BISHOP KELLEY
A LIFE PREPARATORY SCHOOL

2019 – 2020

Bishop Kelley High School

Summer Math Program

Course: Trigonometry and Trigonometry w/ Precalculus

NAME: _____

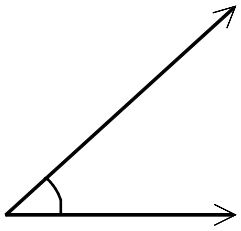
DIRECTIONS:

- Show all work in the packet and transfer answers to 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.

Date	*Time*
Wednesday, July 24th	***8-9:30am***
Monday, July 29th	***8-9:30am***
Tuesday, July 30st	***8-9:30am***

1._Classify the angle as right, acute, or obtuse. _____



2._Simplify the following complex fraction: **(Leave Answer in simplified Radical Form)**

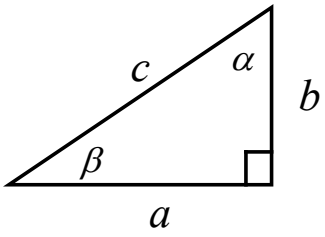
$$\frac{\left[\frac{-\sqrt{3}}{2}\right]}{\left[\frac{1}{2}\right]}$$

_____

3._Solve and simplify the following fraction:

$$\frac{5}{4} \div \frac{7}{2} =$$ _____

4._Solve the right triangle: $\alpha = 30°$ and $a = 18$; find β, b, and c



β _____, b _____, c _____

5._Rationalize the following radical: **(Leave Answer in simplified Radical Form)**

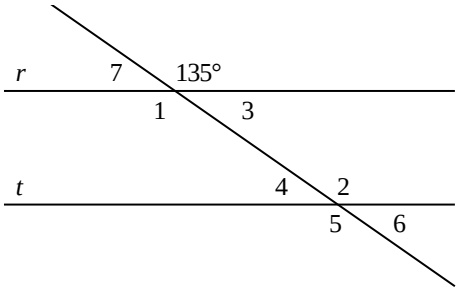
$$\frac{-2}{\sqrt{3}}$$

_____

6. Solve the following rational equation.

$$\frac{2}{x} + \frac{7}{4x} = 15$$

7._ Line r is parallel to line t. Find $m\angle 5$. The diagram is not to scale. _____



[A] 35 [B] 45 [C] 135 [D] 145

8._Simplify the following fraction to **radical form**:

$$\frac{-\sqrt{2}}{2} \div \frac{\sqrt{2}}{3}$$

_____

9._ Rationalize the following denominator. Simplify any radicals.

$$\frac{\sqrt{2}}{1-\sqrt{10}}$$

_____

10. Evaluate the following expressions without using a calculator.

$$\log_3 \frac{1}{27}$$

_____

11._Simplify the fraction: $\frac{6}{11} + \frac{-2}{5}$

_____

12._ Use properties of logarithms to expand the logarithmic expression as much as possible.

$$\log_3\left(\frac{x^3}{y^8}\right)$$

_____

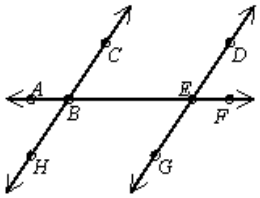
13. Evaluate the following algebraic expression:

$(x - y)^2(x^3 + y^2)$ for $x = -3$ and $y = 2$ _____

14. Evaluate the following algebraic expression:

$x^2 - xy + 5$; when $x = -4$ and $y = 3$ _____

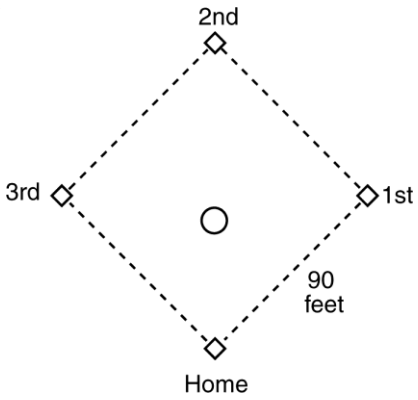
15._Which statement is true?



[A] $\angle CBA$ and $\angle EBH$ are same-side angles.
[B] $\angle EBH$ and $\angle BED$ are same-side angles.
[C] $\angle CBA$ and $\angle HBE$ are alternate interior angles.
[D] $\angle EBH$ and $\angle BED$ are alternate interior angles.

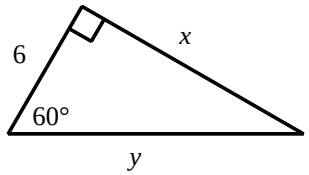
_____

16._A baseball "diamond" is a square of side length 90 feet. How far is the throw, to one decimal place, from home plate to second base? _____



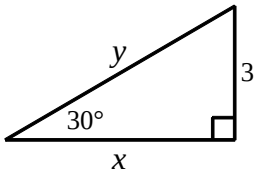
17._Find the value of x and y. **(Leave Answers in Radical Form)**

x _____, y _____



18._Find the value of x and y. **(Leave Answers in Radical Form)**

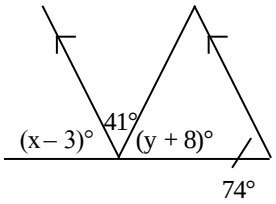
x _____, y _____



19._What is the length of the diagonal of a square with side lengths $7\sqrt{2}$?

_____

20._Find the values of x and y. The diagram is not to scale.



[A] $x = 77, y = 59$
[B] $x = 77, y = 57$
[C] $x = 57, y = 77$
[D] $x = 41, y = 57$

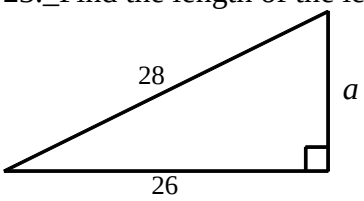
_____

21. Write the equation of the line in slope- intercept form with a slope of 1/3 that passes through (5, -7).

22. Write the equation of the line in slope-intercept form that passes through (6, -2) and (3, 8).

_____

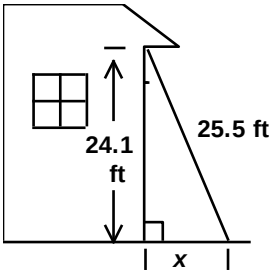
23._Find the length of the leg of this right triangle. Give an approximation to 3 decimal places.



_____

24._A 25.5 foot ladder rests against the side of a house at a point 24.1 feet above the ground. The foot of the ladder is *x* feet from the house. Find the value of *x* to one decimal place.

(Circle Your Answer)



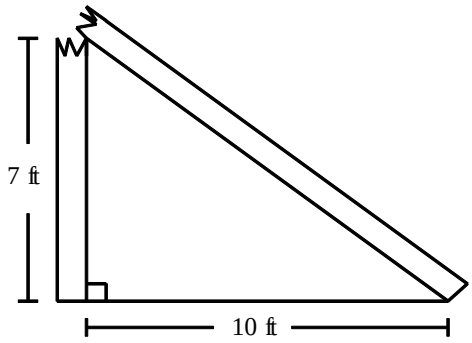
[A] 7.0 [B] 1.9 [C] 8.3 [D] 10.1

25._Find the altitude of an isosceles triangle with base 10 and congruent sides of length 9.

(Leave Answer in Radical Form)

_____

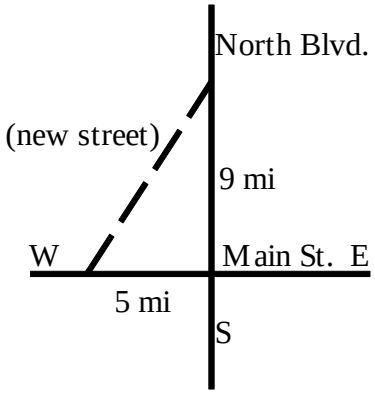
26._A telephone pole breaks and falls as shown.



To the nearest foot, what was the original height of the pole? **(Circle Your Answer)**

[A] 19 ft [B] 20 ft [C] 21 ft [D] 18 ft

27._The city commission wants to construct a new street that connects Main Street and North Boulevard as shown in the diagram below. The construction cost has been estimated at $110 per linear foot. Find the estimated cost for constructing the street. (1 mile = 5280 ft)



(Circle Your Answer)

[A] $1133 [B] $54,361 [C] $580,800 [D] $5,979,702

28._How long is a string reaching from the top of a 16-ft pole to a point 14 ft out from the bottom of the pole? **Give an exact answer and an approximation to 3 decimal places.**

_____

29._Solve the proportion: $\frac{4}{21} = \frac{x}{168}$

[A] 882 [B] 8 [C] 84 [D] 32

_____

30._Solve the perimeter formula for an isosceles triangle, $P = 2a + b$, for b.

[A] $b = \frac{P}{2a}$ [B] $b = \frac{2a}{P}$ [C] $b = P + 2a$ [D] $b = P - 2a$

_____

31._The complement of an angle is 25°. What is the measure of the angle?
[A] 75° [B] 155° [C] 65° [D] 165°

_____

32._Solve the area formula for a trapezoid, $A = \frac{1}{2}h(b_1 + b_2)$, for b_1.

[A] $b_1 = 2Ah - b_2$

[B] $b_1 = \frac{2A}{h} - b_2$

[C] $b_1 = \frac{1}{2}Ahb_2$

[D] $b_1 = 2Ahb_2$

_____

33._Solve: $\frac{2}{5} + \frac{3}{2} - \frac{1}{4} =$ **(Leave answer as an improper fraction)**

_____

34._A worker in an assembly line takes 7 hours to produce 22 parts. At that rate, how many parts can she produce in 21 hours? **(Circle Your Answer)**

[A] 66 parts [B] 132 parts [C] 4 parts [D] 462 parts

35._Solve the proportion $\frac{3}{2x} = \frac{7}{5}$.

_____

36. Solve the following system of equations.

$$3x + 2y = 16$$
$$x + 3y = 10$$

_____

37._Two sides of a triangle have lengths 12 and 26. The length of the third side must be greater than _____ and less than _____.

_____, _____

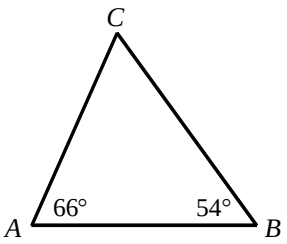
38._Two sides of a triangle have lengths 14 and 10. What are the possible lengths of the third side *x*?

____ < ***x*** < ____

39. Simplify using the laws of exponents: $\frac{3x^4y^5}{2xy^2} \bullet \frac{8x^3y}{9xy^3}$

_____

40._Identify the shortest side of ΔABC .



_____

41. Simplify using the laws of exponents. Do not leave any zero or negative exponents.

$(-4x^{-3}y)(2xy^{-7})$

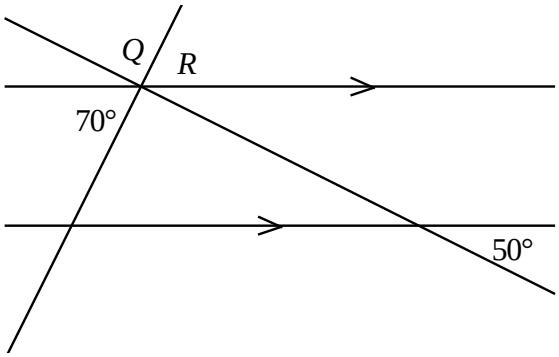
_____

42. Solve the quadratic equation using the quadratic formula.

$3x^2 - 3x - 4 = 0$

_____

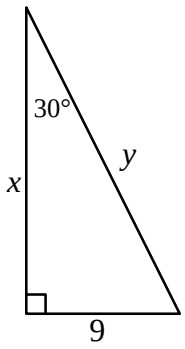
43._ Find $m\angle Q$. The diagram is not to scale.



[A] 60 [B] 120 [C] 110 [D] 70

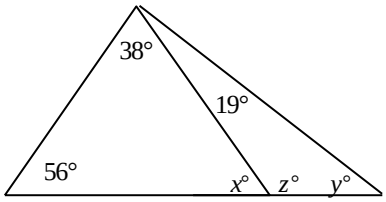
_____

44._Find the missing side lengths for *x* and *y*. **(Leave answers in Radical Form)**



x _____, *y* _____

45._ Find the values of *x, y,* and *z*. The diagram is not to scale.



[A] $x = 86,\ y = 94,\ z = 67$
[B] $x = 67,\ y = 86,\ z = 94$
[C] $x = 67,\ y = 94,\ z = 86$
[D] $x = 86, y = 67, z = 94$

_____

46._Write the standard form of the equation of the circle that passes through the point (3, 4) with its center at the origin.

_____

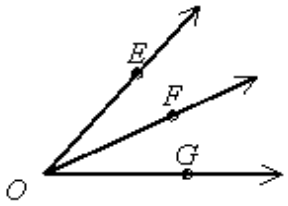
47._Find the distance between the points (5, –6) and (–3, 0).

_____

48._Solve the equation. $\frac{x}{30} - \frac{1}{5x} = \frac{1}{6}$

_____

49._ If $m\angle EOF = 26$ and $m\angle FOG = 38$, then what is the measure of $\angle EOG$? The diagram is not to scale.



[A] 64 [B] 12 [C] 52 [D] 76

50._ $\angle 1$ and $\angle 2$ are supplementary angles. $m\angle 1 = x - 39$, and $m\angle 2 = x + 61$. Find the measure of each angle.

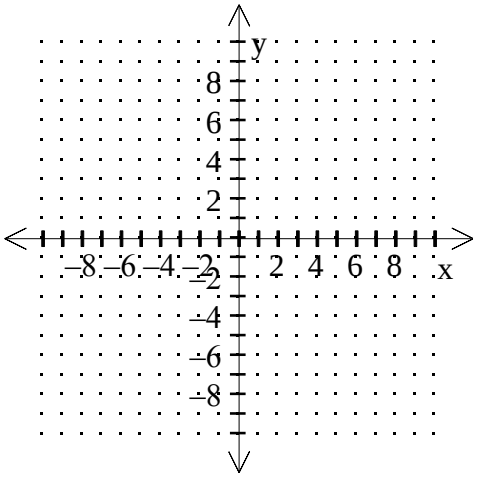
[A] $\angle 1 = 79,\ \angle 2 = 101$
[B] $\angle 1 = 40,\ \angle 2 = 140$
[C] $\angle 1 = 40,\ \angle 2 = 150$
[D] $\angle 1 = 79,\ \angle 2 = 111$

_____

51._Identify all horizontal and vertical asymptotes of the graph of the function. $f(x) = \dfrac{x^2}{x^2 - 4}$

H.A. _____,
V.A. _____

52._Sketch the graph of the function. $f(x) = \dfrac{4 - 2x}{x - 3}$ **(Use Graph Provided)**



53._The price per person of renting a bus varies inversely with the number of people renting the bus. It costs $14 per person if 28 people rent the bus. How much will it cost per person if 31 people rent the bus? **(Circle Your Answer)**

[A] $12.65 [B] $15.50 [C] $62.00 [D] $15.74

54._Solve: $\frac{1}{5}-\frac{6}{7}+\frac{3}{4}=$ **(Leave answer as a fraction)**

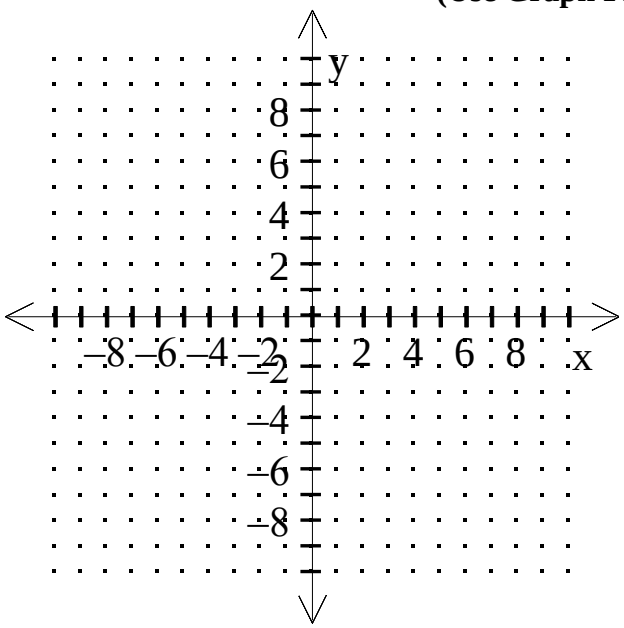
_____

55._A certain gas will escape from a storage tank according to the formula $e = 140\sqrt{p}$, where e represents the amount escaping per minute in gallons, and p represents the pressure in pounds per square inch. What is the pressure on the gas when about 250 gallons per minute are escaping? **(Circle Your Answer)**

[A] 0.6 lb/in.^{2} [B] 3.2 lb/in.^{2} [C] 1.8 lb/in.^{2} [D] 19.7 lb/in.^{2}

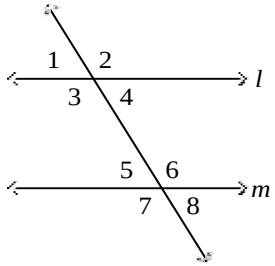
56._Graph: $f(x) = \sqrt{x} - 2$

(Use Graph Provided)



57_ Find the value of the variable if $m \parallel l$, $m\angle 1 = 2x + 44$ and $m\angle 5 = 5x + 38$.

The diagram is not to scale.



[A] 1 [B] 2 [C] 3 [D] –2

_____

58._ If $\angle A$ and $\angle B$ are supplementary angles and $m\angle A = 4m\angle B$, find $m\angle A$ and $m\angle B$.

[A] 72, 18 [B] 144, 36 [C] 18, 72 [D] 36, 144

_____

59._Write the polynomial as a product of linear factors. $x^3 - 2x^2 - 9x + 18$

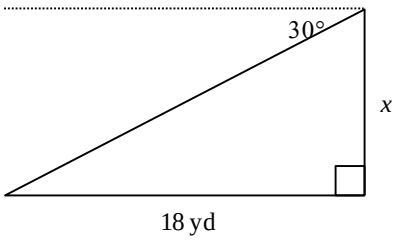
_____

60._Find all real zeros of the function. $g(x) = 2x^3 - x^2 - 10x + 5$

(Leave Answers in Radical Form)

_____, _____, _____

61._ Find the value of *x*. Round the length to the nearest tenth.



Not drawn to scale

[A] 15.6 yd [B] 10.4 yd [C] 9 yd [D] 31.2 yd

_____

62._Factor completely: $8x^5 - 10x^7$

_____

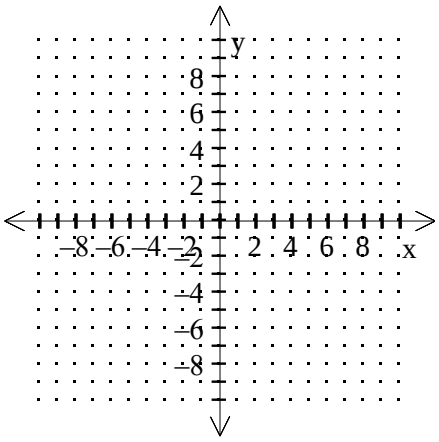
Perform the indicated operations.

63._ $(x+1)(2x-1)(x+3)$

64._ $(-7x^2+3)+(4x^2+2x-1)$

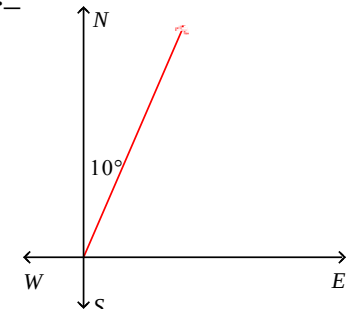
65._Graph: $f(x) = x^3 - 9x$

(Use Graph Provided)



Use compass directions to describe the direction of the Ray. (Not drawn to scale)

66._



[A] 10° west of south
[B] 10° east of north
[C] 10° east of south
[D] 10° west of north

67._ Evaluate the logarithm.

$\log_5 \frac{1}{625}$

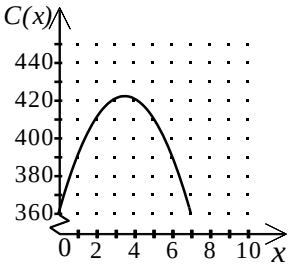
[A] –3 [B] 5 [C] –4 [D] 4

68._A rock is thrown from the top of a tall building. The distance, in feet, between the rock and the ground t seconds after it is thrown is given by $d = -16t^2 - 2t + 505$. How long after the rock is thrown is it 500 feet from the ground?

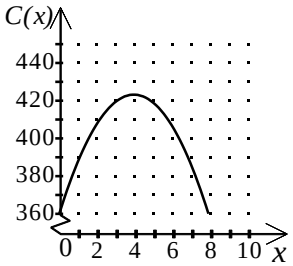
69._Solve by the quadratic formula: $2x^2 + 3x - 20 = 0$

_____, _____

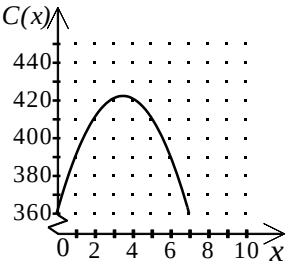
70._A bulldozer operator considered the following pricing strategy for contract jobs: \$360 base charge, plus a variable cost that is a function of the number of hours worked. The cost would be $\$32 - 4.05x$, where x is the number of hours. The total cost of a contract job would be given by the function $C(x) = \$360 + 32x - 4.05x^2$. Graph the function. For what value of x will this function be maximized? Round to the nearest tenth of an hour. **(Circle Your Answer)**

[A] 

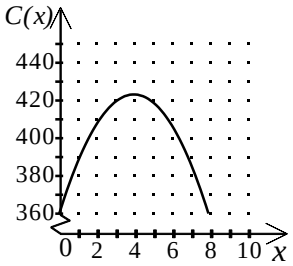
$x = 7.0$

[B] 

$x = 8.0$

[C] 

$x = 3.0$

[D] 

$x = 4.0$

71._Write the expression as a complex number in standard form. $(-3+7i)(1-2i)$

_____

72._Solve the equation. $4x^2 + 20 = 0$ **(Leave Answers in Radical Form)**

_____, _____

73._Solve for x: $6x^2 = 150$

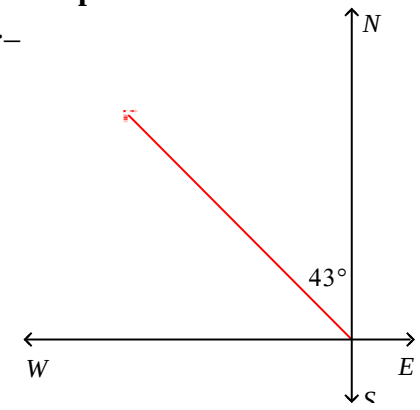
_____, _____

74._Factor the expression: $x^2 + 16x + 64$

_____

Use compass directions to describe the direction of the Ray. (Not drawn to scale)

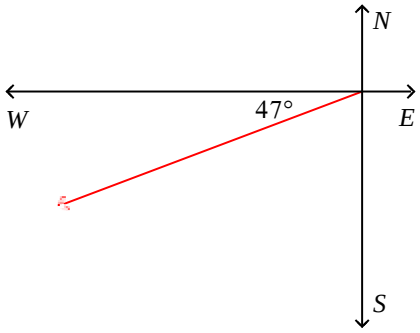
75._



[A] 43° east of north
[B] 43° east of south
[C] 43° west of south
[D] 43° west of north

Use compass directions to describe the direction of the Ray. (Not drawn to scale)

76._



[A] 47° north of west
[B] 47° south of west
[C] 47° north of east
[D] 47° south of east

77._Simplify the following complex fraction. **(Leave Your Answer as a Proper Fraction)**

$$\frac{\left(\frac{4}{-7}\right)}{\left(\frac{-2}{3}\right)}$$

78._ Write the equation in logarithmic form. $6^4 = 1,296$

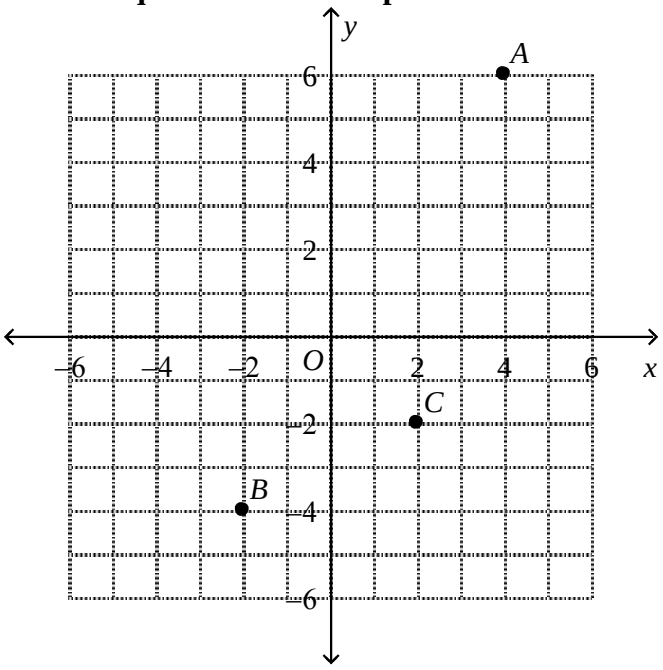
[A] $\log_6 1,296 = 4$
[B] $\log 1,296 = 4$
[C] $\log 1,296 = 4 \cdot 6$
[D] $\log_4 1,296 = 6$

79._Simplify the following Fraction:

$$\frac{(x+2)}{4} - \frac{3(x-1)}{5}$$

_____

In which quadrant does the point lie? Write the coordinates of the point.



80._ **Point *A***

[A] quadrant II; (6, –4)
[B] quadrant I; (4, 6)
[C] quadrant III; (–4, –6)
[D] quadrant I; (6, 4)

_____

81._ **Point *B***

[A] quadrant II; (–2, –4)
[B] quadrant III; (2, 4)
[C] quadrant III; (–2, –4)
[D] quadrant IV; (–4, –2)

_____

82._ **Point *C***

[A] quadrant IV; (–2, 2)
[B] quadrant III; (–2, 2)
[C] quadrant III; (2, –2)
[D] quadrant IV; (2, –2)

_____

#83-86, Perform the indicated operation and simplify if possible.

83. $\dfrac{x-2}{3x+9}\cdot\dfrac{2x+6}{2x-4}$

84. $\dfrac{x^2-25}{2x-2}\cdot\dfrac{x^2+10x+25}{x^2+4x-5}$

85. $\dfrac{3}{x+4}+\dfrac{6}{x+5}$

86. $\dfrac{4}{x}-\dfrac{3}{x+3}$

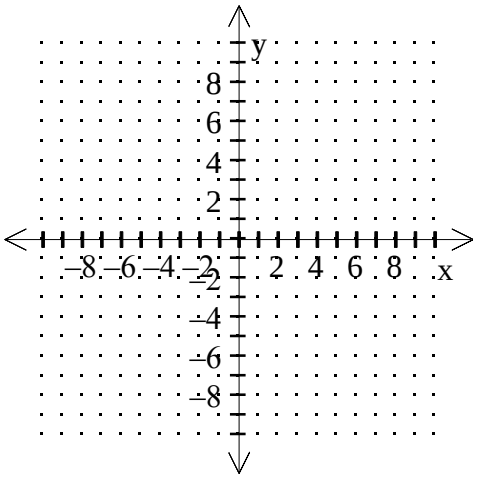
87._Write the slope-intercept form of the line that passes through the point $(-2,-5)$ and is parallel to the line $y=-6x+1$. **(Circle Your Answer)**

[A] $y=-6x-32$ [B] $y=-6x-17$ [C] $y=\dfrac{1}{6}x-\dfrac{14}{3}$ [D] $y=6x+17$

88._Write the equation in slope-intercept form. Then identify the slope and *y*-intercept. $15x-3y=7$

slope-intercept form _____, *slope* _____, *y-intercept* _____

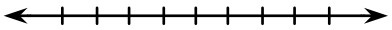
89._Graph the line. $y=\dfrac{1}{3}x+1$ **(Use Graph Provided)**



90._Find the slope of the line passing through (3, –1) and (6, 4).

_____

91._Solve the inequality. Then graph your solution. $3(1+x)>1+5x$ **(Use Graph Provided)**



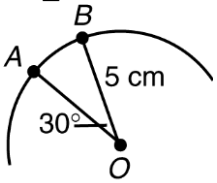
92._Solve for *z:* $y^2z+7z=y$

_____

93._Solve the equation. $-3x+5=-7x-4$

_____

94._Find the arc length of $\overset{\frown}{AB}$ to two decimal places.



_____

95._Find the length of a 40° arc in a circle with a radius of 4. **(Circle Your Answer)**

[A] 8π [B] $\frac{16\pi}{9}$ [C] $\frac{9\pi}{8}$ [D] $\frac{8\pi}{9}$

96._The circumference of a circle is 68π cm. Find the diameter, the radius, and the length of an arc of $110°$. **(Leave Answers in terms of π)**

diameter _____, *radius* _____, *length of arc* _____

97._A circle has a circumference of 48 meters. Find its radius. **(Circle Your Answer)**

[A] 15.28 m [B] 7.64 m [C] 12 m [D] 24 m

98._Find the circumference of a circle with radius 8 mm. Use $\pi \approx 3.14$.

_____

99._Find the equation of the circle with center (5, –4) and radius of 4.

100._Find the equation of the circle of radius 6 with its center at the origin.

101. Determine whether the following function is even, odd, or neither.

$f(x) = x^5 - x$

Solve the proportion.

102._ $\frac{n-6}{3n} = \frac{n-5}{3n+1}$

[A] –3 [B] $\frac{2}{5}$ [C] $\frac{9}{17}$ [D] 3

103._ $\frac{3y-8}{12} = \frac{y}{5}$

[A] –10 [B] –7 [C] $\frac{3}{40}$ [D] $\frac{40}{3}$

104._Evaluate the logarithm**.**

$\log 0.01$

[A] –10 [B] –2 [C] 2 [D] 10

105._Simplify the expression.

$-\frac{1}{8} - \frac{2}{7}$

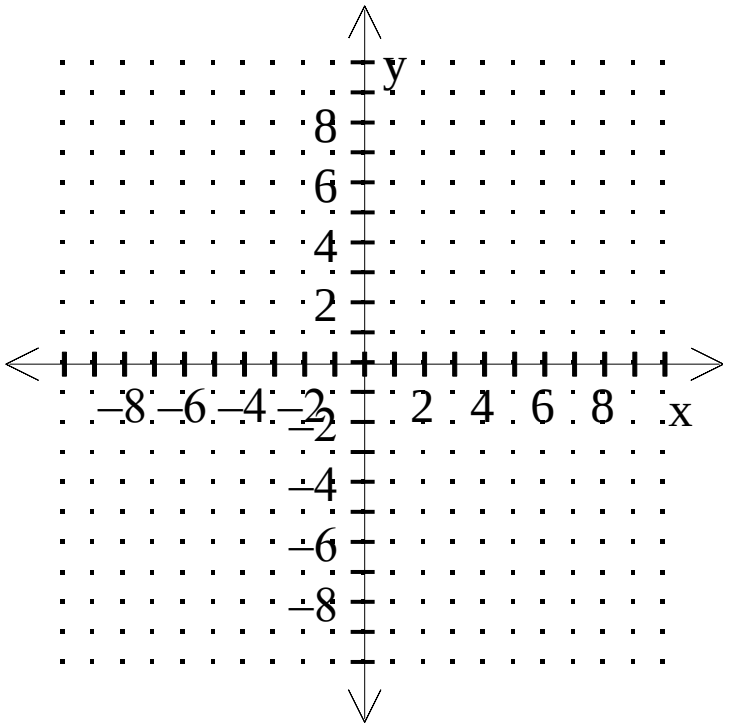
[A] $\frac{1}{5}$ [B] $-\frac{23}{56}$ [B] $\frac{23}{56}$ [D] $-\frac{1}{8}$

Summer Packet Answer Sheet

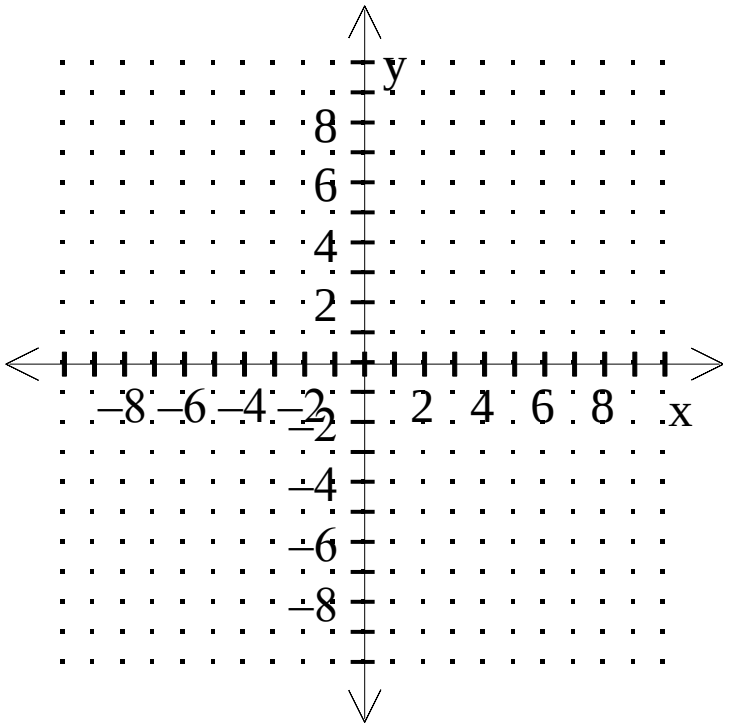
1	**2**	**3**	**4**	**5**
6	**7**	**8**	**9**	**10**
11	**12**	**13**	**14**	**15**
16	**17**	**18**	**19**	**20**
21	**22**	**23**	**24**	**25**
26	**27**	**28**	**29**	**30**
31	**32**	**33**	**34**	**35**
36	**37**	**38**	**39**	**40**
41	**42**	**43**	**44**	**45**
46	**47**	**48**	**49**	**50**
51	**52 Graph Below**	**53**	**54**	**55**
56 Graph Below	**57**	**58**	**59**	**60**
61	**62**	**63**	**64**	**65 Graph Below**
66	**67**	**68**	**69**	**70**
71	**727**	**73**	**74**	**75**
76	**77**	**78**	**79**	**80**
81	**82**	**83**	**84**	**85**
86	**87**	**88**	**89 Graph Below**	**90**
91 Graph Below	**92**	**93**	**94**	**95**
96	**97**	**98**	**99**	**100**
101	**102**	**103**	**104**	**105**

Summer Packet Answer Sheet

52.

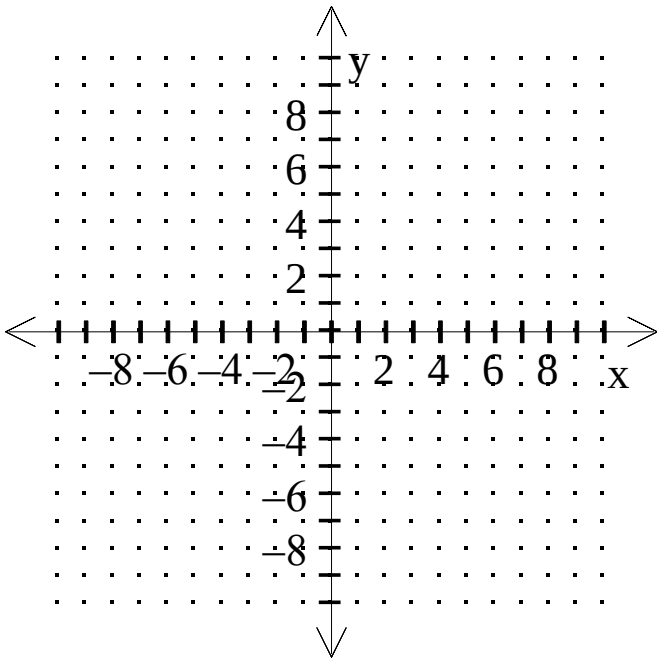


56.

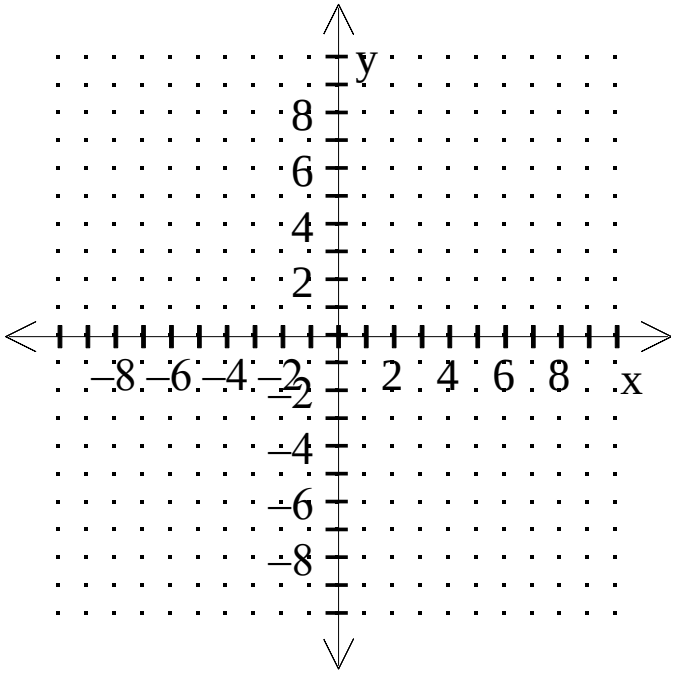


Summer Packet Answer Sheet

65.



89.



91.