Geometry College Prep & Honors
Summer Assignment 2018

Attached is a required summer assignment, which will be due on the first day of school in September. The goal of this packet is to keep your math skills sharp during a time when you are not in school. Therefore, it is important to work on the problems in this assignment **throughout the summer**; you will not reap the same benefits if you wait until the week before school starts to complete the packet.

This packet contains review material from Algebra I. There may be some questions that are not familiar to you; do you best to try to figure them out. Be sure to circle the best answer choice for each question. You MUST also show your work; you may write your work directly on the packet, or attach additional pages with your worked out solutions. Please make sure your name is on all pages.

Grading

This packet is due on the first day of classes, **Tuesday September 4, 2018**. It will be counted toward your 1st quarter grade. Late packets will be subjected to a penalty of 10 points per day; **no packets will be accepted after Friday September 7, 2018.**

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End-of-Course Assessment

Selected Response

Read each question. Then circle the letter(s) of the correct answer(s).

1. A student is 5 ft 9 in. tall. Which of the following are equivalent to the student's height? Use the fact that 1 m ≈ 3.28 ft.

   A 1.75 m
   B 17.5 cm
   C 1750 cm
   D 1750 mm

2. Which is the simplified form of the expression?
   $9(r + 3) - \frac{1}{2}(4r - 16)$

   A $11r + 19$
   B $11r + 35$
   C $7r + 19$
   D $7r + 35$

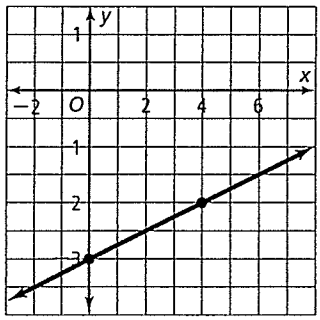
3. Which model is most appropriate for the set?
   $(2, 17), (6, 121), (0, 1), (3, 34), (-1, 2), (-7, 0)$

   A Linear
   B Exponential
   C Quadratic
   D Logarithmic

4. If $f(x) = \frac{3}{4}x + \frac{5}{6}$, what is $f(12)$?

   A $\frac{59}{6}$
   B $\frac{47}{6}$
   C $\frac{23}{6}$
   D 19

5. Which function rule is graphed below?



   A $y = 3x - 4$
   B $y = \frac{1}{4}x - 3$
   C $y = -\frac{1}{4}x - 3$
   D $y = \frac{1}{2}x - 3$

6. Solve $y = 2xz^2 - xy$ for x.

   A $x = \frac{1}{2z^2}$
   B $x = \frac{y}{2z^2}$
   C $x = \frac{1}{2z^2 - 1}$
   D $x = \frac{y}{2z^2 - y}$

7. Which of the following are equivalent to the polynomial?
   $4x(2x^2 - 1) + x(8x)$

   A $4x(2x^2 + 2x - 1)$
   B $8x^3 + 8x^2 - 4x$
   C $6x^3 + 8x^2 - 4x$
   D $8x^3 - 8x^2 + 4x$

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8. What is the factored form of $3x^2 - 17x = 28$?

A $(x + 7)(3x - 4) = 0$
B $(x + 7)(3x + 4) = 0$
C $(x - 7)(3x - 4) = 0$
D $(x - 7)(3x + 4) = 0$

9. Which of the following give a definition for the geometric sequence?
3, −3, 3, −3, 3, ...

A $a_1 = -3; a_n = a_{n-1} \cdot -1$

B $a_n = 3 \cdot (-1)^{n-1}$

C $a_1 = 3; a_n = a_{n-1} \cdot 1$

D $a_1 = 3; a_n = a_{n-1} \cdot -1$

10. Mandy works part-time to earn money for a trip. The amount she saves after working x hours is given by the equation $y = 7.5x + 40$. How much does Mandy earn per hour?

A $7.50
B $32.50
C $40
D $47.50

11. Express the following sentence in equation form.

Five times the difference of a number and 2 is equal to the quotient of the same number and 6.

A $5x - 2 = \frac{x}{6}$

B $5(x - 2) = \frac{x}{6}$

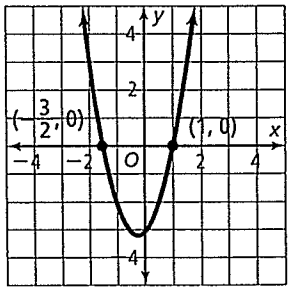
C $5(2 - x) = \frac{x}{6}$

D $5(x - 2) = \frac{6}{x}$

12. Which of the following result in an irrational number?

A the sum of two rational numbers
B the product of two rational numbers
C the sum of a rational number and an irrational number
D the product of a nonzero rational number and an irrational number

13. The graph of which equation is shown below?



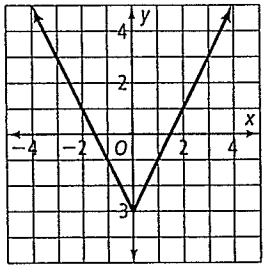
A $y = 2x^2 + x - 3$

B $y = \frac{1}{2}x^2 + x - 3$

C $y = 4x^2 + x - 3$

D $y = x^2 + x - 3$

14. The graph of which equation is shown below?



A $y = -|2x| + 3$
B $y = |2x| - 3$
C $y = |2x - 3|$
D $y = 2|x - 3|$

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15. Solve the equation $2x^2 + 3x = 2$.

A -2

B $-\frac{1}{2}$

C $\frac{1}{2}$

D 2

16. Which of the following are equivalent forms of the equation $y = -\frac{5}{9}x + \frac{2}{3}$?

A $y + 1 = -\frac{5}{9}(x - 3)$

B $5x + 9y = 6$

C $\frac{5}{9}x + y = \frac{2}{3}$

D $-5x + 9y = 6$

17. An engineer studied the sales of trucks and SUVs in California over an 8-year period. The results are modeled in thousands sold with the following polynomials.

Trucks: $-13x^3 + 89x^2 - 119x + 6814$
SUVs: $16x^2 - 12x + 2152$

In each polynomial, $x = 0$ corresponds to the first year in the 8-year period. Which polynomial models the total number of trucks and SUVs sold in California during the 8-year period?

A $-13x^3 + 105x^2 - 131x + 8966$
B $-13x^3 + 73x^2 - 107x + 4662$
C $-13x^3 + 105x^2 - 107x + 8966$
D $13x^3 - 73x^2 + 107x - 4662$

18. At which point do the graphs of the equations intersect?

$$\begin{cases} y = 3x - 5 \\ y = |x - 7| \end{cases}$$

A $(-1, 8)$

B $(3, 4)$

C $(-1, -8)$

D $(3, -4)$

19. Which of the following correlations represents a causal relationship?

A the number of cats and the number of dogs in a shelter

B the number of cats in a shelter and the amount of cat food used

C the number of cats in a shelter and the number of vaccinations given

D the amount of money in the cash drawer and the number of cats in the shelter

20. Which of the following are solutions to the inequality $-9 \leq 2x + 1 \leq 5$

A -6

B -4

C -2

D 0

E 2

F 4

21. Which of the following are solutions to the inequality $x^2 - 4 = x + 8$

A -4

B -3

C 3

D 4

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22. Which of the following are equivalent to 18 feet per minute?

A 3.6 inches per hour
B 40 inches per minute
C 1080 feet per hour
D 12,960 inches per hour

23. Which points are in the solution set for $4x - y > 1$?

A $(1, 2)$
B $(0, -1)$
C $(0, 2)$
D $(2, 0)$
E $(-1, 2)$
F $(-1, -2)$

24. At which points do the graphs of the following equations intersect?

$$\begin{cases} y = x^2 + 9x + 1 \\ x - y = 6 \end{cases}$$

A $(0, -6)$
B $(0, 1)$
C $(-4, -9)$
D $(-4, -19)$
E $(-1, -7)$
F $(-1, 0)$
G $(-7, -13)$
H $(-7, 0)$

25. What are the factors of the expression $x^2 - 7x - 44$?

A $(x - 11)$
B $(x - 4)$
C $(x + 4)$
D $(x + 11)$

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Constructed Response

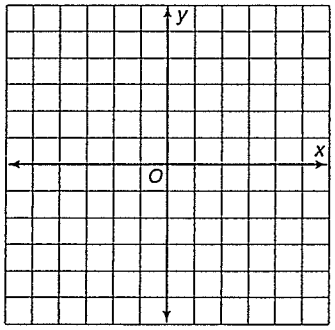
In this section, show all your work in the space beneath each test item.

26. Solve the equation. Show your work and justify each step.

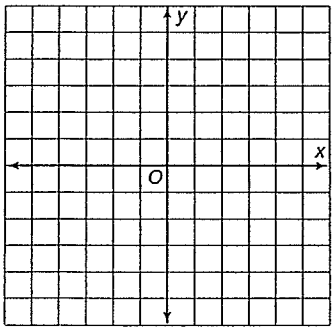
$$4\left(x - \frac{1}{2}\right) - 12 = 0$$

27. The perimeter of a rectangle is $6x^2 - 6x - 4$. The width of the rectangle is $2x + 1$. What is the length of the rectangle?

28. Graph the inequality $4x + 2y < 6$.



29. Graph the function $f(x) = -x^2 + 2x + 4$.



30. The ages of the members of a hiking club are 17, 18, 24, 28, 32, 36, 43, and 52. A new members who is 45 years old joins the club. In general, describe how this will affect the mean, median, mode, and range of the ages of the members of the club.

31. What are the solutions of the equation $x^2 - 4x - 32 = 0$? Show your work and justify each step.

32. One angle of an obtuse triangle measures four times the first angle. The third angle measures 30° less than the first angle. What are the degree measures of the three angles? Show or explain your work.

33. What is the solution to the system of equations?

$$\begin{cases} y = 2x + 3 \\ y = -x + 6 \end{cases}$$

34. You buy x pounds of strawberries for \$3.99/lb. Write a function rule for the amount of change C you receive from a \$20 bill.

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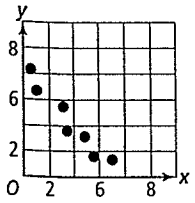
35. Write an equation for the line of best fit for the scatter plot below.



36. A square has sides measuring $5\sqrt{9}$ m. What is the area of the square?

37. Suppose you survey each coach at a cheerleading tournament. What relationship would you expect between the number of coaches and the number of teams competing in the tournament?

38. The population of a town is 75,000 and decreases 1.5% each year. If the trend continues, what will the population be after 12 years? Round your answer to the nearest thousand.

39. A beach club made $39,100 in May and $59,200 in August. What is the rate of change in the profit for this time period?

40. Write a sequence that is both arithmetic and geometric.

41. What function does the table represent?

x	−2	−1	0	1	2
y	4	5	6	7	8

42. What is the value of the function $f(x) = \frac{1}{3}(-5x) + 3$ when $x = 0.25$?

43. What is the correlation coefficient of the line of best fit for the data in the table? Round your answer to the nearest thousandth.

Attendance at Water Park	
Month	Attendance
April	130
May	276
June	874
July	951
August	712
September	402

44. A puddle is 0.06 m deep after 1 h and 0.03 m deep after 5 h. At what rate is the level of the water changing?

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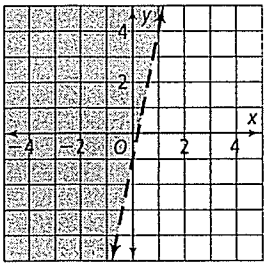
45. How does the graph of $y = 3x - 1$ differ from that of $y = 3x$?

46. Write an inequality for the graph below.



47. What is the solution of the system of equations?

$$\begin{cases} y = 4x - 1 \\ y = 3x + 2 \end{cases}$$

48. What is the mean of the data?
$6x$, $3x$, $17x$, $4x$, $10x$, $2x$

49. What is the standard deviation of the data set rounded to the nearest thousandth?

7.2, 9.1, 5.7, 8.5, 10.2, 9.9, 11.0, 7.7, 6.4, 8.9

50. What is the vertex of the graph of the function $f(x) = x^2 + 4x - 5$?

51. What is the value of x? Explain each step in your solution.

$$\frac{1}{10}(1.2x - 3.5) = 0.13$$

52. Is the relation a function? Explain how you know.

{(300, 9), (260, 4), (275, 4), (350, 11), (225, 2), (300, 7), (325, 10), (280, 5)}

53. Write an explicit formula for the arithmetic sequence.

$$\frac{2}{3}, \frac{3}{4}, \frac{5}{6}, \frac{11}{12}, 1, \ldots$$

54. In the following situation, is there likely to be a correlation? If so, does the situation reflect a causal relationship?

the cost per pound of salad at a salad bar and the amount of salad sold

55. In May, your savings account balance was \$1140. In August, the balance in the account was \$1450. What is the average rate of change per month?