BLUE KNIGHTS

Southington High School

720 Pleasant Street • Southington, CT 06489

Phone: (860) 628-3229
Fax: (860) 628-3397
Home Page: www.southingtonschools.org

Principal
Frank Pepe

Assistant Principals
Richard Aroian
Michael Halloran
Dianne Holst-Grubbe
Leah Clark

Dear Students,

Enclosed you will find a comprehensive set of problems which reflect critical math skills that must be mastered prior to entering your Algebra I class at Southington High School. You are encouraged to develop a wide range of ways for finding the correct answer, including techniques both with and without the aid of a calculator*. Working with a friend, sibling, or parent might be a helpful way to complete this assignment!

On the second day of school, your teachers will check your packets for completion and count it as your first three homework grades. In order to receive full credit for the assignment, you must attempt each problem and show all work used to complete it. The answers are provided as a means to assess your own work. During the first few days of school, your teachers will provide you with an opportunity to review your work from this packet. Soon thereafter, you will be given your first quiz that addresses these skills.

Our goal is for you to have a successful and enjoyable transition into your Algebra I class at Southington High School. This packet is meant to facilitate this process. Try your best and remember your teachers will help you upon your return.

Sincerely,

David Kowalchuk
Mathematics Department Chair
Southington High School
860-628-3229 ext 11243
Distance Learning # (401) 315-8897

Frank Pepe
Principal

*Reminder: A graphing calculator is an important tool used within this course. Students are strongly encouraged to obtain one for their personal use. Copies of this packet may be found on the Southington High School Website. Go to www.southingtonschools.org and click on the link to Parent Resources

ALGEBRA I SUMMER PACKET 2020 Name:_____ Date: _____

Remember To Show All Work.

Find the sum, difference, product, or quotient of the integers, without a calculator, as follows:

Ex: - 6+(- 4)= - 10 5+(-12)= - 7 6–(-8)= 14 -2 •4= - 8 $\frac{-16}{-2}$ = 8

1) 16 + -13 = 2) -6 – 5 = 3) 5 – (-7) = 4) -9 + (-12) =

5) $6 \bullet -5$ = 6) $\frac{-35}{7}$ = 7) $\frac{28}{-4}$ = 8) $-3 \bullet -6$ =

Find the least common denominator of the pair of fractions, then add and subtract them.
Simplify your final answer in the form of a mixed number.

For example: $\frac{1}{2}, \frac{6}{7}$: LCD=14 $\frac{6}{7} + \frac{1}{2} = \frac{12}{14} + \frac{7}{14} = \frac{19}{14} = 1\frac{5}{14}$

$\frac{6}{7} - \frac{1}{2} = \frac{12}{14} - \frac{7}{14} = \frac{5}{14}$

---

9) $\frac{1}{2}, \frac{7}{10}$:

10) $\frac{5}{9}, \frac{7}{12}$:

Multiply and divide the fractions, and put in simplest form.

For example: $\frac{3}{7} * \frac{14}{9} = \frac{42}{63} = \frac{2}{3}$,

For **division** take the reciprocal of the second fraction and multiply.

$$\frac{11}{20} \div \frac{7}{12} = \frac{11}{20} * \frac{12}{7} = \frac{132}{140} = \frac{66}{70}$$

11) $\frac{5}{12}, \frac{2}{3}$:

12) $\frac{2}{3}, \frac{12}{21}$:

Write the numbers in order from least to greatest.

13) 0.19, 0.91, 0.49, 0.9

14) −6.5, − 5.4, – 6.4, – 6

15) $\frac{5}{8}, \frac{4}{7}, \frac{3}{5}, \frac{1}{2}$

16) $1\frac{5}{9}$, $1\frac{3}{4}$, $\frac{13}{11}$, $\frac{7}{5}$

Use the order of operations to evaluate each expression. Remember, **P**arentheses first, **E**xponents second, **M**ulitply or **D**ivide next (from Left to Right), **A**dd or **S**ubtract (from Left to Right).

Example : [3^2 – (8– 4) + 30 ÷ 10 * 2] =

[3^2 - **(8– 4)** + 30 ÷ 10 * 2] **=** [**3^2** – 4 + 30 ÷ 10 * 2] = [9 - 4 + **30 ÷ 10** * 2] =
[9 – 4 + **3 * 2**] = [9 – 4 + 6] =11

17) $4^2 – 4(5^2 – 32 ÷ 8 * 4)$ =

18) $\frac{48-24\div 2^3}{3+2*6}$ =

19) What is the value of $(3x)^2 – 5$ when x = 4.

20) Evaluate: −2(−2x + 3*4) when x = 3.

21) Simplify: −4(x − 2)

22) Simplify: 4(n − 3) − 2(−3 + n)

23) Simplify: $\frac{27-6y}{-3}$

24) Simplify: $\frac{12x+10}{2}$

Find the perimeter, using the correct formula: P = 2l + 2w or P = 4s or P = a + b + c

25) A triangle with sides of length 19 ft., 17 ft., and 32 feet.

26) A square with sides of length 9.3 centimeters.

Find the area, using the correct formula: A = lw or A = s^2 or A = $\frac{1}{2}$ bh

27) A square with sides of length 12 feet.

28) A rectangle with length 8.7 km. and width 4.5 kilometers.

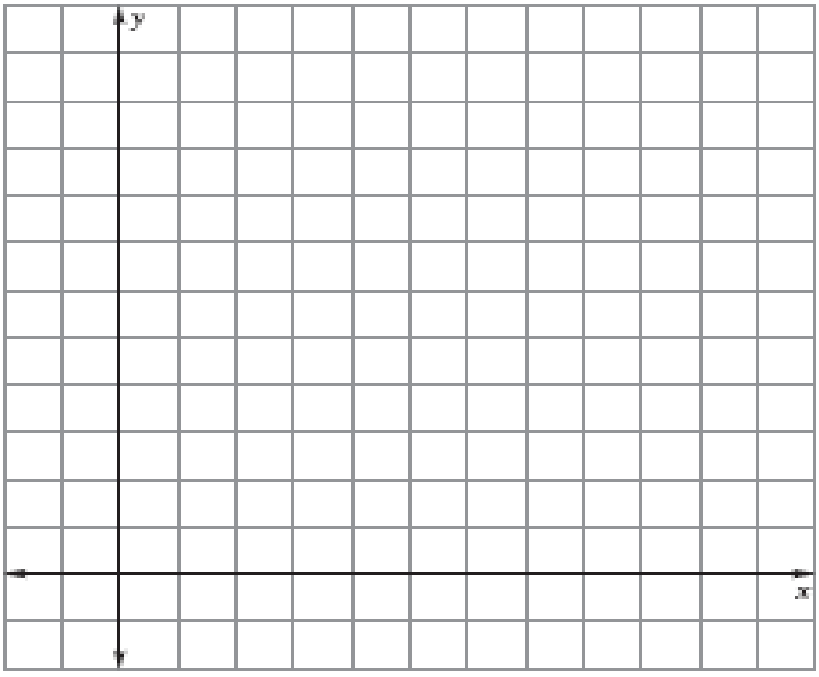
Find the volume, using the correct formula: V = lwh or V = s^3

29) A cube with sides of length 13 meters.

30) A rectangular prism with length 3.9 in., width 4.6 in., and height 2.2 inches.

The following countries won gold medals at the 2002 Winter Olympics.
31) **Create a bar graph to display the data.**

Germany 12
Norway 10
Russia 9
Canada 6
United States 6
Japan 5



Find the mean, median, and mode(s) of the data set. (Calculators may be used)

Mean- is the average of the data set
Median- is the middle value when arranged in order from either highest to lowest or lowest to highest.
Mode- is the value that appears the most in the data set.

32) 1, 3, 3, 3, 4, 5, 6, 7, 7, 9

33) 5, 23, 12, 5, 9, 18, 12, 4, 10, 21, 8, 25, 13

Solve each of the equations for x.

34) $x + 15 = 3$

35) $\frac{x}{5} = -16$

36) $-3x + 5 = -16$

37) $6x - 13 = -10 + 2x$

38) $\frac{4}{3}x - 3 = -11$

39) $7(x - 3) = 2(x - 9) + 2x$

In the following chart, place an x for the correct number of solutions to each equation.

	Equation	No Sol.	1 Sol.	Infinite Sol.
40)	$x - 14 = 7$			
41)	$3x + 4 = 3x + 4$			
42)	$-6x = 48$			
43)	$12 - 2x = 8$			
44)	$8 + 5x = 5x - 6$			
45)	$3(x+2) - 6 = 3(x-2) + 6$			

Solve each system of equations by substitution.

46) $y = 2x - 1$
$y = -2x + 3$

47) $4x - 7y = 10$
$y = x - 7$

48) $x - 2y = 5$
$3x - 6y = 8$

Find the slope and the y-intercept for the following equations.

49) $y = 3x - 5$ 50) $y = 7 - 2x$ 51) $2y = 8x + 18$

52) $3x + 4y = 12$ 53) $-6x - y = 4$ 54) $3y + 9x = 21$

Find the slope between the following two points.

55) (3, 5) and (4, 7) 56) (–4, 5) and (1, –6) 57) (2,5) and (–1, –4)

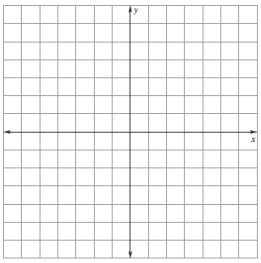
58) (3, –2) and (3, 10) 59) (2, –4) and (–3, –4)

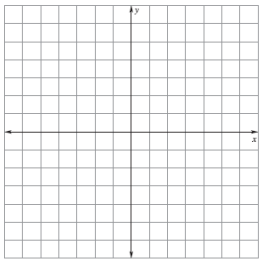
60) The table below shows the cost to paint a house for a given number of hours. **Find the rate of change in cost with respect to time.**

Time (hours)	4	6	8
Cost ($)	90	135	180

61 - 62. Graph the following two equations on the separate graphs.

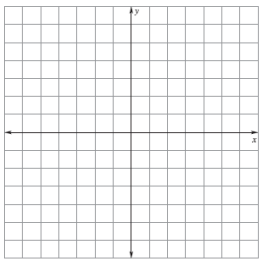
61) $y = 3x - 2$ 62) $y = -3 - 4x$

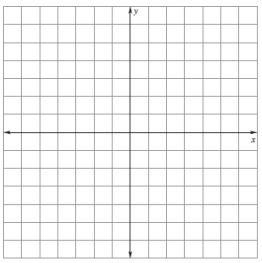




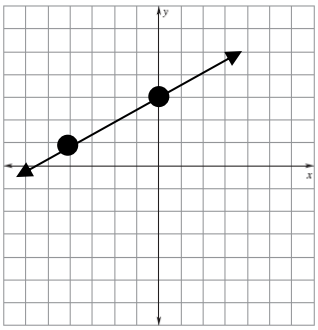
63 - 64. Graph the following standard form equations on the separate graphs using slope intercept form.

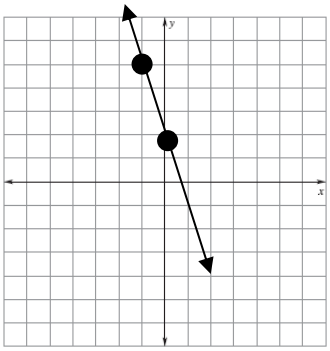
63) $6x - 3y = 12$ 64) $4x + 2y = 8$





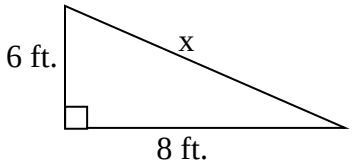
65 - 66. Find the equation of the line for each graph in slope-intercept form.

65) 

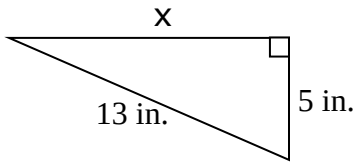
66) 

Use Pythagorean Theorem to help you answer the following questions.

67) Find the value of x.



68) Find the value of x.



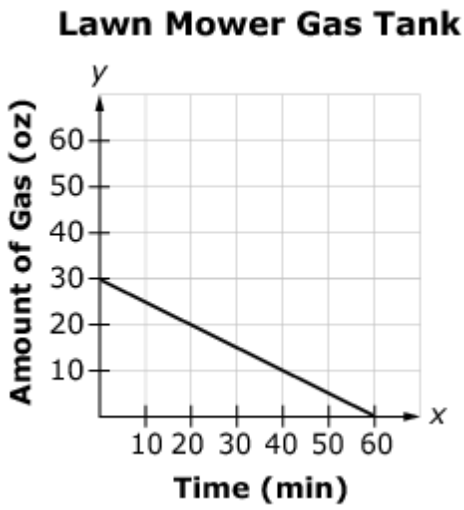
69-70. Solve each system of equations using the elimination method.

69) $x + 2y = 11$
$2x - 2y = -2$

70) $3x + y = -9$
$x - 2y = -10$

71)

This graph shows the amount of gas, in ounces, in a lawn mower gas tank, modeled as a function of time.



Determine whether each statement is true according to the graph. Select True or False for each statement.

	True	False
The maximum amount of gas in the gas tank was 60 ounces.	☐	☐
The amount of gas in the gas tank is at a maximum at 0 minutes.	☐	☐
The gas tank will be empty after 60 minutes.	☐	☐

Congratulations! This concludes the Summer Review packet in preparation for 9th grade mathematics at Southington High School! We hope you tried your best and look forward to working with you next school year!

Answer Key

1. 3 **2.** -11 **3.** 12 **4.** -21 **5.** -30 **6.** -5

7. -7 **8.** 18 **9.** $\frac{12}{10} = 1\frac{1}{5}$, $-\frac{1}{5}$ **10.** $\frac{41}{36} = 1\frac{5}{36}$, $\frac{-1}{36}$

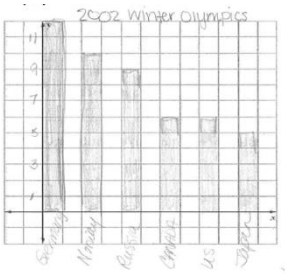
11. $\frac{5}{18}, \frac{5}{8}$ **12.** $\frac{8}{21}, \frac{7}{6}$ **13.** .19, .49, .9, .91 **14.** -6.5, -6.4, -6, -5.4

15. $\frac{1}{2}, \frac{4}{7}, \frac{3}{5}, \frac{5}{8}$ **16.** $\frac{13}{11}, \frac{7}{5}, 1\frac{5}{9}, 1\frac{3}{4}$ **17.** -20 **18.** 3 **19.** 139

20. -12 **21.** -4x+8 **22.** 2n-6 **23.** 2y – 9 **24**. 6x+5

25. 68 ft. **26.** 37.2 cm **27.** 144 ft^2

28. 39.15 km^2 **29.** 2197 m^3 **30.** 39.5 in^3 **31.**



32. mean = 4.8 median = 4.5 mode = 3

33. mean = 12.7 median = 12 mode = 5,12 **34.** x = -12

35. x = -80 **36.** x = 7 **37.** x = $\frac{3}{4}$ or .75 **38.** x = -6

39. x = 1 **40.** 1 Sol. **41.**Infinite Sol. **42.**1 Sol. **43.** 1 Sol.

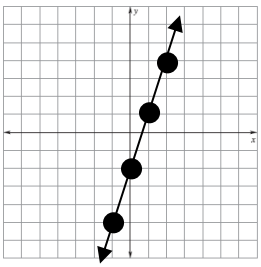
44. No Sol. **45.** Infinite Sol. **46.** (1,1) **47.** (13,6) **48.** No Solution

49. m = 3 , b = -5 **50.** m = -2 , b = 7 **51.** m = 4 , b = 9 **52.** m = $\frac{-3}{4}$, b = -3

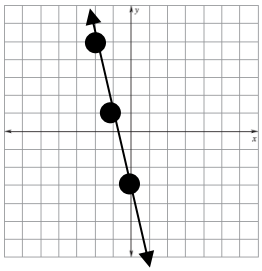
53. m = -6 , b = -4 **54.** m = -3 , b = 7 **55.** m= 2 **56.** m= $-\frac{11}{5}$

57. m= 3 **58.** Undefined **59.** m= 0 **60.** $22.50/ hr.

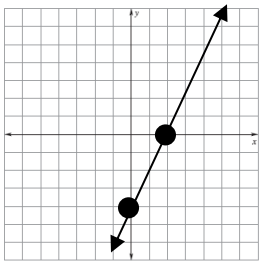
61.



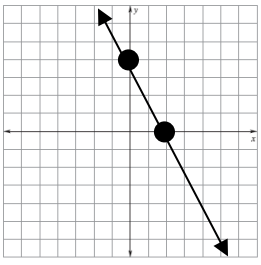
62.



63.



64.



65. y = ½ x + 3 **66.** y = -3x + 2

67. x = 10 ft. **68.** x = 12 in.

69. (3,4) **70.** (-4,3) **71.** False, True, True