

Name: _____ Date: _____



NOBLE
ACADEMY

Senior Integrated Math IV
School Year 2017-2018
Summer Assignment

Name: _____

Date: _____

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Integrated Math IV Summer Assignment

Dear Noble Academy Student:

Welcome to Integrated Math IV! I look forward to getting to know you and working with you this school year. While you are enjoying your summer, please take time to complete the attached assignments. This packet is designed to help make the transition into this challenging course as smooth as possible (and to keep your math skills from deteriorating from lack of use). One thing is for sure - the more you do over the summer, the easier it will be when school starts and the more comfortable you will feel with the pace of the class.

Your summer assignment consists of problems that cover the following concepts:

- Part 1: Prerequisite Skills - Exponent Rules, The Quadratic Formula and Factoring
- Part 2: Domain, Range, Functions and Inverses
- Part 3: Logarithms
- Part 4: Triangles

You should recognize these concepts from Algebra II and Geometry. It is very important that you complete the summer work. **Packets WILL BE COLLECTED on the FIRST day of school.** A completion grade will be assigned to all students. Answers are attached at the end of this packet so you can check your solutions.

We will spend some time in class reviewing the prerequisite skills covered in this packet, but we will NOT complete problems from this packet, as they are your responsibility to complete over the summer. You will be tested on this material within the first two weeks of school. *We will be building on all these concepts for the rest of the year.* These foundational skills are very important!

If you have questions or concerns, you can reach me by email at bdefauw@thenobleacademy.org. I will respond, but please understand that I do not check my email as frequently in the summer as I do during the school year.

Give me your best work while giving yourself the opportunity to get off to a great start. I look forward to seeing you in August!

Sincerely,
Mr. DeFauw
12th Grade Math Teacher

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REQUIRED MATERIALS

Come prepared for class every day. You will need to bring your textbook(s), calculator, and a method to record notes and do problems. Students should have these materials by the first day of class.

- Textbook(s)
 - Will be announced at a later date
- Calculator
 - A graphing calculator will be an essential tool for you as you learn and do calculus. This tool will, of course, help us to calculate results as we solve problems. It will also help us explore new ideas, test conjectures, and create graphs to help us visualize what we are learning.
 - Students are required to purchase a TI-83 or TI-84 calculator to bring to class every day.
- Method to record notes and do problems
 - This could take the form of a college rule notebook, binder, and/or notebook with graphing paper.
- Other miscellaneous items
 - 2 packs of Expo Markers (pack of 6 or 12)
 - One pack will be shared by the class for problems on the big whiteboards
 - One pack will be kept by you to do problems on small whiteboards
 - Mechanical pencils (There will not be a pencil sharpener in the room)
 - 2 color pens (at least one red and one blue, for grading)

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Please work on a separate sheet of paper and ALWAYS show ALL work to support your answer!!

1. Remove parentheses and simplify. $5c + 5d - 6(6c - 6d) =$

2. Simplify. $-6^2 + 7 =$

3. Simplify. $5 - (-2 - 27) =$

4. Simplify. $-90 - (-29) - 38 - (-52)$

5. Evaluate and simplify. $\frac{z + y}{6}$ for $z = 28$ and $y = 2$

6. Evaluate the polynomial for $x = 6$. $2x^2 - 3x + 6$

7. Solve. $-9 + x = -17$

8. Solve. $-x = -48$

9. Solve. $\frac{x}{7} = -10$

10. Solve. $-\frac{3}{5}x = \frac{6}{35}$

11. Solve. $6x + 10 = 22$

12. Solve. $6x - 4 = 4x$

13. Solve. $4y - 2 = 33 - 3y$

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14. Solve. $4(3x - 2) = 52$

15. Solve. $3(3 + 3x) - 5 = 49$

16. Solve. $8x - (3x + 7) = 23$

17. Solve. $4(x - 6) + 8 = 6(x + 2) - 8$

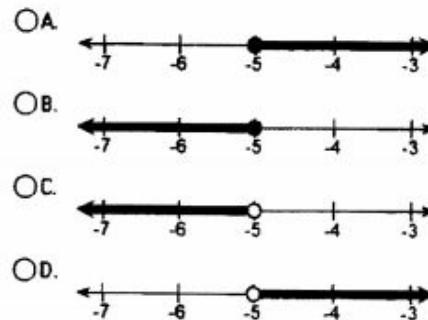
18. Solve. $3.4x - 3.44 = 2.72 - 4.3x$

19. Solve. $\frac{5}{8}x + \frac{1}{16}x = \frac{5}{16} + x$

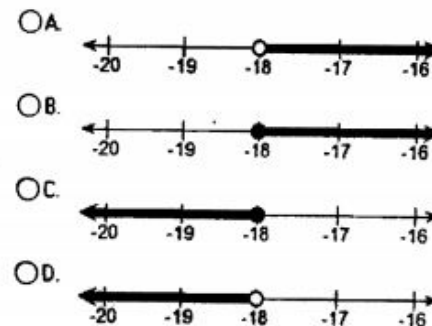
20. Solve for j . $D = jm$

21. Solve for g . $e = \frac{g + p}{2}$

22. Solve, then graph. $x + 7 > 2$
Which of the answers is the graph of the solution set?



23. Solve, then graph. $a + 7 \leq -11$
Which of the answers is the graph of the solution set?



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24. Solve. $2x + 8 \leq x + 7$

25. Solve. $-7x \leq 21$

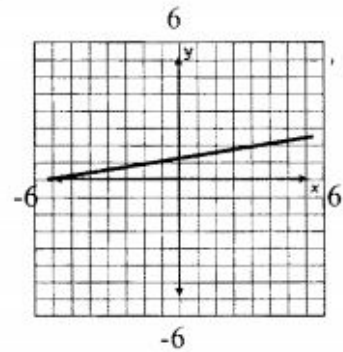
26. Solve. $11x - 13 < -46$

27. Solve. $38 > 6 - 8x$

28. Solve. $6(2x - 3) < 18$

29. Solve. $y + \frac{2}{7} \leq \frac{7}{14}$

30. Graph the equation and identify the y intercept. $y = \frac{1}{2}x + 5$



31. Determine the slope of the line shown at the right.

32. Graph the line containing the given pair of points and find the slope.
 $(-2, 5), (3, -3)$

33. Find the slope and the y intercept of the line. $y = -5x - 7$

34. Graph the equation using the slope and y intercept. $6y + 5x = 6$

35. Simplify. $(2p^8)^2$

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36. Simplify. $\left(\frac{n^8x}{y}\right)^3$

37. Add. $(9x^2 - 7x + 19) + (2x^2 + 9x - 52)$

38. Add. $(4x^2 - xy + y^2) + (-x^2 - 7xy + 8y^2)$

39. Subtract. $(9x^4 + 4x^3 - 2) - (6x^2 - 9x + 3)$

40. Multiply. $(4x^9)(-3x^2)(9x^8)$

41. Multiply. $9x(6x^2 - 9x + 8)$

42. Multiply. $(x - 7)(x - 3)$

43. Multiply. $(8x - 2)(x + 5)$

44. Multiply. $(2t - 9)(2t + 9)$

45. Multiply. $(x + 12)^2$

46. Multiply. $(y^2 - 5)(8y^2 - 4y + 4)$

47. Divide. $\frac{16x^3y^2}{8x^6y^2}$

48. Divide. $\frac{18x^9 - 81x^7 + 45x}{9x}$

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49. Divide. $\frac{32b^8g^9 - 8b^6g^7 + 32b^3g^4}{4b^3g}$

50. Factor. $6x^6y^4 + 42x^4y^3 + 54xy$

51. Factor. $x^5(x + 3) + 2(x + 3)$

52. Factor by grouping. $x^3 + 7x^2 + 7x + 49$

53. Factor by grouping. $3x^3 - 3x^2 - x + 1$

54. Factor the trinomial. $t^2 + 10t + 16$

55. Factor the trinomial. $r^2 - 9r + 20$

56. Factor. $a^2 - 6a - 27$

57. Factor the trinomial. $s^3 - 2s^2 - 63s$

58. Factor. $5w^2 - 19w - 4$

59. Factor. $2r^2 + 11r + 5$

60. Factor. $3v^2 - 5v - 2$

61. Factor. $9b^2 - 10b + 1$

62. Factor. $3a^2 + 2a - 1$

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63. Factor the trinomial. $6y^2 + 20y - 16$

64. Factor. $20u^3 + 72u^2 - 140u$

65. Factor completely. $49s^2 - 14sg + g^2$

66. Factor completely. $25w^2 - p^2$

67. Factor completely. $27c^2 - 3$

68. Solve. $b^2 + 9b + 18 = 0$

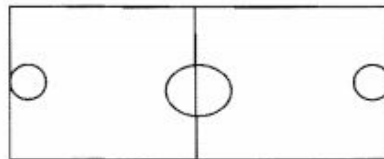
69. Solve. $v^2 - 7v = 0$

70. Solve. $81w^2 - 25 = 0$

71. Solve. $2w^2 - 5 = 9w$

72. The sum of the page numbers on the facing pages of a book is 85. What are the page numbers?

73. The perimeter of a basketball court is 84 meters and the length is 6 meters longer than twice the width. What are the length and width?



74. A 220-inch pipe is cut into two pieces. One piece is three times the length of the other. Find the lengths of the two pieces.

75. The perimeter of a rectangle is 496 ft. The length is 20 ft longer than the width. Find the area of the rectangle.

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76. Solve by any method.

$$\begin{aligned} 3x + 2y &= 11 \\ -x + y &= 3 \end{aligned}$$

77. Solve by any method.

$$\begin{aligned} 3x + 4y &= 4 \\ x - y &= 13 \end{aligned}$$

78. Solve by any method.

$$\begin{aligned} 3x - 4y &= 1 \\ 2x + 3y &= 12 \end{aligned}$$

79. Solve by any method.

$$\begin{aligned} 2x + 3y &= -1 \\ 3x - 2y &= 18 \end{aligned}$$

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Summer Assignment Solutions

1. $-31c + 41d$

2. -29

3. 34

4. -47

5. 5

6. 60

7. -8

8. 48

9. -70

10. $-\frac{2}{7}$

11. 2

12. 2

13. 5

14. 5

15. 5

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16. 6

17. -10

18. 0.8

19. -1

20. $\frac{D}{m}$

21. $2e - p$

22. $x > -5$
D

23. $a \leq -18$
C

24. $x \leq -1$

25. $x \geq -3$

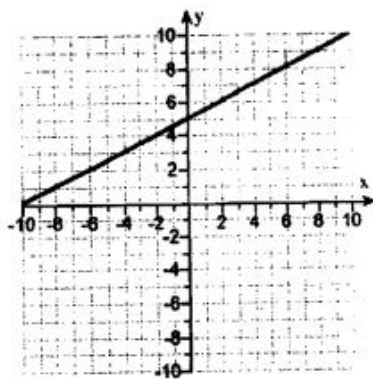
26. $x < -3$

27. $x > -4$

28. $x < 3$

29. $y \leq \frac{3}{14}$

30.

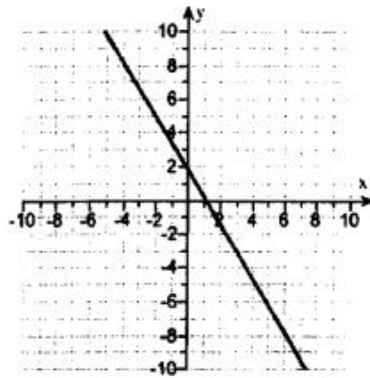


(0,5)

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31. $\frac{1}{5}$

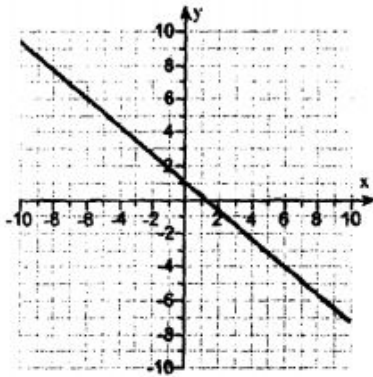
32.



$-\frac{8}{5}$

33. slope -5
y-intercept $(0, -7)$

34.



35. $4p^{16}$

36. $\frac{n^{24}x^3}{y^3}$

37. $11x^2 + 2x - 33$

38. $3x^2 - 8xy + 9y^2$

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39. $9x^4 + 4x^3 - 6x^2 + 9x - 5$

40. $-108x^{19}$

41. $54x^3 - 81x^2 + 72x$

42. $x^2 - 10x + 21$

43. $8x^2 + 38x - 10$

44. $4t^2 - 81$

45. $x^2 + 24x + 144$

46. $8y^4 - 4y^3 - 36y^2 + 20y - 20$

47. $\frac{2}{x^3}$

48. $2x^8 - 9x^6 + 5$

49. $8b^5g^8 - 2b^3g^6 + 8g^3$

50. $6xy(x^5y^3 + 7x^3y^2 + 9)$

51. $(x^5 + 2)(x + 3)$

52. $(x^2 + 7)(x + 7)$

53. $(3x^2 - 1)(x - 1)$

54. $(t + 8)(t + 2)$

55. $(r - 4)(r - 5)$

56. $(a + 3)(a - 9)$

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57. $s(s + 7)(s - 9)$

58. $(5w + 1)(w - 4)$

59. $(2r + 1)(r + 5)$

60. $(3v + 1)(v - 2)$

61. $(9b - 1)(b - 1)$

62. $(3a - 1)(a + 1)$

63. $2(3y - 2)(y + 4)$

64. $4u(5u - 7)(u + 5)$

65. $(7s - g)^2$

66. $(5w + p)(5w - p)$

67. $3(3c + 1)(3c - 1)$

68. $-6, -3$

69. $0, 7$

70. $-\frac{5}{9}, \frac{5}{9}$

71. $5, -\frac{1}{2}$

72. 42
 43

73. 12
 30

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74. 55
165

75. 15,276

76. (1, 4)

77. (8, -5)

78. (3, 2)

79. (4, -3)