4 \bullet 5 = 1$

III.   Determine the answer for each problem

5) $29 - 100 =$ _____   6) $10 \bullet (-2 \bullet 18) =$ _____

7) $-844/4 =$ _____   8) $-777 - (-801) =$ _____

IV.   Evaluate Expressions: Evaluate each expression when
       a = -2, b = 4 and c = -10

9) $2a + b$ 10) $ac - b$

11) $8a + 5b$ 12) $\dfrac{a + b}{a}$

13) $\dfrac{3c}{-5}$ 14) $-4a - b$

V.   Solve Equations Show all steps

15) $5x = 210$ 16) $\frac{3}{8} \, x = 36$

17) $2x - 10 = 44 + 8x$ 18) $7x - 4 = 20 + 3x$

19) $2(x - 3) = -20$ 20) $15 - 4x + 5 = 32$

21) $2x - 3x + 5 = 18$ 22) $15 = 7x - 3x - 2$

23) $155 = 6x - 3 + 4x$ 24) $15 - 3x - x = -5$

VI.   Solve Inequalities: Show all steps and graph on a number line

25) $4x + 7 > 37$ 26) $-5x + 9 \geq 24$

27) $7x - 28 \geq -7$ 28) $3x - 5 \leq 2x - 13$

VII.   Solve the percent problems:

29) What number is 63% of 53?

30) What percent of 23 is 14?

31) Find a number so that 2% of it is 128?

VIII.   Write an algebraic equation and then solve:

32) Eight times a number, increased by 6 is 62. What is the number?

33) A number divided by 6 is 25. What is the number?

IX.   Set up an equation and solve;

34) A television rating service found that out of a sample of 100 households, 35 were watching an Orangetown TV during its time slot. Suppose there are 210,000 households in a marketing region, how many of them would you expect to be watching Orangetown TV?

X.   Find the Greatest Common Factor (GCF) of the following:

35) 36 and 40 _____   36) 6,12, and 21 _____

XI.   Name all the possible factors:

37) 24 _____

38) 55 _____

XII.   Statistics

Mr. Smith teachers two math classes. The table below shows the recent test scores for his students.

Class A	56	57	57	59	65	67	68	70	72	75	88	89	91	95	96	98	99
Class B	62	73	76	79	79	83	84	84	85	87	87	87	90	92	93	93	95

39) Calculate the mean, median and mode of each class separately.
    Mean class A_____   Mean class B_____

    Median class A _____   Median class B_____
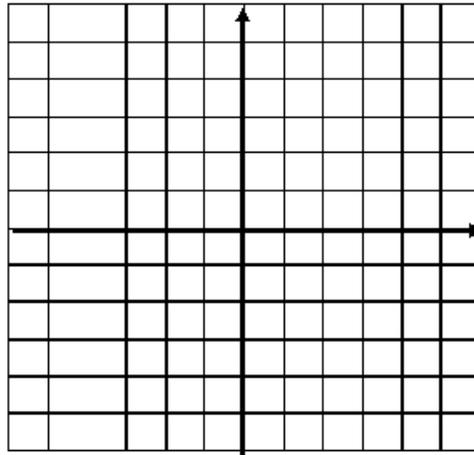
    Mode class A _____   Mode class B_____

40) Overall which class did better on the test? Use mathematics to justify your answer. Be sure to give specific examples.
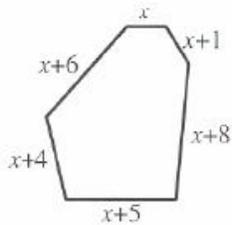
XIII. Graphing

Plot each of the following points on the grid below. Use the letter to label the point on the graph.

41)   A(3,0)   B(5,5)   C(-1,2)   D(-3,-2)   E(0,-3)

Answer in complete sentences where appropriate. Show all your work to receive full credit.

42) The perimeter of the figure below is equal to 150 cm.

- What is the length of the longest side of the polygon? Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.

XIV. Number properties

43. Match the property with its correct name

1. $x + (y + z) = (x + y) + z$ a. Additive Inverse Property

2. $(pq) \cdot 1 = pq$ b. Multiplicative Inverse Property

3. $(5x)y = 5(xy)$ c. Commutative Property of Multiplication

4. $a + 5b = 5b + a$ d. Multiplicative Identity

5. $a + 0 = a$ e. Commutative Property of Addition

6. $gh = hg$ f. Associative Property of Addition

7. $8 + (-8) = 0$ g. Distributive Property

8. $x \cdot 0 = 0$ h. Associative Property of Multiplication

9. $5 \cdot \left(\dfrac{1}{5} \right) = 1$ i. Additive Identity Property

10. $2(a + b) = 2a + 2b$ j. Zero Property

I. Use order of operation to determine each answer:

1) $4 \bullet 16 + 8 - 0 \div 5$ _____72_____

2) $8(3 + 4) - 2 \bullet 8 \div (5 - 3)$ _____48_____

＊3) $(8^2 + (13 - 4)^2) \div 5$ _____29_____

II. Insert parenthesis to make the following equation true:

4) $(8 + 12) \div (4 \bullet 5) = 1$

III. Determine the answer for each problem

5) $29 - 100 =$ __−71__   6) $10 \bullet (-2 \bullet 18) =$ __−360__

7) $-844 / 4 =$ __−211__   8) $-777 - (-801) =$ __24__

IV. Evaluate Expressions: Evaluate each expression when
a = -2, b = 4 and c = -10

9) $2a + b = 0$ 10) $ac - b = 16$

11) $8a + 5b = 4$ 12) $\dfrac{a + b}{a} = -1$

13) $\dfrac{3c}{-5} = 6$ 14) $-4a - b = 4$

V. Solve Equations Show all steps

15) $5x = 210$
$\dfrac{5x}{5} = \dfrac{210}{5}$
$x = 42$

16) $\frac{3}{8}x = 36$
$\dfrac{3x}{8} = \dfrac{36}{3/8}$
$x = 96$

17) $2x - 10 = 44 + 8x$
$-2x \qquad -2x$
$-10 = 44 + 6x$
$-44 \quad -44$
$-54 = 6x$
$\dfrac{-54}{6} = \dfrac{6x}{6}$ $\boxed{-9 = x}$

18) $7x - 4 = 20 + 3x$
$-3x \qquad -3x$
$4x - 4 = 20$
$+4 \quad +4$
$\dfrac{4x}{4} = \dfrac{24}{4}$ $\boxed{x = 6}$

19) $2(x - 3) = -20$
$2x - 6 = -20$
$+6 \quad +6$
$\dfrac{2x}{2} = \dfrac{-14}{2}$
$\boxed{x = -7}$

20) $15 - 4x + 5 = 32$
$20 - 4x = 32$
$-20 \qquad -20$
$\dfrac{-4x}{-4} = \dfrac{12}{-4}$
$\boxed{x = -3}$

21) $2x - 3x + 5 = 18$

$-x + 5 = 18$
$\quad -5 \quad -5$

$\dfrac{-x}{-1} = \dfrac{13}{-1}$ $\boxed{x = -13}$

22) $15 = 7x - 3x - 2$

$15 = 4x - 2$
$+2 \qquad +2$

$\dfrac{17}{4} = \dfrac{4x}{4}$ $\boxed{4\tfrac{1}{4} = x}$

23) $155 = 6x - 3 + 4x$

$155 = 10x - 3$
$+3 \qquad\quad +3$

$\dfrac{158}{10} = \dfrac{10x}{10}$

$\boxed{15.8 = x}$

24) $15 - 3x - x = -5$

$15 - 4x = -5$
$-15 \qquad -15$

$\dfrac{-4x}{-4} = \dfrac{-20}{-4}$

$\boxed{x = 5}$

VI. Solve Inequalities: Show all steps and graph on a number line

25) $4x + 7 > 37$

$\quad -7 \;\; -7$

$\dfrac{4x}{4} > \dfrac{30}{4}$

$x > 7.5$

26) $-5x + 9 \geq 24$

$\qquad -9 \;\; -9$

$\dfrac{-5x}{-5} \geq \dfrac{15}{-5}$

$x \leq -3$
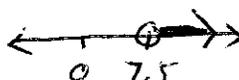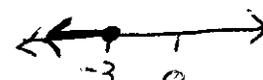
27) $7x - 28 \geq -7$

$\quad +28 \; +28$

$\dfrac{7x}{7} \geq \dfrac{21}{7}$

$x \geq 3$

28) $3x - 5 \leq 2x - 13$

$-2x \qquad -2x$

$x - 5 \leq -13$
$\;\; +5 \quad +5$
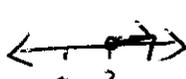
$x \leq -8$

VII. Solve the percent problems:

29) What number is 63% of 53? $\boxed{33.39}$

30) What percent of 23 is 14? $\boxed{60.9\%}$

31) Find a number so that 2% of it is 128? $\boxed{6400}$

VIII. Write an algebraic equation and then solve:

32) Eight times a number, increased by 6 is 62. What is the number?

Let $x =$ the #

$8x + 6 = 62$
$\quad -6 \quad -6$

$\dfrac{8x}{8} = \dfrac{56}{8}$

$x = 7$ $\boxed{\text{The Number is 7.}}$

33) A number divided by 6 is 25. What is the number?

Let $x =$ the #

$6\left(\dfrac{x}{6}\right) = (25)6$

$x = 150$ $\boxed{\text{The number is 150}}$

IX. Set up an equation and solve;

34) A television rating service found that out of a sample of 100 households, 35 were watching an Orangetown TV during its time slot. Suppose there are 210,000 households in a marketing region, how many of them would you expect to be watching Orangetown TV?

$$\frac{35}{100} = \frac{x}{210,000}$$

$$100x = 7350000$$

$$\boxed{x = 73,500}$$

X. Find the Greatest Common Factor (GCF) of the following:

35) 36 and 40 ___4___   36) 6,12, and 21 ___3___

XI. Name all the possible factors:

37) 24 1, 2, 3, 4, 6, 8, 12, 24

38) 55 1, 5, 11, 55

XII. Statistics

Mr. Smith teachers two math classes. The table below shows the recent test scores for his students.

Class A	56	57	57	59	65	67	68	70	72	75	88	89	91	95	96	98	99
Class 3	62	73	76	79	79	83	84	84	85	87	87	87	90	92	93	93	95

39) Calculate the mean, median and mode of each class separately.

Mean class A ___76.6___   Mean class B ___84___

Median class A ___72___   Median class B ___85___

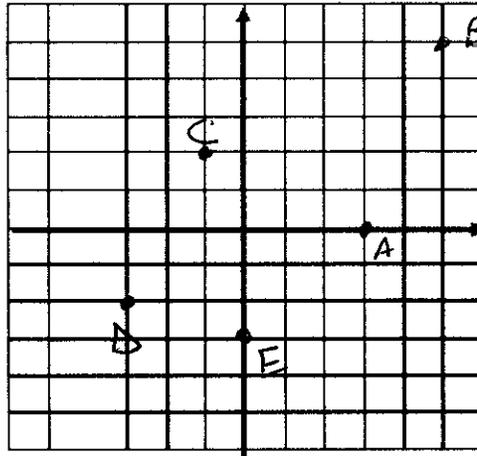Mode class A ___57___   Mode class B ___87___

40) Overall which class did better on the test? Use mathematics to justify your answer. Be sure to give specific examples.

Class B did better. They had A higher Mean And Median
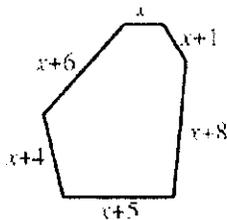
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41) A(3,0) B(5,5) C(-1,2) D(-3,-2) E(0,-3)

Answer in complete sentences where appropriate. Show all your work to receive full credit.

42) The perimeter of the figure below is equal to 150 cm.

- What is the length of the longest side of the polygon? Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.

$$x + x+1 + x+8 + x+5 + x+4 + x+6 = 150$$

$$6x + 24 = 150$$
$$-24 \quad -24$$

$$6x = 126$$
$$6 \qquad 6$$

$$\boxed{x = 21}$$

$$x+8 = 21+8 = \boxed{29}$$

XIV. Number properties

43. Match the property with its correct name

1. $x + (y - z) = (x + y) + z$ F

2. $(pq) \cdot 1 = pq$ D

3. $(5x)y = 5(xy)$ H

4. $a + 5b = 5b - a$ E

5. $a + 0 = a$ I

6. $gh = hg$ C

7. $8 + (-8) = 0$ A

8. $x \cdot 0 = 0$ J

9. $5 \cdot \left(\dfrac{1}{5} \right) = 1$ B

10. $2(a + b) = 2a + 2b$ G

a. Additive Inverse Property

b. Multiplicative Inverse Property

c. Commutative Property of Multiplication

d. Multiplicative Identity

e. Commutative Property of Addition

f. Associative Property of Addition

g. Distributive Property

h. Associative Property of Multiplication

i. Additive Identity Property

j. Zero Property