



Linton Hall School

9535 Linton Hall Road Bristow, Virginia 20136-1200
(703)368-3157 Fax: (703)368-3036

This Summer Math Packet is for all students who will be entering Algebra in the fall of 2020.

Please note: This packet contains two sections. The first section is a review of Pre-Algebra concepts and the second section is readiness for Algebra.

****This packet is optional**.** If it is done, this packet will be collected during the first week of school.

We understand everyone needs a break and wants to have fun over the summer. Therefore, please know that this is just reinforcement to make sure our students do not lose the skills they have learned throughout the school year.

Thank you for your continued support and have a blessed summer.

Week 1

Solve.

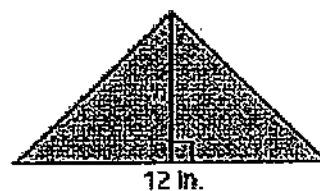
1. $x - 7 = -13$

2. $15 - 3c = 3$

3. One cell phone plan charges \$20 per month plus \$0.15 per minute used. A second cell phone plan charges \$35 per month plus \$0.10 per minute used. Find the number of minutes you must talk to have the same cost for both calling plans.

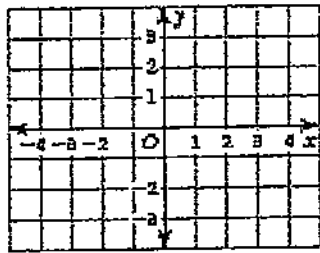
4. The area of a triangle is 36 square inches. Find the height of the triangle in inches.

$$A = \frac{1}{2}bh$$

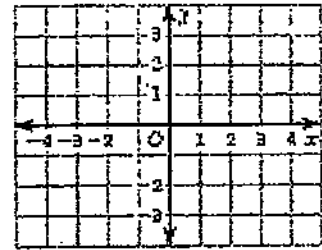


Find the slope (rise/run) and y-intercept of the graph of the linear equation. Then sketch its graph.

5. $y = 3x - 2$



6. $2x + 4y = 6$



7. The equation $5x + 2y = 20$ represents the cost for a family to attend a play where x is the number of adults and y is the number of children. Find the intercepts (when x or y equal zero) and interpret the meaning of each one.

Solve the system of linear equations using a graph, a table or substitution.

8. $y = 3x + 4$

$y - x = 2$

9. $y - 4x = 3$

$2y = 8x + 5$

10. It costs \$0.05 to send a text message and \$0.10 to send a picture on your cell phone. You spend \$4 and send five more text messages than pictures. How many text messages x and pictures y did you send?

Week 2

Write an equation of the line in slope-intercept form: $y = mx + b$. $m = (y_1 - y_2)/(x_1 - x_2)$

11. the line passing through $(-1, 3)$ and $(-4, 5)$

12. the line with slope -2.5 and passing through $(2, 1.5)$

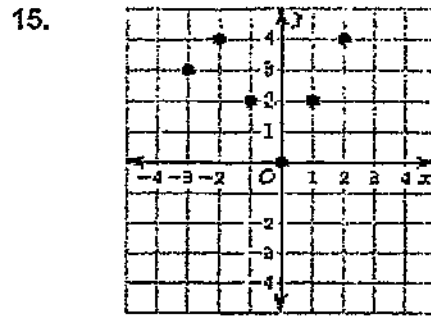
13. $0^\circ\text{C} = 32^\circ\text{F}$ and $100^\circ\text{C} = 212^\circ\text{F}$.

- a. Using x for degrees Celsius and y for degrees Fahrenheit, find an equation of the line passing through $(0, 32)$ and $(100, 212)$.
- b. What is the slope of the line? Explain what the slope means in terms of degrees Celsius and degrees Fahrenheit.
- c. What is the y -intercept of the line? Explain what the y -intercept means in terms of degrees Celsius and degrees Fahrenheit.

Determine the domain and range of the function.

14.

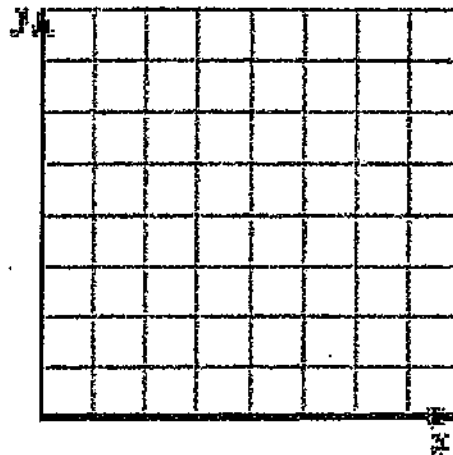
x	-2	-1	0	1	2	3
y	-3	-1	1	3	5	7



16. The table shows the cost y (in dollars) of x cold drinks.

- Graph the data.
- Is the domain discrete or continuous?
- Write a linear function that relates y to x .
- How much does it cost to buy three drinks?

Drinks, x	0	2	4	6
Cost, y	0	3	6	9



Determine whether the equation or table represents a linear or nonlinear function.

17. $2x - 4y = 6$

18.

x	3	7	11	15
y	2	4	8	16

27. What two integers is $\sqrt{42}$ between? Explain.

28. The data represent the weights (in pounds) of dogs at a dog show.

8, 30, 37, 42, 50, 45, 35, 32, 40, 40, 55, 90

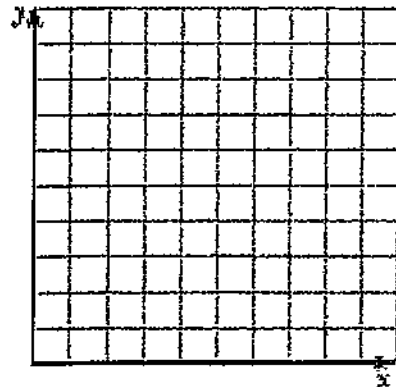
- Find the mean, median, and mode.
- Make a box-and-whisker plot for the data.



29. The table shows the number of years of college education and hourly earnings (in dollars) for several people.

Number of years, x	0	1	3	5	6
Hourly earnings, y	6	8	15	25	30

- Make a scatter plot of the data.
- Predict the hourly earnings for a person with four years of college education.



Choose an appropriate display for the situation. Explain your reasoning.

Bar graph, circle graph, histogram, line graph, scatterplot, pictograph,
stem and leaf, box and whisker

30. The percent of students with 0, 1, 2, or more than 2 siblings

31. The average movie theater ticket price over the last ten years

Week 4

Write the word sentence as an inequality.

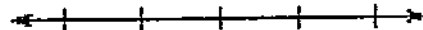
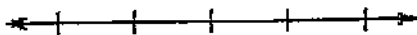
32. 3 less than a number t is at most 7.

33. A number m multiplied by 4 is greater than 12.

Solve the inequality. Graph the solution.

34. $x + 4 > -6$

35. $3x - 2 \leq 7$



36. If you spend at least \$50 (including shipping) at an online store, you receive a \$10 gift card. You want to purchase CDs that cost \$12 each. If shipping costs \$5, write and solve an inequality to find the number of CDs you must buy to receive the gift card.

Evaluate.

37. $1 - 3^2$

38. $12^3 \cdot 12^{-4}$

39. $\frac{(-7)^6}{(-7)^4}$

Write the number in standard form.

40. 2.7×10^5

41. 4.16×10^{-4}

Week 5

Solve.

42. $r - 3.4 = -5.8$

43. $-1 - 2c = 4$

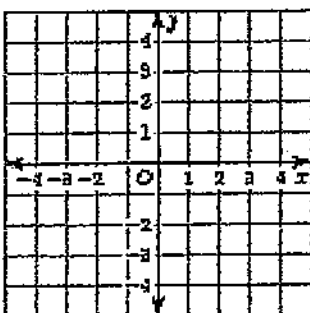
44. One cell phone plan charges \$17.50 per month plus \$0.17 per minute used. A second cell phone plan charges \$32 per month plus \$0.07 per minute used. Find the number of minutes you must talk to have the same cost for both calling plans.

45. The area of a triangle is 14.4 square inches. Find the height of the triangle in inches.

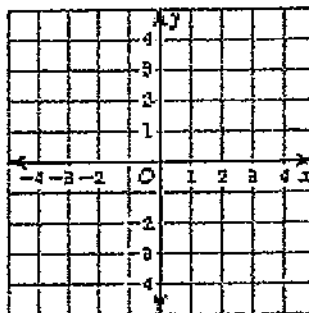


Find the slope (rise/run) and y-intercept of the graph of the linear equation. Then sketch its graph.

46. $y = 1.5x + 1$



47. $3x + 5y = 1$



48. The equation $3.50x + 1.50y = 21$ represents the cost for a family to attend a play where x is the number of adults and y is the number of children. Find the intercepts (when x or y equal zero) and interpret the meaning of each one.

Solve the system of linear equations using a graph, a table or substitution.

49. $y = \frac{3}{2}x + 2$

$$y - \frac{1}{2}x = \frac{1}{2}$$

50. $y - \frac{4}{3}x = 2.5$

$$3y = 4x - 2$$

51. It costs \$0.07 to send a text message and \$0.12 to send a picture on your cell phone. You spend \$3.38 and send twice as many text messages as pictures. How many text messages did you send?

Write an equation of the line in slope-intercept form: $y = mx + b$. $m = (y_2 - y_1)/(x_2 - x_1)$

52. the line passing through $(-1.5, 2)$ and $(1, -1)$

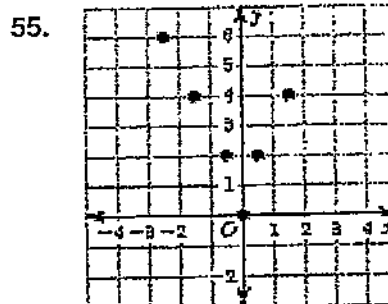
53. the line with slope -2 and passing through $(3, 1)$

Week 6

Determine the domain and range of the function.

54.

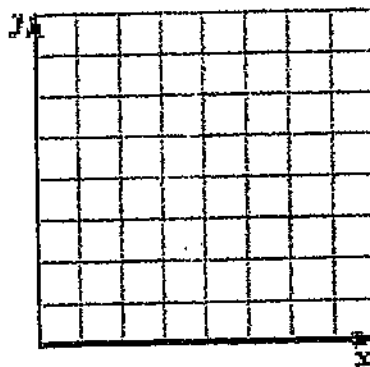
x	-2.5	-1	0	1.2	2
y	-3	-1	1	3	5



56. The table shows the cost y (in dollars) of x peaches.

Peaches, x	0	4	8	12
Cost, y	0	3	6	9

- Graph the data.
- Is the domain discrete or continuous?
- Write a linear function that relates y to x .
- What is the cost of six peaches?



Determine whether the equation or table represents a linear or nonlinear function.

57. $\frac{2}{3}x - \frac{1}{2}y = 4$

58.

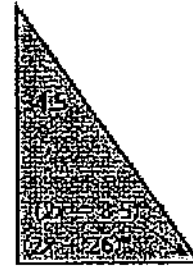
x	1.5	3.5	5.5	7.5
y	1	2	4	8

Solve.

59. $4(3q - 2) = 16q$

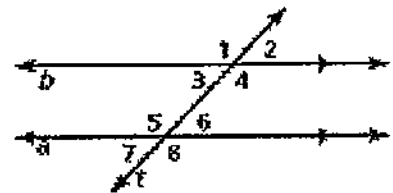
60. $22 - 6g = 18$

61. Find the value of x and classify the triangle in as many ways as possible.



62. Find the measure of each angle of a regular polygon with 10 sides. Sum = $180(n-2)$

63. If the measure of $\angle 2 = 36.5^\circ$, find the measures of $\angle 6$ and $\angle 8$.



Evaluate the expression.

64. $-\sqrt{225} + 4.8$

65. $\sqrt{\frac{8}{25}}$

66. A ladder is placed against the side of a house. The top of the ladder is 24 feet above the ground. The base of the ladder is 7 feet away from the house. Find the length of the ladder.
Use $a^2 + b^2 = c^2$.

67. What two integers is $-\sqrt{42}$ between? Explain.

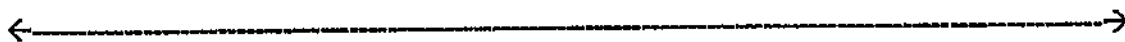
Week 7

68. The data represent the weight (in pounds) of dogs at a dog show.

7, 30, 37, 40, 40, 50, 45, 35, 32, 40, 55, 90

a. Find the mean, median, mode, and range.

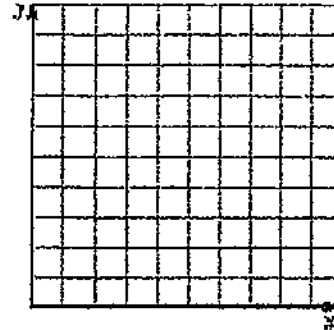
b. Make a box-and-whisker plot for the data.



69. The table shows the number of years of college education and hourly earnings (in dollars) for several people.

Years, x	0	1	3	5	6
Hourly earnings, y	6	9	15	26	31

- a. Make a scatter plot of the data.
- b. Predict the hourly wage for a person with four years of college education.



Write the word sentence as an inequality.

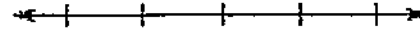
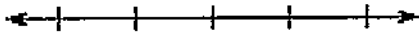
70. 3.2 less than a number t is at most 7.5.

71. A number m multiplied by $\frac{4}{7}$ is greater than $\frac{12}{5}$.

Solve the inequality. Graph the solution.

72. $x + 2.5 > -4.3$

73. $\frac{1}{2}x + \frac{1}{3} \leq \frac{2}{3}$



74. If you spend at least \$50 (including shipping) at an online store, you receive a \$10 gift card. You want to buy CDs that cost \$12.50 each. If shipping costs \$5, write and solve an inequality to find the number of CDs you must buy to receive the gift card.

Evaluate.

75. $1.5 - 3^2$

76. $12^{21} \cdot 12^{-29}$

77. $\frac{(-6)^7}{(-6)^5}$

Write the number in standard form.

78. 3.75×10^5

79. 4.286×10^{-4}

Week 8

80. The equation below can be used to determine the number of small tables x and the number of large tables y that you need for a party.

$$4x + 6y = 180$$

Which of the following is the same equation solved for y in terms of x ?

A. $y = -24x + 1080$

C. $y = -4x + 30$

B. $y = -\frac{2}{3}x + 180$

D. $y = -\frac{2}{3}x + 30$

81. Rex walked 450 yards from his house to his friend's house. Rex and his friend then walked to an ice cream shop at a rate of 100 yards per minute for x minutes. Which equation represents y , the total distance that Rex walked?

F. $100x = 450y$

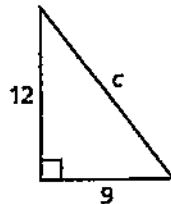
H. $y = 100x + 450$

G. $450x = 100y$

I. $y = 450x + 100$

82. What is the value of c in the figure below?

(use $a^2 + b^2 = c^2$)



83. A supermarket manager researched the price of a gallon of milk at all the local supermarkets. The prices are listed below.

\$3.89, \$3.85, \$3.99, \$4.20, \$4.00, \$3.89, \$4.45, \$3.89

What is the median price of a gallon of milk in the local supermarkets?

- A. \$3.89
B. \$3.94
C. \$4.02
D. \$4.10

84. A flagpole casts a shadow of $12\frac{1}{2}$ feet. A string tied to the top of the flagpole pulled tightly to the tip of the shadow farthest from the flagpole measures $32\frac{1}{2}$ feet in length. What is the height, in feet, of the flagpole?

(use $a^2 + b^2 = c^2$)

- F. 20
G. 30
H. 35
I. 45

85. Which of the following is equivalent to $\frac{12a^6}{8a^4}$?

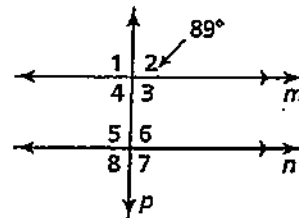
- F. $\frac{3a^2}{2}$
G. $4a^2$
H. $\frac{3a^3}{2a^2}$
I. $\frac{4}{a^2}$

86. The population of India in July 2007 was approximately 1,130,000,000.
 What is this number written in scientific notation?

- A. 1.13×10^7
- B. 1.13×10^9
- C. 113×10^7
- D. 113×10^9

87. In the figure to the right, line m is parallel to line n .
 Both line m and line n are intersected by line p .
 Which angle is supplementary to $\angle 6$?

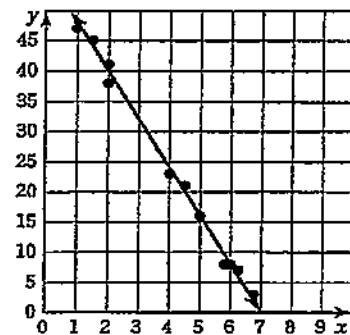
- F. $\angle 1$
- G. $\angle 2$
- H. $\angle 4$
- I. $\angle 8$



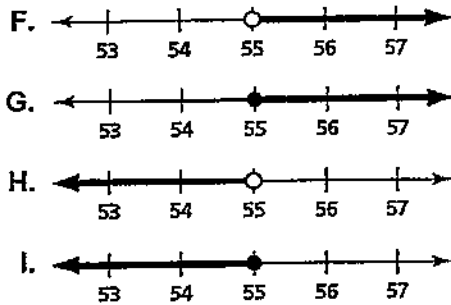
88. Ann starts training for a race. She makes a scatter plot relating the number of months she has been training x and the time y , in minutes, it takes to complete the course. She draws a line of best fit on the graph.

Which equation best represents the graph?

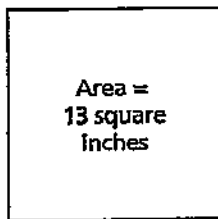
- A. $y = -8x + 56$
- B. $y = -\frac{3}{2}x + 50$
- C. $y = \frac{9}{5}x + 58$
- D. $y = 7x + 54$



89. An automobile insurance company offers a discount to drivers that are at least 55 years of age. Which graph represents the ages of the drivers who are eligible for this discount?



90. What is the perimeter, to the nearest tenth of an inch, of the square shown?



91. A group of 8 friends played a round of miniature golf. The mean of the final scores for the first 6 friends to finish the course is exactly 54. The mean of the final scores for all 8 friends is exactly 51. Which of the following are the possible final scores of the last 2 friends to finish the course?

- | | |
|--------------|--------------|
| A. 51 and 51 | C. 42 and 54 |
| B. 48 and 48 | D. 41 and 43 |

92. A pizza restaurant charges the same amount for each topping on their large pizzas. A large pizza with pepperoni and sausage costs \$13.50. A large pizza with mushrooms, onions, peppers, olives, and sun-dried tomatoes costs \$17.25. Which equation represents y , the cost of a large pizza with x toppings?

F. $y = 1.25x + 11$

H. $y = 3.75x + 13.5$

G. $y = 1.25x + 13.5$

I. $y = 3.75x + 17.25$

93. The inequality below can be used to represent the amount of money in a bank account after n weeks. What is the solution of the inequality below?

$$-5(n - 15) > 20$$

A. $n > 11$

C. $n < -1$

B. $n < 11$

D. $n > -19$