



**2019 – 2020**

***Bishop Kelley High School***

***Summer Math Program***

***Course: Algebra 3***

**NAME:** \_\_\_\_\_  
\_\_\_\_\_

**DIRECTIONS:**

- Show all work on separate paper and put answers on answer sheet.
- Make sure you are aware of the calculator policy for this course.
- No matter when you have math, this packet is due on the first day of your math class.
- This material will be graded, and points awarded at the discretion of each teacher
- A test on this material will be administered during the first week of the class.
- An additional resource for help with this packet is <http://www.khanacademy.org>. It provides videos of about 10 minutes in length on hundreds of different math topics.

***Math Teachers will be available in C-1 the following dates/times if you need help.***

<b>Date</b>	<b>Time</b>
<b><i>Wednesday, July 24<sup>th</sup></i></b>	<b><i>8-9:30am</i></b>
<b><i>Monday, July 29<sup>th</sup></i></b>	<b><i>8-9:30am</i></b>
<b><i>Tuesday, July 30<sup>th</sup></i></b>	<b><i>8-9:30am</i></b>

Name \_\_\_\_\_

### SUMMER MATH PACKET

*Directions: Do all work in pencil on separate sheets of paper showing ALL work. Copy your answers onto the answer key and staple your work to the back.*

**PLEASE NOTE: A TI-83/84 SERIES CALCULATOR IS REQUIRED (EVERY DAY) FOR THIS COURSE!**

The categories of real numbers include natural numbers (N), whole numbers (W), integers (Z), rational (Q) and irrational (I). Name ALL of the categories to which each number belongs.

1.  $\sqrt{3}$
2. 8

**Simplify.**

3.  $5(2a + 3b) - 4(3a - 7b)$
4.  $5 + 2(a + 10)$
5.  $(2x^2 - 5x + 3) - (5x^2 - x + 9)$
6.  $8 + 2[3(4x - 1) - 2(x - 5) + 6x]$

**Solve. Show work!**

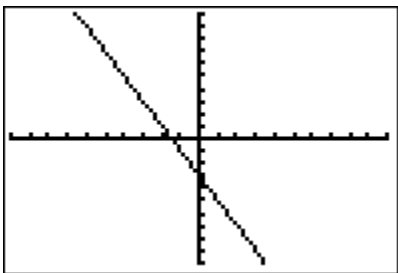
7.  $\frac{2}{3}x = 12$
8.  $-\frac{x}{5} = 3$
9.  $\frac{3}{4}x + 12 = 4$
10.  $3m - 2[4 - (3 - 2m)] = 9$
11.  $2(5a - 3) - a = 2(4a - 3)$
12.  $5(3 - 2x) - 2(x - 5) = 6x + 5$
13. The sum of four consecutive odd integers is 96. Find the integers.
14. Find three consecutive integers such that two times the largest increased by the middle is three more than the smallest.

**State the domain and range of each relation. Then state if the relation is a function.**

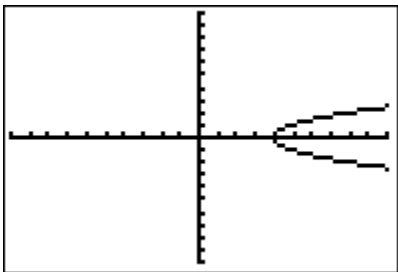
15.  $\{(2,6)(5,8)(9, 12)\}$
16.  $\{(3,1) (3,7)( 12, 14)(15, -17)\}$
17.  $\{(5, 6)( 7,6)( 10,7)( 12, 19)(15,20)\}$

Using the vertical line test, determine if the following relations are functions.

18.



19.



Find the slope.

20.  $(-1, 4)$   $(3, -2)$

21.  $(-6, 2)$   $(-6, 5)$

Find the slope and y-intercept.

22.  $y = 2x - 5$

23.  $2x - y = 3$

24.  $3x - 2y = 12$

25.  $y = 2x$

26.  $y = 2$

Graph.

27.  $y = -2/3x + 3$

28.  $2x - 3y = 12$

29.  $x = 3$

Write an equation with the given conditions.

30. Slope = 2 and y-intercept=3

Find each value using  $f(x) = x^3 - x^2 + 3x$

31.  $f(2)$

32.  $f(-2)$

Solve by graphing.

33.  $y = \frac{-1}{3}x + 1$

$$4x + 3y = -6$$

Solve by substitution.

34.  $x - 7y = -2$

$$3x + 2y = 40$$

Solve by elimination.

35.  $8x - 3y = 3$

$$3x - 2y = -5$$

Simplify. Remember no negative exponents in final answer.

36.  $(3a^2b^3)(4ab^5)$

37.  $\frac{20a^3b^5c^3}{24ab^9c^3}$

38.  $2^5 \cdot 2^3$

39.  $(6x^5y^{-2})(-3x^2y^3)$

40.  $(3a^{-5}b^{-7})(2ab^{-2})$

41.  $\frac{-24a^3b^{-5}c^{-2}}{28a^{-6}b^3c^{-5}}$

42.  $\frac{(5a^3b^4)^2}{10a^2b}$

43.  $\left(\frac{8a^3}{16a^{-2}}\right)^0$

44.  $\left(\frac{3x^{-2}y^3}{x^5y^6}\right)^2$

Multiply.

45.  $(2x - 5)(3x - 2)$

46.  $(x - 3)^2$

47.  $(2x - 3)(x^2 - 4x + 6)$

**Factor completely.**

48.  $x^2 - 25y^2$

49.  $x^3 - 64$

50.  $x^2 - 13x - 30$

51.  $x^2 - 13x + 30$

52.  $3p^2 + 7p - 6$

53.  $21a^2 + 4a - 12$

54.  $3x^3 - 15x^2 - 2x + 10$

55.  $2x^4 - 32$

56.  $x^4 + 5x^2 - 36$

57.  $2x^3 + x^2 - 3x$

**Divide using synthetic division.**

58.  $(x^3 + 6x^2 + 3x + 1) \div (x - 2)$

59.  $(g^3 + 27) \div (g + 3)$

**Solve by factoring.**

60.  $a^2 + a - 72 = 0$

61.  $4e^3 - 12e^2 - 9e + 27 = 0$

62.  $8m^2 - 10m + 3 = 0$

63.  $3x^2 + 11x - 20 = 0$

64.  $25x^2 - 49 = 0$

**Write an equation and solve.**

65. A person's weight on earth varies directly to his weight on the moon. A person weighing 168 pounds on Earth weighs 28 pounds on the moon. How much would an astronaut weighing 110 pounds on Earth weigh on the moon?

**Simplify.**

66. 
$$\frac{n^2 - 64}{3n^2 - 22n - 16}$$

**Multiply or Divide.**

67. 
$$\frac{4x^2 - 25}{6x^2} \cdot \frac{3x^4}{2x^2 - 3x - 20}$$

$$68. \frac{2x^2 + 5x - 3}{2x + 4} \cdot \frac{9x + 18}{4x^2 - 1}$$

$$69. \frac{x^2 - 25}{14x^3y^8} \div \frac{8x + 40}{7x^2y}$$

**Add or subtract.** ( 1. find common denom. 2. mult each part by what it is  
“missing”  
3. add nums.- keep denoms. the same 4. reduce)

$$70. \frac{x-5}{x^2-6x+8} + \frac{x+1}{x^2-6x+8}$$

$$71. \frac{6}{4x+8} - \frac{2x+3}{x^2-x-6}$$

$$72. \frac{3a}{a^2+11a+24} - \frac{3}{3a+9}$$

**Solve.** (Be CAREFUL—this is different from 92-94....MULTIPLY everything by the common denominator and then cancel “stuff”)(Also remember to distribute negative signs)

$$73. \frac{y^2}{4} - \frac{5y+2}{3} = 2$$

$$74. \frac{4}{x+5} + \frac{6}{x-4} = \frac{1}{x+5}$$

$$75. \frac{3}{x} + \frac{x}{x+2} = \frac{4}{x(x+2)}$$

**Simplify.**

$$76. \sqrt{80}$$

$$77. \sqrt{26x^2y^6}$$

$$78. \sqrt{81x}$$

$$79. \sqrt[3]{48x^3y^5}$$

**Add or subtract.**

$$80. \sqrt{50} + \sqrt{18}$$

$$81. 2\sqrt{18} + 3\sqrt{50} - \sqrt{98} + \sqrt{2}$$

**Multiply.**

$$82. 3\sqrt{6} \cdot 2\sqrt{2}$$

$$83. \sqrt{18a^3} \cdot \sqrt{3a^5}$$

84.  $(2\sqrt{3} + 7)(2\sqrt{3} - 7)$

85.  $(3\sqrt{2} + 5)^2$

**Divide.**

86.  $\frac{4}{\sqrt{2}}$

87.  $\frac{3\sqrt{2}}{\sqrt{27}}$

88.  $\frac{4}{\sqrt{2} + 6}$

**Write as a radical.**

89.  $a^{\frac{3}{4}}$

90.  $2^{\frac{1}{2}} a^{\frac{2}{3}}$

**Use a calculator and express answer as a fraction.**

91.  $8^{\frac{-2}{3}}$

**Solve.**

92.  $\sqrt{2x-5} + 3 = 11$

**Simplify and express answer as a rational exponent. (KNOW those exponent rules!!)**

93.  $\sqrt{ab^3}$

94.  $(x^4 y^3)^{\frac{1}{2}}$

95.  $2x^{\frac{1}{2}} + 5x^{\frac{1}{2}}$

96.  $2a^{\frac{1}{6}} \cdot 3a^{\frac{1}{2}}$

**Simplify.**

97.  $\sqrt{-36}$

98.  $\sqrt{-20}$

99.  $(3 + 2i)^2$

100.  $(3 + 5i)(3 - 5i)$

101.  $\frac{3 - 2i}{4i}$

102.  $\frac{5i}{4-2i}$

103.  $i^{142}$

104.  $i^{207}$

**Solve using the Quadratic formula.**

105.  $8x^2 + 10x + 3 = 0$

106.  $x^2 - 4x = 2$

107.  $3k^2 + 2 = -8k$

108.  $2a^2 + 5a + 3 = 0$

**Find the value of the discriminant and describe the nature of the roots.**

109.  $2x^2 - x + 5 = 0$

110.  $3x^2 - 6x - 5 = 0$

**Graph. Name the vertex, label the axis of symmetry and list 2 points on each side. Make sure I can see your x-y chart.**

111.  $y = x^2$

112.  $y = (x-3)^2 + 1$

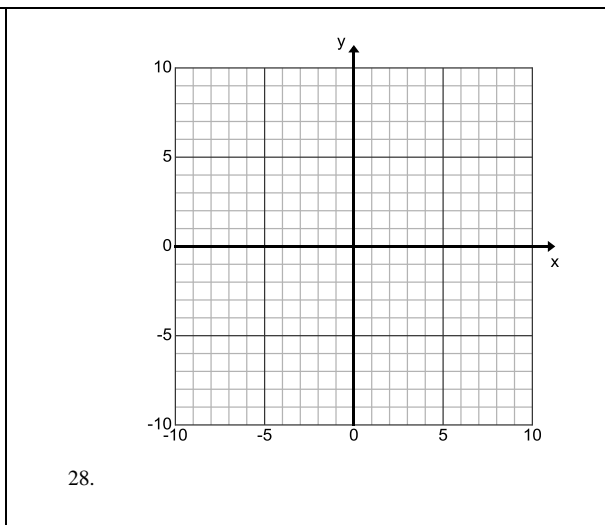
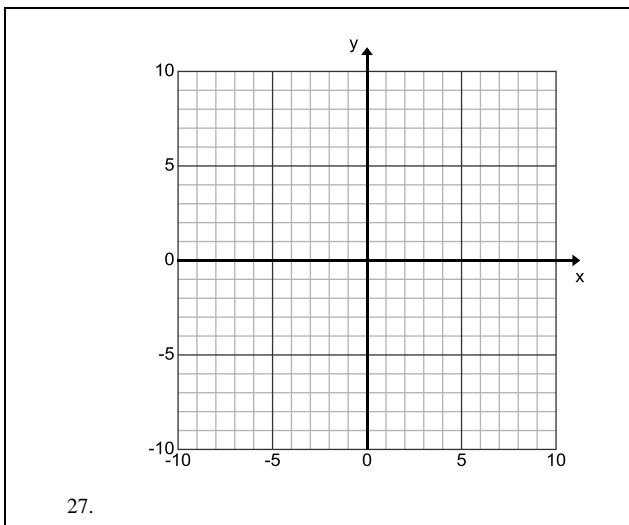
113.  $y = -3x^2 - 6x + 8$  (it might go off graph some—but put all 5 points on anyway)

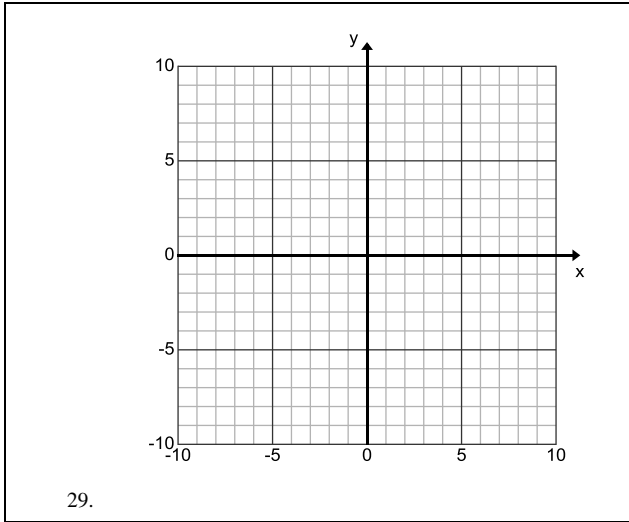


### Algebra 3 Summer Math Packet Answer Sheet

1.	2.	3.	4.	5.
6.	7.	8.	9.	10.
11.	12.	13.	14.	

15.	16.	17.
18.	19.	20.
21.	22.	23.
24.	25.	26.

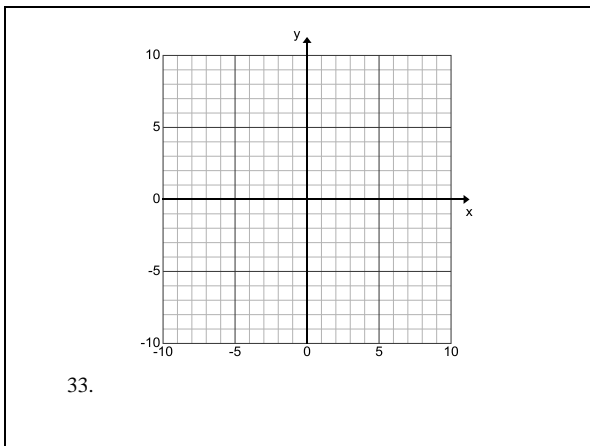




30.

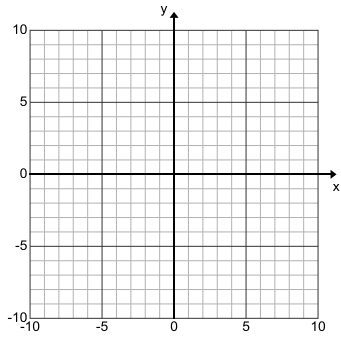
31.

32.



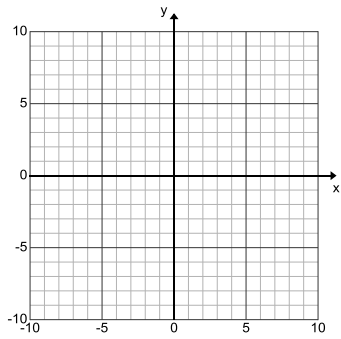
34.	35.	
36.	37.	38.
39.	40.	41.
42.	43.	44.
45.	46.	47.
48.	49.	50.
51.	52.	53.
54.	55.	56.
57.	58.	59.
60.	61.	62.
63.	64.	65.
66.	67.	68.
69.	70.	71.
72.	73.	74.

75.	76.	77.
78.	79.	80.
81.	82.	83.
84.	85.	86.
87.	88.	89.
90.	91.	92.
93.	94.	95.
96.	97.	98.
99.	100.	101.
102.	103.	104.
105.	106.	107.
108.	109.	110.



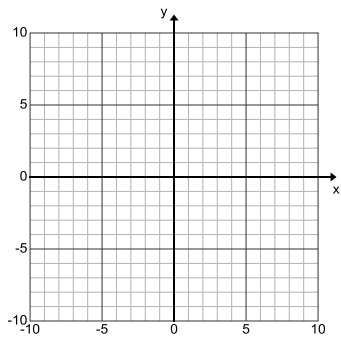
111.

Vertex \_\_\_\_\_



112.

Vertex \_\_\_\_\_



113.

Vertex \_\_\_\_\_

