Randolph High School

Mathematics Department

To: Prospective Algebra 2A Students

From: The Algebra 2A Teachers

Subject: Summer Assignment

Algebra 2A is a rigorous yearlong course that will prepare you for Precalculus and additional higher level math courses. It covers an extensive selection of mathematical topics and is a very demanding course.

A requirement for success in the Algebra 2A course is that you have absorbed and are able to apply many concepts learned in your previous math courses. In an attempt to ensure that you are sufficiently prepared for Algebra 2, you are asked to complete the attached "Summer Review Packet." This attachment contains a summary of many topics from your previous math courses. Please read/study this review material and do all problems. All problems should be done in order, clearly labeled, neatly written, and **showing all work.** Answers to the assigned problems are included so you should check your work.

Although the Homework Administrative Regulations of the Randolph Township Schools do not permit us to "grade" your work on this summer assignment, the material in this packet will be the focus of instruction during the first few days of school and you will be tested on this material and extensions of this material during the first two weeks of classes. The material in this packet is not new; it is preparatory and review for the ensuing school year. Traditionally, the degree to which a student puts the time and effort into this assignment is a good indicator of his or her success in this course.

If you have any questions, please see Mr. Plucinsky or Mr. Eaton before the end of the school year. If questions arise during the summer, please email Mr. Plucinsky at: kplucinsky@rtnj.org or Mr. Eaton at: beaton@rtnj.org

Good luck and have a safe and happy summer.

Sincerely,

The Algebra 2A Teachers

Name:_____

Solve the equation. Check your solution.

1.) $x - 14 = -5$

2.) $3x - 2 = 4 - x$

Solve the equation.

3.) $-3 + 4 \mid 8n + 10 \mid = 53$

4.) $-23 = -3(-4b - 3) - 8(1 + b)$

Describe the values of *c* for which the equation has no solution.

5.) $-3x + c = -3x + 8$

Write the sentence as an inequality.

6.) The quotient of n and 3 is less than 5.

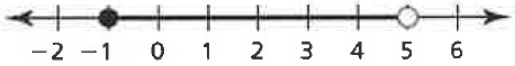
7.) 10 more than y is greater than or equal to 17.

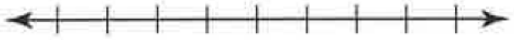
Solve the inequality. Graph the solution on a number line.

8.) $-3 \leq -3(1 - x)$

Write and graph a compound inequality that represents the numbers that are ***not*** solutions of the inequality represented by the graph shown.

9.)





10.)

Determine whether the relation is a function. If the relation is a function, determine whether the function is linear or nonlinear.

11.)

x	-3	0	3	6	9
y	-3	-4	-5	-6	-7

12.) $y = -(x+1)^2$

Write an equation in slope-intercept form of the line with the given characteristics.

13.) through: $(-3, 1)$, slope $= 2$

14.) through: $(-3, -4)$, perpendicular to $y = -\frac{3}{4}x + 5$

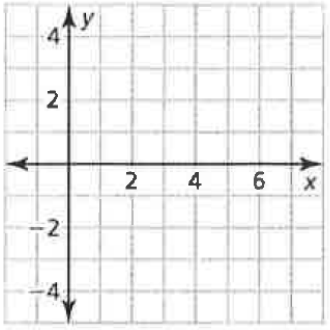
Write an equation in point-slope form of the line with the given characteristics.

15.) through: $(-1, -3)$ and $(2, 5)$

16.) through: $(4, 4)$, parallel to $y = -\frac{1}{6}x + 2$

Graph the equation and identify the intercept(s). If the equation is linear, find the slope of the line.

17.) $2x + 5y = 10$



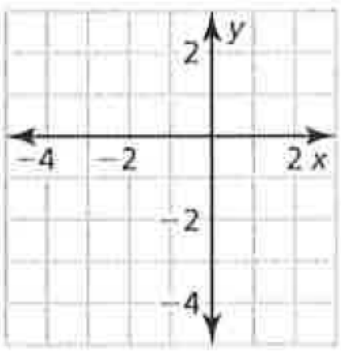
Solve the system of linear equations using any method.

18.) $2x + 6y = 14$
$2x - y = -7$

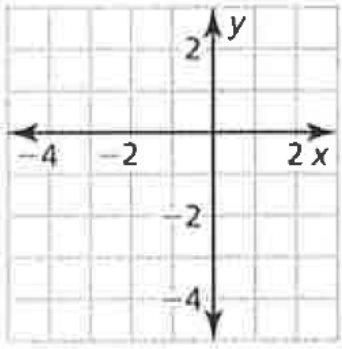
19.) $-x = -6y + 19$
$4 = -4x - 12y$

Graph the system of linear inequalities.

20.) $y \geq x + 1$
$\frac{1}{3}x + y \geq -3$



21.) $4x - y \leq -1$
$y < -3$



Find the sum or difference and write your answer in standard form.

22.) $(3x^2 + 6x) + (4x^2 - 8x)$

22.) $(3 + 7x^3 + x^4) - (8 - x - 4x^4)$

Find the product and write your answer in standard form.

24.) $(c-5)(c-3)$

25.) $(2a+7)(7a-4)$

26.) $(2x+1)(2x-1)$

Factor the polynomial completely.

27.) b^3-3b^2+b-3

28.) $-n^2+n+20$

29.) $2x^2-17x+21$

Solve the equation.

30.) $-2x(3x+1)(x-8)(x+2)=0$

31.) $4k^2+3=-13k$

Solve the equation using any method.

32.) $-3x^2=-54$

33.) $x^2-8x+7=0$

34.) $-3x^2-2x+4=0$

Solve the equation. Check your solutions.

35.) $8\sqrt{n-2}=-16$

36.) $\sqrt{2v}=\sqrt{3v-1}$

37.) The holidays are coming and you decide to purchase new candles to decorate outside with. Since you're trying to save money, you purchase them at the dollar store but find that they are cheaply made and burn very fast. After being lit for 2 hours, the candle is 20 inches tall. After being burned for 6 hours, the height of the candle is now 17 inches.

<table>
<tr>
<td>A. Identify the variables in this problem:

x = _____

y = _____

Use your answers above to rewrite the data as 2 ordered pairs (x, y)</td>
<td>B. Use your ordered pairs to find the slope of the line and then write a linear equation of the form y = mx + b to model this situation. What does the slope represent in the context of this problem? What does the y-intercept represent?</td>
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<tr>
<td>C. How tall will the candle be after 10 hours of burning?</td>
<td>D. If the candle is 8 inches tall, how long has it been burning?</td>
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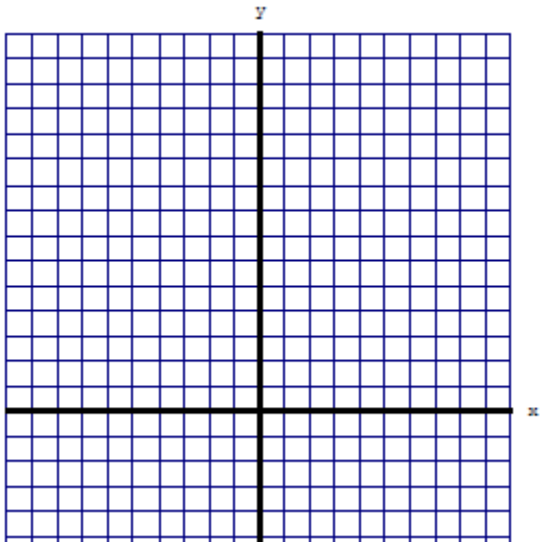
<tr>
<td>E. What is the x-intercept of this problem? What is the meaning of the x-intercept in the context of this problem?

F. Suppose your friend Jay tells you that he has a candle that is 10 inches tall after burning for 7 hours and that he knows that the height has been going down 2 inches per hour since he first bought and lit it. How tall was the candle when he purchased it?</td>
<td>G. Sketch a graph that models the height of your candle over time

  </td>
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38.) Mr. Brady and Ms. Green both have the same above-ground pools that are 4 feet deep and need to be refilled each spring. Mr. Brady starts with 3 inches of water on the bottom and adds water at a rate of 3 inches per minute. Ms. Green starts with 6 inches of water on the bottom and adds water at a rate of 2 inches per minute.

A. Write an equation for each person representing the amount of water in the pool y, as a function of the time x that has gone by in minutes.

Mr. Brady: Ms. Green:

B. How much water will Mr. Brady's pool be after 10 minutes?

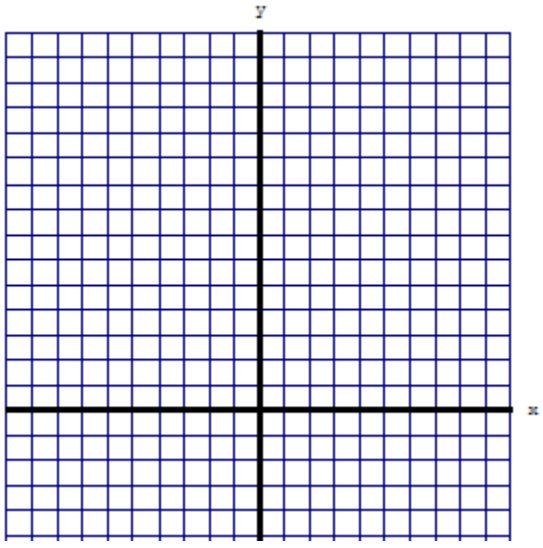
C. How much time has gone by if Ms. Green has 20 inches of water in her pool?

D. After 12 minutes, what PERCENTAGE of Ms. Green's pool is full?

E. If they both start filling their pools at the same time, whose will be filled first?

F. If Ms. Green began filling her pool at 1:45 p.m., what time will it be full?

G. Is there ever a time when both pools will have the same amount of water in them? Use the graph below to support your answer.



Algebra 2A Summer Packet Answer Key

1. x = 9 2. x = 3/2 3. n = ½, -3 4. b = -6 5. $c \neq 8$ 6. $\frac{n}{3} < 5$

7. $y + 10 \geq 17$ 8. $x \geq 0$ 9. $x < -1$ or $x \geq 5$ 10. $x > 0$ and $x < 4$ 11. Function, linear

12. Function, nonlinear 13. y = 2x + 7 14. y = 4/3x 15. y + 3 = 8/3 (x + 1)

16. y – 4 = -1/6(x – 4) 17. (5, 0) (0, 2) m = -2/5, Graph 18. (-2, 3) 19. (-7, 2)

20. Graph 21. Graph 22. $7x^2 - 2x$ 23. $5x^4 + 7x^3 + x - 5$ 24. $c^2 - 8c + 15$

25. $14a^2 + 41a - 28$ 26. $4x^2 - 1$ 27. $(b^2 + 1)(b - 3)$ 28. $-(n + 4)(n - 5)$

29. (2x – 3)(x – 7) 30. x = 0, -1/3, 8, -2 31. k = -1/4, -3 32. $x = \pm 3\sqrt{2}^{-}$

33. x = 7, 1 34. $x = (-1 \pm \sqrt{13})/3$ 35. No solution 36. v = 1

37. A. x = # hours burning, y = height of the candle B. y = -.75x + 21.5 C. 14 inches

D. 18 hrs E. x = 28.7 hours before the candle burns away F. 24 inches G. Graph

38. A. Brady y = 3x + 3 Green y = 2x + 6 B. 33 in C. 7 mins D. 62.5%

E. Mr. Brady F. 2:06 pm G. Graph, and after 3 mins