Math Summer Homework Packet Name_____

Geometry to Algebra 2 - SY 2018-2019

Date_____ Period____

Solve each equation.

1) $\frac{b}{4} - 6 = -4$

A) $\{9\}$ B) $\{7\}$
C) $\{-5\}$ D) $\{8\}$

2) $\frac{v+5}{4} = -1$

A) $\{-1\}$ B) $\{-3\}$
C) $\{-9\}$ D) $\{10\}$

3) $8 = \frac{x}{15}$

A) $\{23\}$ B) $\{120\}$
C) $\left\{\frac{8}{15}\right\}$ D) $\{-7\}$

4) $\frac{n}{6} = -20$

A) $\{-14\}$ B) $\left\{-\frac{10}{3}\right\}$
C) $\{-26\}$ D) $\{-120\}$

5) $|k - 1| = 11$

A) $\{17, 1\}$ B) $\{3, -3\}$
C) $\{12, -10\}$ D) $\{6, -6\}$

6) $|-5 + a| = 2$

A) $\{-7, 7\}$ B) $\{-7\}$
C) $\{7, 3\}$ D) $\{7\}$

7) $|x + 6| = 1$

A) $\{9\}$ B) $\{9, 7\}$
C) $\{-5, -7\}$ D) $\{-4, 4\}$

8) $4(1 - 5n) - 8n = -192$

A) $\{7\}$ B) $\{10\}$
C) $\{-13\}$ D) $\{-9\}$

9) $92 = 5k + 4(-4k + 1)$

A) { All real numbers. }
B) $\{6\}$
C) $\{7\}$
D) $\{-8\}$

10) $-2(1 - 7x) = -100$

A) $\{-7\}$ B) $\{-2\}$
C) $\{10\}$ D) $\{9\}$

Simplify. Your answer should contain only positive exponents.

11) $m^{-1}n^3 \cdot 4mn^2$

A) $4n^5$ B) $6m^3n$
C) $8m$ D) $\frac{4}{n^3}$

12) $x^{-4}y^2 \cdot 4x^3y^{-1}$

A) $\frac{4y}{x}$ B) $\frac{4x^7}{y^7}$
C) $\frac{3}{xy^2}$ D) $\frac{12}{xy^3}$

13) $b \cdot 3a$

A) $\frac{6a^4}{b}$ B) $\frac{4b^3}{a}$
C) $3ba$ D) $\frac{4a}{b}$

14) $2nm^2 \cdot (m^2n^3 \cdot mn^3)^4$

A) $\frac{n^6}{m^2}$ B) $2n^{25}m^{14}$
C) $\frac{1}{n^4}$ D) m^2n^4

15) $\left(2x^{-3}\right)^2 \cdot 2x^{-3}y^3$

A) $\frac{8y^3}{x^9}$ B) x^{10}

C) x^{13} D) $4x^2y^8$

16) $x^{-3}y^{-4} \cdot \left(2x^{-4}y^0\right)^{-1}$

A) $\frac{x^9}{y^2}$ B) $\frac{x}{2y^4}$

C) $2x^3$ D) $256x^{12}$

17) $\left(\frac{2y^4 \cdot x^{-3}y^3}{2x^0y^4}\right)^2$

A) $\frac{4y^2}{x^{16}}$ B) $\frac{1}{8x^7y^7}$

C) $\frac{y^6}{x^6}$ D) $\frac{y^7}{2x^{16}}$

18) $\left(\frac{x^2y^{-4} \cdot yx^3}{x^4y^2}\right)^4$

A) $4y^8x^6$ B) $\frac{x^4}{y^{20}}$

C) $\frac{x^{10}}{y}$ D) 1

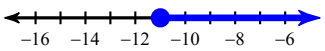
19) $\left(\frac{x^{-1}}{2xy^0 \cdot x^0}\right)^2$

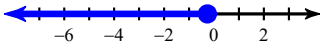
A) $4y^3x^4$ B) $\frac{1}{4x^4}$

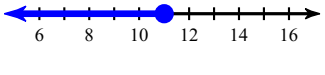
C) y^2x^4 D) y^7x^2

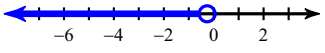
Solve each inequality and graph its solution.

20) $r + 15 \geq 4$

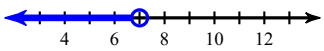
A) $r \geq -11$: 

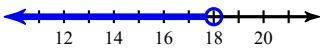
B) $r \leq -\frac{4}{15}$: 

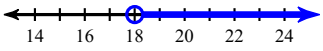
C) $r \leq 11$: 

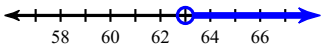
D) $r \geq -\frac{4}{15}$: 

21) $3 + x > 21$

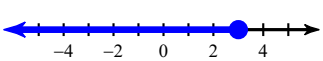
A) $x < 7$: 

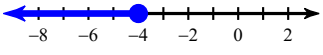
B) $x < 18$: 

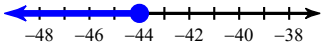
C) $x > 18$: 

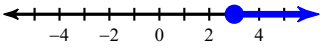
D) $x > 63$: 

22) $-5(b - 1) \leq -10$

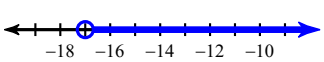
A) $b \leq 3$: 

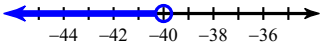
B) $b \leq -4$: 

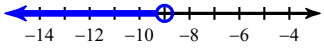
C) $b \leq -44$: 

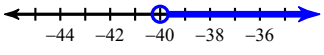
D) $b \geq 3$: 

23) $-5(10 + n) < 35$

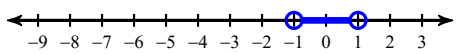
A) $n > -17$: 

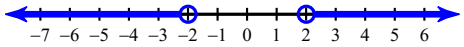
B) $n > -40$: 

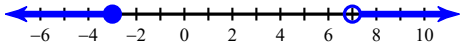
C) $n < -9$: 

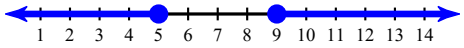
D) $n > -40$: 

24) $|5v| > 10$

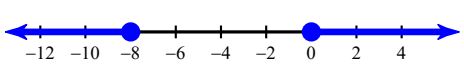
A) $-1 < v < 1$: 

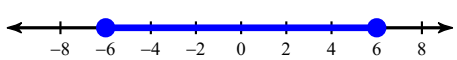
B) $v > 2$ or $v < -2$: 

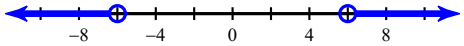
C) $v \leq -3$ or $v > 7$: 

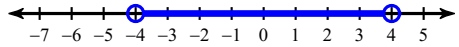
D) $v \geq 9$ or $v \leq 5$: 

25) $|-10x| \leq 60$

A) $x \geq 0$ or $x \leq -8$: 

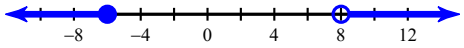
B) $-6 \leq x \leq 6$: 

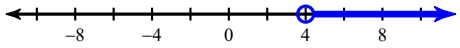
C) $x > 6$ or $x < -6$: 

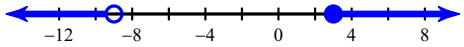
D) $-4 < x < 4$: 

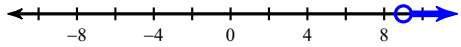
Solve each compound inequality and graph its solution.

26) $-8a \geq 48$ or $\frac{a}{4} > 2$

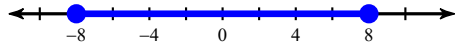
A) $a \leq -6$ or $a > 8$: 

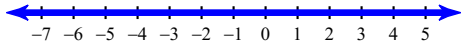
B) $a > 4$: 

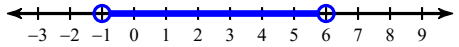
C) $a < -9$ or $a \geq 3$: 

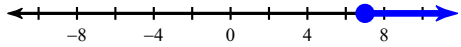
D) $a > 9$: 

27) $-11 < -10 + n < -4$

A) $-8 \leq n \leq 8$: 

B) $1 \leq n \leq 4$: 

C) $-1 < n < 6$: 

D) $n \geq 7$: 

Evaluate each expression.

28) $\frac{10}{2} \times 6 - 5$

A) 23 B) 24
C) 25 D) 22

29) $1^2 \times \frac{3}{3}$

A) 1 B) 4
C) 5 D) 6

30) $5 \div (6 - 1) \times 8 \div 2$

A) 4 B) 8
C) 0 D) 3

31) $12 \div 3 - (2 - (4 - 2))$

A) 4 B) 10
C) 6 D) 1

Simplify each expression.

32) $(6r^4 + 7) + (6 - 8r^3 + 8r^4)$

A) $14r^4 - 5r^3 + 13$
B) $14r^4 - 3r^3 + 13$
C) $14r^4 - 3r^3 + 16$
D) $14r^4 - 8r^3 + 13$

33) $(3m + 5) - (4 + 3m - 5m^3)$

A) $5m^3 + 1 - 7m$
B) $5m^3 + 1$
C) $8m^3 + 1 - 7m$
D) $2m^3 + 1 - 7m$

34) $(7 - 2n^3 - n^2) - (3 + 2n + 6n^2)$

A) $-2n^3 - 7n^2 - 2n + 4$
B) $-8n^3 - 7n^2 - 2n + 4$
C) $-3n^3 - 11n^2 - 2n + 4$
D) $-8n^3 - 11n^2 - 2n + 4$

35) $(3n^3 - 4n^4 - 7n^2) + (4n^4 + 6n^3 + 4n^2)$

A) $2n^3 - 3n^2$ B) $9n^3 - 3n^2$
C) $2n^3 + n^2$ D) $2n^3 - n^2$

36) $(u^4v^3 - 8u^4v^2 + 6uv^2) + (4uv^2 + 2u^4v^3 - 5u^4v^2)$

A) $3u^4v^3 - 17u^4v^2 + 10uv^2$
B) $3u^4v^3 - 13u^4v^2 + 10uv^2$
C) $2u^4v^3 - 17u^4v^2 + 10uv^2 - v^2$
D) $3u^4v^3 - 17u^4v^2 + 10uv^2 - v^2$

37) $(8x^3y^3 - 8x^3 - 5x^3y^4) + (8x^3y^4 + 2x^3 + 3x^3y^3)$

A) $3x^3y^4 + 7x^3y^3 - 4x^3$
B) $-4x^3y^4 + 7x^3y^3 - 4x^3$
C) $3x^3y^4 + 11x^3y^3 - 4x^3$
D) $3x^3y^4 + 11x^3y^3 - 6x^3$

Find each product.

38) $(x + 3)(7x - 6)$

A) $8x^2 - 22x - 6$
B) $7x^2 + 15x - 18$
C) $28x^2 - 8x - 20$
D) $28x^2 - 20$

39) $(4n - 6)(6n - 6)$

A) $24n^2 - 45n + 21$
B) $24n^2 - 12n - 36$
C) $24n^2 - 60n + 36$
D) $24n^2 + 12n - 36$

40) $(6a + 6)(4a^2 - 6a - 6)$

A) $56a^3 - 18a^2 - 2a - 12$
B) $24a^3 - 40a^2 + 30a - 8$
C) $24a^3 - 12a^2 - 72a - 36$
D) $8a^3 + 4a^2 - 24a - 18$

41) $(k + 2)(8k^2 - 6k + 8)$

A) $32k^3 - 76k^2 + 19k + 10$
B) $8k^3 + 10k^2 - 4k + 16$
C) $4k^3 - 14k^2 + 40k - 42$
D) $20k^3 - 57k^2 + 50k - 16$

42) $(3x^2 + 8x + 1)(8x^2 - 8x - 3)$

A) $24x^4 + 88x^3 + 63x^2 - 16x - 3$
B) $24x^4 - 88x^3 + 63x^2 + 16x - 3$
C) $24x^4 + 40x^3 - 65x^2 - 32x - 3$
D) $24x^4 - 64x^2 - 3$

43) $(5x^2 + 5x + 1)(x^2 - 7x - 6)$

A) $24x^4 - 26x^3 - 32x^2 - 80x - 48$
B) $5x^4 + 40x^3 + 6x^2 - 23x - 6$
C) $5x^4 - 35x^2 - 6$
D) $5x^4 - 30x^3 - 64x^2 - 37x - 6$

Solve each proportion.

44) $\frac{5}{x-5} = \frac{10}{3}$

A) $\{6.5\}$ B) $\{2.6\}$
C) $\{-4.6\}$ D) $\{4.28\}$

45) $\frac{7}{v-1} = \frac{6}{10}$

A) $\{12.66\}$ B) $\{4.7\}$
C) $\{-9\}$ D) $\{-6.455\}$

Simplify.

46) $-3\sqrt{18} - \sqrt{2} - 2\sqrt{8}$

A) $-14\sqrt{2}$ B) $-28\sqrt{2}$
C) $-19\sqrt{2}$ D) $-15\sqrt{2}$

47) $-2\sqrt{12} + 2\sqrt{5} + 2\sqrt{45}$

A) $-4\sqrt{3} + 8\sqrt{5}$
B) $-4\sqrt{3} + 14\sqrt{5}$
C) $-4\sqrt{3} + 20\sqrt{5}$
D) $-4\sqrt{3} + 22\sqrt{5}$

Solve each system by elimination.

48) $6x + y = -23$
$-4x - y = 15$

A) $(-4, 1)$ B) $(-1, -1)$
C) $(-1, 1)$ D) $(1, -1)$

49) $-3x - 5y = 3$
$5x + 5y = 5$

A) No solution B) $(4, 3)$
C) $(4, 10)$ D) $(4, -3)$

50) $x + 5y = 2$
$x - 7y = -22$

A) $(-8, -2)$ B) $(-8, 2)$
C) $(3, -10)$ D) $(-10, 3)$

51) $-7x + 7y = 14$
$5x + 7y = 2$

A) $(1, -1)$ B) $(-1, 1)$
C) $(-9, 1)$ D) $(1, 1)$

Solve each system by substitution.

52) $-x + 2y = -10$
$-3x + y = 10$

A) $(-6, -8)$ B) $(1, -8)$
C) $(-1, 8)$ D) $(-1, -8)$

53) $-3x - 5y = 4$
$8x + y = 14$

A) $(-7, 2)$ B) $(2, 2)$
C) $(2, -2)$ D) $(-2, 2)$

54) $3x + 8y = -13$
$x - 2y = -9$

A) $(-7, 7)$ B) $(-8, 6)$
C) $(-7, -2)$ D) $(-7, 1)$

Solve each system by graphing.

55) $y = -x + 1$
$y = \frac{1}{4}x - 4$

A) $(4, -3)$ B) $(-4, -3)$
C) $(1, -4)$ D) $(-3, 4)$

56) $y = -x - 3$
$y = x + 1$

A) $(5, 1)$ B) $(5, 3)$
C) $(-2, -1)$ D) $(5, -1)$

57) $y = \frac{7}{2}x - 4$
$y = \frac{1}{2}x + 2$

A) $(-2, 3)$ B) $(-3, -2)$
C) $(-2, -3)$ D) $(2, 3)$

Simplify.

58) $-\sqrt{15}(-4\sqrt{5} + 2)$

A) $\sqrt{30} + 5$
B) $\sqrt{30} + 4\sqrt{3}$
C) $20\sqrt{3} - 2\sqrt{15}$
D) $4\sqrt{2} + 2$

59) $\sqrt{3}(\sqrt{2} + 5)$

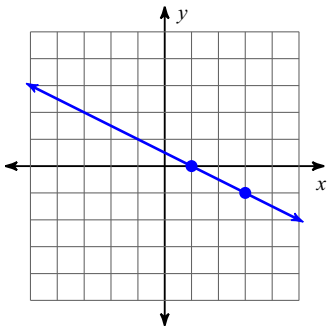
A) $3\sqrt{2} + 10$
B) $\sqrt{6} + 5\sqrt{3}$
C) $4\sqrt{30} + 5$
D) $3\sqrt{2} - 5\sqrt{30}$

60) $\sqrt{3}(\sqrt{5} + \sqrt{2})$

A) $6\sqrt{2} + 10$
B) $4\sqrt{5} + \sqrt{30}$
C) $\sqrt{15} + \sqrt{6}$
D) $2\sqrt{30}$

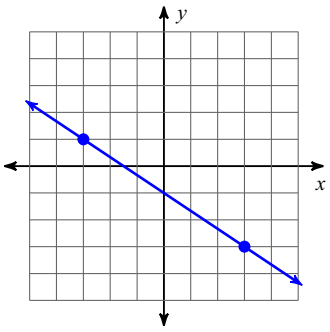
Find the slope of each line.

61)



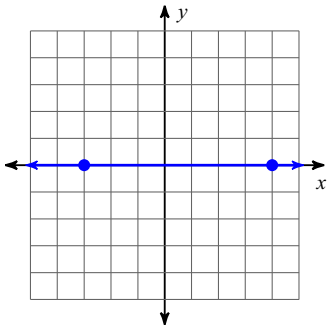
A) -2 B) $\frac{1}{2}$
C) $-\frac{1}{2}$ D) 2

62)



A) $-\frac{3}{2}$ B) $\frac{2}{3}$
C) $-\frac{2}{3}$ D) $\frac{3}{2}$

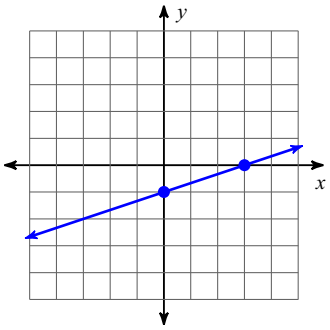
63)



A) Undefined B) 0

C) $\frac{1}{2}$ D) $-\frac{1}{2}$

64)



A) 3 B) $\frac{1}{3}$

C) $-\frac{1}{3}$ D) -3

Find the slope of the line through each pair of points.

65) $(4, -14), (-12, -7)$

A) $-\frac{16}{7}$ B) $-\frac{7}{16}$

C) $\frac{7}{16}$ D) $\frac{16}{7}$

66) $(-11, -14), (6, -5)$

A) $\frac{17}{9}$ B) $-\frac{9}{17}$

C) $\frac{9}{17}$ D) $-\frac{17}{9}$

67) $(17, 7), (-3, 19)$

A) $-\frac{5}{3}$ B) $\frac{5}{3}$

C) $-\frac{3}{5}$ D) $\frac{3}{5}$

68) $(-8, 15), (20, 16)$

A) 28 B) $-\frac{1}{28}$

C) $\frac{1}{28}$ D) -28

Find the slope of each line.

69) $y = 5x + 2$

A) $-\frac{1}{5}$ B) $\frac{1}{5}$

C) 5 D) -5

70) $y = \frac{2}{3}x - 1$

A) $-\frac{2}{3}$ B) $\frac{2}{3}$

C) $\frac{3}{2}$ D) $-\frac{3}{2}$

71) $y = -\frac{3}{2}x - 3$

A) $-\frac{3}{2}$ B) $\frac{2}{3}$

C) $\frac{3}{2}$ D) $-\frac{2}{3}$

72) $y - 5 = 3x$

A) $-\frac{1}{3}$ B) 3

C) $\frac{1}{3}$ D) -3

73) $7x + 20 = -4y$

A) $\frac{7}{4}$ B) $-\frac{4}{7}$

C) $-\frac{7}{4}$ D) $\frac{4}{7}$

74) $2x + y - 5 = 0$

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

C) $\frac{1}{2}$ D) 2

75) $-4 = -y - 2x$

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

C) $\frac{1}{2}$ D) -2

Find the slope of a line parallel to each given line.

76) $6x = 2y$

A) $-\frac{1}{3}$ B) 3

C) $\frac{1}{3}$ D) -3

77) $-4 - 4y = 3x$

A) $-\frac{3}{4}$ B) $-\frac{4}{3}$

C) $\frac{4}{3}$ D) $\frac{3}{4}$

78) $3y = x$

A) 3 B) -3

C) $\frac{1}{3}$ D) $-\frac{1}{3}$

79) $-5 = -5y - 4x$

A) $-\frac{4}{5}$ B) $\frac{5}{4}$

C) $-\frac{5}{4}$ D) $\frac{4}{5}$

Find the slope of a line perpendicular to each given line.

80) $x = -5$

A) 0 B) Undefined

C) $-\frac{2}{3}$ D) $\frac{2}{3}$

81) $y = 5x + 3$

A) -5 B) $\frac{1}{5}$

C) 5 D) $-\frac{1}{5}$

82) $y = \frac{1}{3}x + 1$

A) $\frac{1}{3}$ B) $-\frac{1}{3}$

C) 3 D) -3

83) $y = -\frac{3}{4}x + 4$

A) $-\frac{4}{3}$ B) $-\frac{3}{4}$

C) $\frac{4}{3}$ D) $\frac{3}{4}$

Simplify.

84) $\sqrt{3}\left(-4\sqrt{6}+2\right)$

A) 10
B) $4\sqrt{2}+3$
C) $5\sqrt{2}+6\sqrt{5}$
D) $-12\sqrt{2}+2\sqrt{3}$

85) $-\sqrt{3}\left(3\sqrt{6}+2\right)$

A) $\sqrt{30}+5$
B) $-3\sqrt{5}+4$
C) $-16\sqrt{3}$
D) $-9\sqrt{2}-2\sqrt{3}$

86) $-3\sqrt{15}\left(\sqrt{6}+4\right)$

A) $-10\sqrt{5}+5$
B) $-9\sqrt{10}-12\sqrt{15}$
C) 7
D) 10

87) $-\sqrt{3}\left(\sqrt{10}-2\sqrt{6}\right)$

A) $8+15\sqrt{2}$
B) 10
C) $-6\sqrt{5}+5$
D) $-\sqrt{30}+6\sqrt{2}$

Find each product.

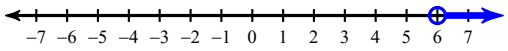
88) $(3x-8)(3x+8)$

A) $9x^2+48x+64$
B) $9x^2-64$
C) $9x^2-48x+64$
D) $4x^2-32x+64$

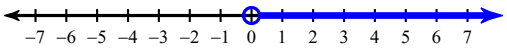
89) $(3x+1)(3x-1)$

A) $9-36x^2$
B) $9x^2-6x+1$
C) $9x^2-1$
D) $9x^2+6x+1$

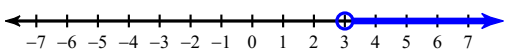
Write an inequality for each graph.

90) 

A) $n \geq 6$
B) $n \leq 6$
C) $n > 6$
D) $n < 6$

91) 

A) $p \leq 0$
B) $p < 0$
C) $p > 0$
D) $p \geq 0$

92) 

A) $n < 3$
B) $n \leq 3$
C) $n \geq -3$
D) $n > 3$

Factor the common factor out of each expression.

93) $-54x^4+54x^3+12x^2$

A) $6x^2\left(-9x^2+9x+2\right)$
B) $6x^2\left(-54x^3+54x+12\right)$
C) $6x^2\left(-27x^2+12x+2\right)$
D) $6x^2\left(-9x^2+18x+2\right)$

94) $2p^6+9p^4+2p^3$

A) $p^3\left(2p^4+9p+10\right)$
B) $p^3\left(2p^3+9p+2\right)$
C) $p^2\left(2p^3+9p+2\right)$
D) $p^3\left(2p^4+9p+2\right)$

Factor each completely.

95) $2n^2 + 12n$

A) $2n(n + 6)$
B) $4(n - 9)(n + 4)$
C) $2n(n - 6)$
D) Not factorable

96) $4p^2 + 36p$

A) $4p(p + 9)$
B) $5(p + 9)(p - 10)$
C) $3(p + 5)(p + 3)$
D) $p(p - 3)$

97) $3r^2 - 27r$

A) $(r - 10)(r + 3)$
B) $r(r - 9)$
C) $3r(r - 9)$
D) $4(r - 5)(r + 1)$

98) $b^2 - b - 6$

A) $(b + 2)(b - 3)$
B) Not factorable
C) $5(b + 8)(b - 6)$
D) $(b - 2)(b - 5)$

Simplify.

99) $\sqrt{20}$

A) $3\sqrt{7}$
B) $2\sqrt{3}$
C) $2\sqrt{5}$
D) $5\sqrt{5}$

100) $\sqrt{245}$

A) $16\sqrt{2}$
B) $3\sqrt{6}$
C) $6\sqrt{6}$
D) $7\sqrt{5}$