NESHAMINY HIGH SCHOOL

ALGEBRA 2

SUMMER PACKET

Name: _____

The purpose of this summer packet is to make sure you are prepared with the pre-requisite skills necessary to be successful in Algebra 2.

This packet is due to your math teacher on the FIRST DAY OF SCHOOL.

Please be sure to show all work (you may attach to packet).

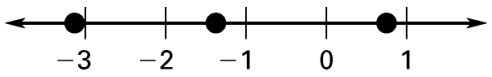
Neshaminy High School

Algebra 2 Summer Packet

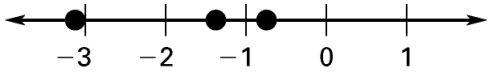
Name: _____

____ 1. Which graph correctly shows the real numbers $-\sqrt{2}, -\frac{3}{4}$, and $-\pi$ on a number line?

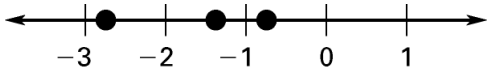
A.



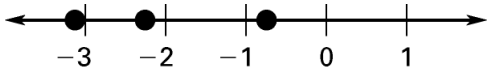
B.



C.



D.



____ 2. Identify the property shown.

$(23 + 12) + 8 = 23 + (12 + 8)$

A. distributive property
B. identity property of addition
C. associative property of multiplication
D. associative property of addition

____ 3. What is the value of $w - (w + 2)^2$ when $w = -5$?

____ 4. It costs $3 for a used book at a library's sidewalk sale. Tenecia has $20. Which expression can be used to find how much money Tenecia would have left after buying *b* books at the sale?

A. $20 + 3b$ B. $3b - 20$ C. $20 - 3b$ D. $17b$

____ 5. Which of the following shows the expression $5(q - 3) + 2(4 - q)$ in simplified form?

A. $3q + 5$ B. $3q - 7$ C. $4q + 5$ D. $4q - 7$

____ 6. What is the solution of $8 + 5z = 2(3z - 7)$?

____ 7. Solve the equation $\frac{3}{4}x + \frac{1}{2} = \frac{1}{4}(x - 2)$.

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

____ 8. Find the value of *y* in the equation $4x + 2y = 30$ if $x = 3$.

A. 5 B. 6 C. 9 D. 21

____ 9. Strawberries and blueberries both cost $1.50 a pound. You bought 3 fewer pounds of blueberries than strawberries. If you spent $10.50 total, how many pounds of blueberries did you buy?

A. 1 pound B. 2 pounds C. 5 pounds D. 6 pounds

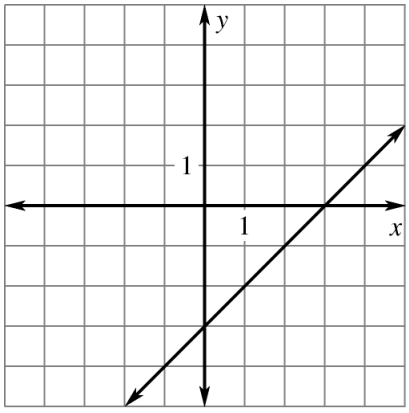
____ 10. Consider the relation given by the ordered pairs (–5, 0), (–1, –2), (4, –1), (6, –1), (–3, 2), (2, 0), and (–6, –5). Which of the following statements is true?

A. The relation is a function because domain values are not equal to their range values.
B. The relation is a function because each domain value maps to only one range value.
C. The relation is *not* a function because there are range values that map to different domain values.
D. The relation is *not* a function because the points do not lie on a straight line.

____ 11. Evaluate the function $h(x) = \frac{3}{4}x - 2$ when $x = 8$.

A. 4 B. $\frac{11}{2}$ C. 8 D. $\frac{40}{3}$

____ 12. What function is shown in the graph?



A. $f(x) = 3x - 3$ C. $f(x) = x - 3$
B. $f(x) = 3x + 3$ D. $f(x) = x + 3$

____ 13. What is the slope of the line passing through the points (–4, 3) and (2, 5)?

____ 14. A line passes through the points (4, 5) and (−8, 5). Which best describes the slope of the line?

A. The slope is positive.
B. The slope is negative.
C. The slope is zero.
D. The slope is undefined.

____ 15. The temperature at 6:00 A.M. was 45ºF. At noon the temperature was 75ºF. What was the average rate of change in temperature?

A. −5ºF/h
B. 5ºF/h
C. 20ºF/h
D. −20ºF/h

____ 16. What is the equation of a line with slope $-\frac{7}{8}$ and *y*-intercept 28?

A. $28y = -\frac{7}{8}x$
B. $y = 28x - \frac{7}{8}$
C. $y = -\frac{7}{8}x + 28$
D. $-\frac{7}{8}y = 28x$

____ 17. Which two equations, when graphed, represent perpendicular lines?

A. $y = 2x - 1$ and $y = 2x + 1$
B. $3x - 4y = 8$ and $y = -\frac{4}{3}x + 2$
C. $x + 2y = 5$ and $2x + y = 3$
D. $y = -3x + 3$ and $3x + y = 10$

____ 18. Write an equation for the line that passes through the points (0, −3) and (−2, 1).

____ 19. How many solutions does the linear system have?

$$8x - 2y = 6$$
$$-4x + y = 2$$

A. none
B. exactly one
C. exactly two
D. infinitely many

____ 20. Which ordered pair is a solution to the system?

$$-5x + 2y = 17$$
$$3x - y = -10$$

A. (−3, 1)
B. (1, −3)
C. (1, 13)
D. (3, 16)

____ 21. Solve the system using substitution.

$$3x - 4y = -25$$
$$-2x + y = 10$$

A. (3, −8)
B. (5, −4)
C. (−3, 4)
D. (−11, 36)

____ 22. Solve the system using the linear combo method.

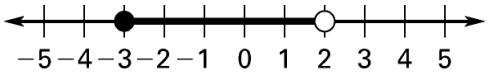
$6x + 5y = 2$
$3x + 4y = 7$

A. (1, 1) B. (−3, 4) C. (4, −1) D. (9, −5)

____ 23. What is the solution to the inequality $6 + 2h > h - 2$?

A. $h > -8$ B. $h > -4$ C. $h > 4$ D. $h > 8$

____ 24. What solution is graphed on the number line?

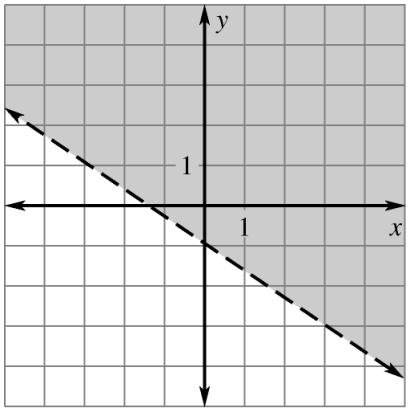


A. $-3 \geq x > 2$
B. $-3 < x \leq 2$
C. $-3 \leq x < 2$
D. $-3 \leq x$ or $x < 2$

____ 25. Which ordered pair is a solution of $5x - 2y > 6$?

A. (0, −2) B. (2, −3) C. (−1, −1) D. (2, 2)

____ 26. Which inequality is shown in the graph?

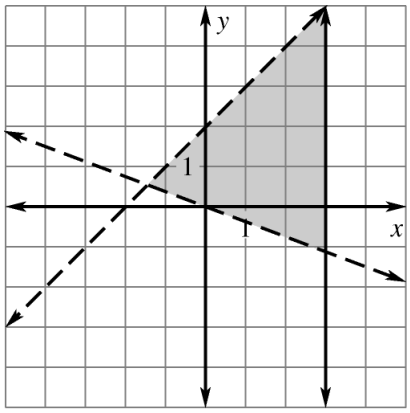


A. $y \geq -\frac{2}{3}x - 1$
B. $y > -\frac{2}{3}x - 1$
C. $y < -\frac{2}{3}x - 1$
D. $y \leq -\frac{2}{3}x - 1$

____ 27. The ordered pair (−2, 4) is a solution to which system of linear inequalities?

A. $y > x + 2$
$y \geq -2x + 1$
B. $y > 2x + 1$
$y < -x + 3$
C. $y \leq 2x + 5$
$y \leq -3x$
D. $y \geq -2x$
$y > -x + 6$

____ 28. Which system of linear inequalities is shown in the graph?



A. $x \geq 3$
$y < x + 2$
$y > -\frac{1}{4}x$

B. $x \leq 3$
$y > x + 2$
$y > -\frac{1}{4}x$

C. $x \leq 3$
$y < x + 2$
$y < -\frac{1}{4}x$

D. $x \leq 3$
$y < x + 2$
$y > -\frac{1}{4}x$

____ 29. What is the solution of the absolute value inequality $|2x + 5| > 25$?

A. $x > 10$ or $x < -15$
B. $x > 10$ or $x > -15$
C. $x < 10$ or $x > -15$
D. $x < 10$ or $x < -15$

____ 30. What is the value of $f(x) = 2|x + 4| - 1$ when $x = -6$?

____ 31. What is the correct factorization of $x^2 + 3x - 10$?

____ 32. What is the factored form of the expression $g^2 - 4$?

____ 33. What is the correct factorization of $9x^2 + 12x + 4$?

A. $(3x - 2)^2$
B. $(3x + 2)(3x - 2)$
C. $(3x + 2)^2$
D. $3x + 2$

____ 34. What is the solution of $x^2 - 16x + 64 = 0$?

A. -16
B. -8
C. 8
D. 64

____ 35. What is the value of $\left(\frac{3^{-2}}{3^2}\right)^{-1}$?

A. 0
B. $\frac{1}{81}$
C. 3
D. 81

____ 36. Which function has a leading coefficient of -3 and degree 5?

A. $f(x) = 5x^{-3} + 2x^2 - 6x + 18$
B. $f(x) = -3x^5 + 2x^3 + 6x - 18$
C. $f(x) = -3x^3 + 5$
D. $f(x) = 5x - 3$

____ 37. What is the simplified form of the expression $(6x^3 + 2x - 7) + (8x^2 - 4x + 12)$?

____ 38. Simplify the expression $3x(x^2 + 2x - 4) - 2(x^3 - 8)$.

____ 39. Find the product $(2x - 1)(7x^2 + 3x - 5)$.

____ 40. Find the product $(2a - 5b)^2$.

____ 41. What is the solution of $-4x^3 = 32$?

A. -8
B. -2
C. 2
D. $2\sqrt{2}$

____ 42. Solve $4\sqrt{5x + 6} = 24$.

A. 0
B. 6
C. 36
D. 114

____ 43. What is $\frac{f(x)}{g(x)}$ if $f(x) = x^2 + x - 12$ and $g(x) = x - 3$?

A. $x + 4$
B. $\frac{(x - 4)(x + 3)}{(x - 3)}$
C. -4
D. $x - 4$

____ 44. Simplify the expression $\frac{3x^2 + 21x + 36}{6x + 24}$.

____ 45. Multiply: $\frac{x^2 - 9}{x + 3} \cdot \frac{x - 5}{x^2 + 2x - 15}$

____ 46. Divide: $\frac{9x^2 + 18x - 72}{x^2 - 4x + 4} \div \frac{3x^2 + 15x + 12}{x^2 - 3x + 2}$

____ 47. Solve $\frac{8}{x + 1} = \frac{15}{2x + 1}$.

A. -7 B. 0 C. 7 D. 14

____ 48. A city wants to know if they should open a new skateboard park. Which chosen sample is least likely to be biased?

A. 100 randomly selected customers at a skateboard shop
B. 40 randomly selected teenagers from the local high school
C. 10 randomly selected homeowners near where the park would be built
D. 90 randomly selected households from across the city

____ 49. In a health club with 900 members, a survey of 50 members found that 18 would like to see a yoga class offered. Predict how many members of the health club would like a yoga class offered.

A. 18 B. 324 C. 450 D. 2500

____ 50. Find the mean, median, and range of the new data set if each entry of the given data set is multiplied by 5.

23, 11, 7, 14, 8, 19, 3, 11

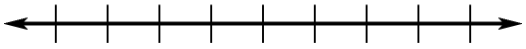
____ 51. You have a bag of 16 red, 6 white, and 10 blue beads. What is the probability of randomly choosing a white bead from the bag?

A. $\frac{1}{2}$ B. $\frac{13}{16}$ C. $\frac{5}{16}$ D. $\frac{3}{16}$

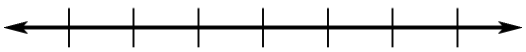
____ 52. What is the next term in the sequence 6, 13, 20, 27, . . .?

Graph the numbers on a number line. Then write the numbers in order from least to greatest.

53. $-0.6, \frac{7}{10}, -3, -\frac{5}{2}, 4$



54. $\frac{3}{2}$, ?, $\sqrt{3}, -2, 0.7$



Identify the property shown.

55. $3 + 2 = 2 + 3$

Simplify the expression.

56. $4(2x + 3) - x$

57. $4(y - 2) + 2(y + 3)$

58. $3^3 - 3(6 - 2^2)$

Solve the equation.

59. $x - 4 = 20$

60. $3m + 1 = 7m - 11$

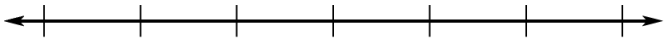
In Exercises 5–6, use the following data set.
27, 31, 23, 14, 18, 20, 24, 32, 19, 24, 21

61. Find the mean.

62. Find the mode(s) and range.

63. Draw a box-and-whisker plot for the following data set.

167, 154, 167, 142, 138, 186, 173, 175, 167, 185, 158, 169, 181

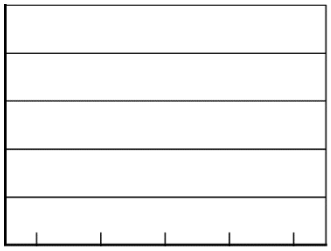


In Exercises 8–9, use the following data set.
38, 42, 53, 58, 67, 67, 69

64. Make a frequency distribution of the data. Use four intervals beginning with the interval 31–40.

Interval	Tally	Frequency
31–40		

65. Draw a histogram of the data set.

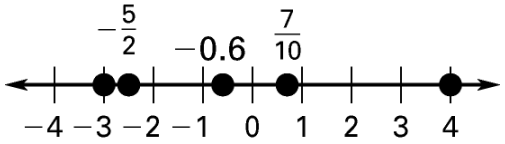


Algebra 2 summer packet
Answer Section

1. ANS: B
2. ANS: D
3. ANS: -14
4. ANS: C
5. ANS: B
6. ANS: 22
7. ANS: A
8. ANS: C
9. ANS: B
10. ANS: B
11. ANS: A
12. ANS: C
13. ANS: 1/3
14. ANS: C
15. ANS: B
16. ANS: C
17. ANS: B
18. ANS: y = - 2x - 3
19. ANS: A
21. ANS: C
22. ANS: B
23. ANS: A
24. ANS: C
25. ANS: B
26. ANS: B
27. ANS: B
28. ANS: D
29. ANS: A
30. ANS: 3
31. ANS: (x + 5)(x – 2)
32. ANS: (g – 2)(g + 2)
33. ANS: C
35. ANS: D
36. ANS: B
37. ANS: $6\,x^3 + 8x^2 - 2x + 5$
38. ANS: $x^3 + 6x^2 - 12x + 16$
39. ANS: $14x^3 - x^2 - 13x + 5$
40. ANS: $4a^2 - 20ab + 25b^2$
41. ANS: B
42. ANS: B
44. ANS: $\frac{x+3}{2}$

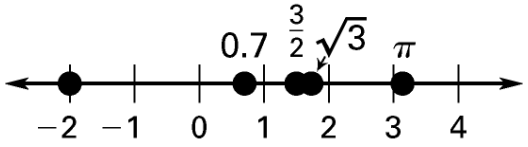
45. ANS: $\frac{x-5}{x+5}$
46. ANS: $\frac{3(x-1)}{x+1}$
47. ANS: C
48. ANS: D
49. ANS: B
50. ANS: 60, 55, 100
51. ANS: D
52. ANS: 34
53. ANS:

–3, $-\frac{5}{2}$, –0.6, $\frac{7}{10}$, 4;



54. ANS:

–2, 0.7, $\frac{3}{2}$, $\sqrt{3}$, ?;



55. ANS:
commutative property

56. ANS:
$7x + 12$

57. ANS:
$6y - 2$

58. ANS:
21

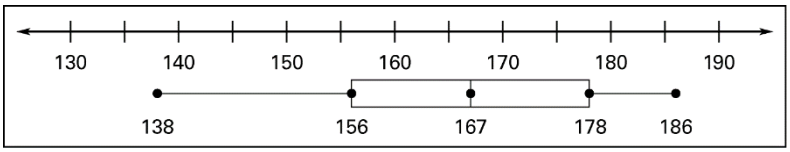
59. ANS:
24

60. ANS:
3

61. ANS:
mean = 23

62. ANS:
mode = 24 ; range = 18

63. ANS:



64. ANS:

Interval	Tally	Frequency
31–40	|	1
41–50	|	1
51–60	||	2
61–70	|||	3

65. ANS: