



Dear Parent(s)/Guardian(s) and Algebra II Students,

Mathematics is the gateway to all college and career opportunities. As stated by the National Research Council:

“Students today are growing up in a world permeated by mathematics. The technologies used in homes, schools, and the workplace are all built on mathematical knowledge. Many educational opportunities and good jobs require high levels of mathematical expertise.”

In an effort to build a strong foundation for high school math skills and to improve student success in Algebra II students are required to complete the enclosed Summer 2026 Math packet. The problems in this packet will review key math skills from previous math courses and will better prepare students for the new concepts of Algebra II.

Summer Packet Guidelines:

No calculators are to be used to solve problems.

- All work must be done in pencil and shown under each problem.
- Summer packets for Algebra II are due Friday September 4, 2026.
- After reviewing packets, the teachers of these classes will know which preliminary skills need to be reviewed with the students.

The teachers of the Mathematics Department are available after school for extra help. I encourage all students to take advantage of working with their own teacher so the teacher can fully assess their knowledge of mathematics.

Please feel free to email me with any concerns or questions over the summer. I will be doing day trips during the summer but will get back to you within a few days of your email. You may reach me at: pcofrancesco@notredame.org in the subject area indicate Algebra II.

Peter Cofrancesco
Math Department Coordinator

SUMMER MATH PACKET

NOTRE DAME HIGH SCHOOL

ALGEBRA II

CP



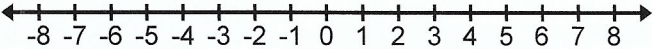
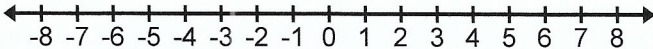
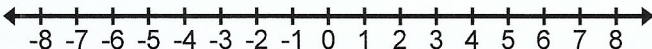
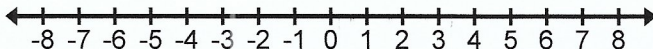
The examples on the following pages are to be completed and handed into your teacher on Friday, September 4, 2026. This will aid the teachers of these classes to give focus to mathematical concepts that will be necessary for this class.

Name _____

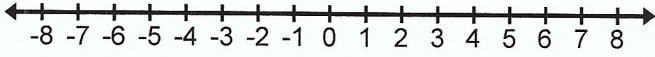
SOLVE EACH OF THE FOLLOWING. SHOW ALL WORK. IF YOU DO NOT SHOW THE WORK YOU WILL NOT RECEIVE THE CREDIT.

1). $x - 48 = 110$	2). $29 = a + 5$
3). $\frac{1}{2}t = -8$	4). $14y - 6y = 48$
5). $32 = 12 + 4(z - 1)$	6). $5(x + 2) - 7 = 5x + 3$

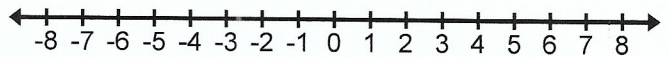
SOLVE EACH OF THE FOLLOWING. GRAPH THE SOLUTIONS ON THE NUMBER LINE PROVIDED. SHOW ALL WORK.

7). $26 < x + 31$ 	8). $-4x < -24$ 
9). $2x + 6 \geq 2$ 	10). $-2(x - 5) < 4^2$ 

11). $-8 \leq c - 3 < -1$



12). $a - 6 < -4$ or $a - 1 > 5$



13). Give the domain and range for each relation. Tell whether the relation is a function or not.

$\{(3,4), (-1,2), (2, -3), (5,0)\}$

Domain _____

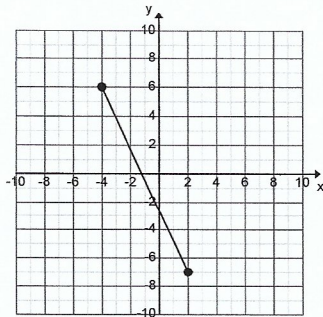
Range _____

Function ? (Yes or No) _____

14). Using the graph below, determine both the domain and the range:

DOMAIN _____

RANGE _____



15). Determine the domain and range of the relation below:

x	1	2	3	4
y	2	2	5	6

Domain: _____

Range _____

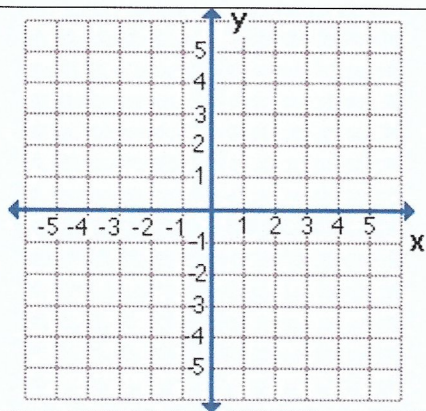
16). Determine a relationship between the x and y variables. Write an equation.

x	0	1	2	3	4
y	0	5	10	15	20

Equation: _____

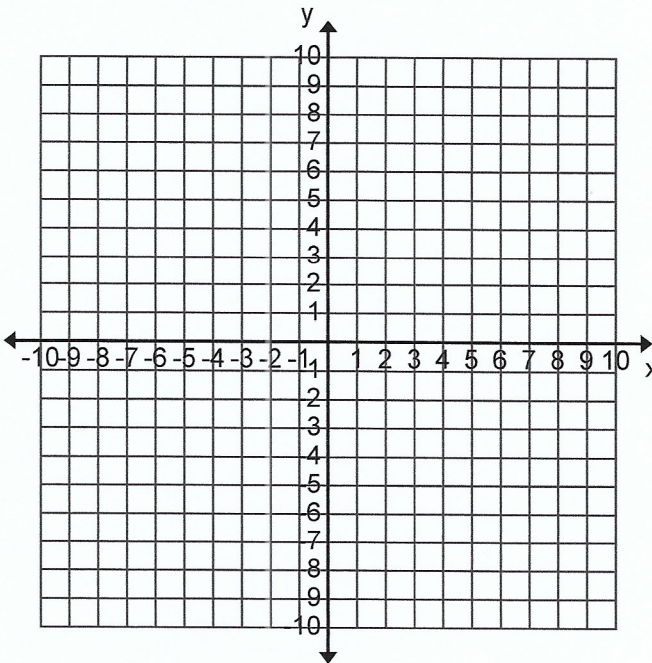
17). Graph the function: $y = 2|x|$

D: $\{-2, -1, 0, 1, 2\}$



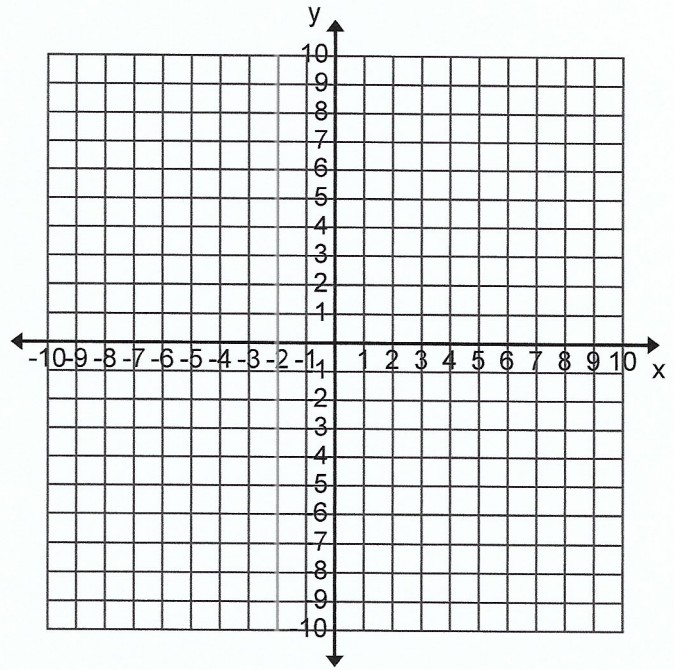
18). $-2x + y = 2$

D: $\{-2, -1, 0, 2\}$



19). GRAPH THE LINE $-3x + 2y = -4$
 BY COMPLETING THE CHART AND
 GRAHING THE POINTS

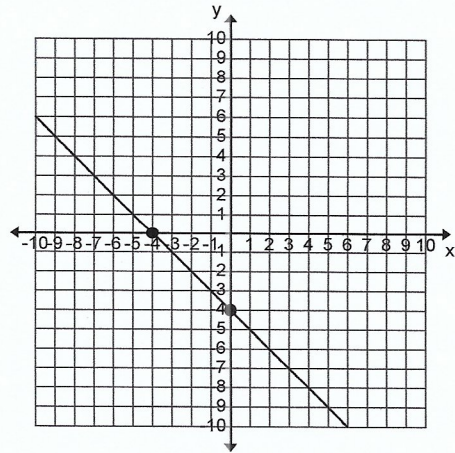
x	y
0	
-2	
2	



20). FROM THE GRAPH DETERMINE THE X
 AND Y INTERCEPTS

x-intercept = _____

y-intercept = _____

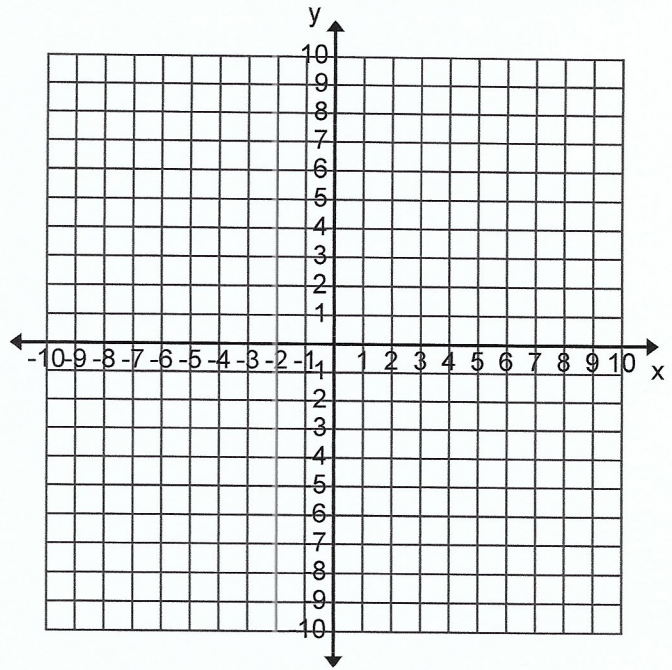


21). FOR THE EQUATION BELOW,
DETERMINE THE X-INTERCEPT AND
THE Y-INTERCEPT AND THEN GRAPH
THE LINE

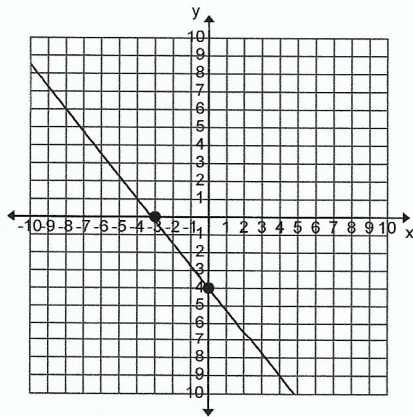
$$-5x + 3y = 15$$

x-intercept = _____

y- intercept = _____



22). FROM THE GRAPH DETERMINE THE SLOPE OF THE LINE $m =$ _____

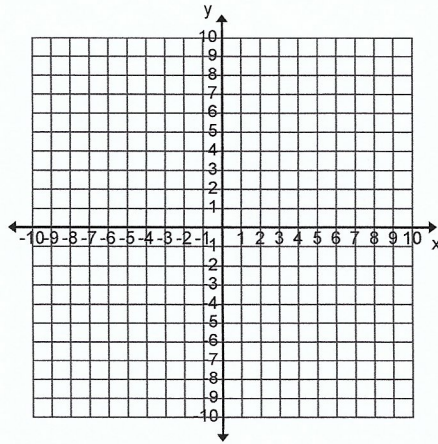


23). FROM THE EQUATION, DETERMINE THE SLOPE OF THE LINE:

$$6x + 2y = -4$$

slope = _____

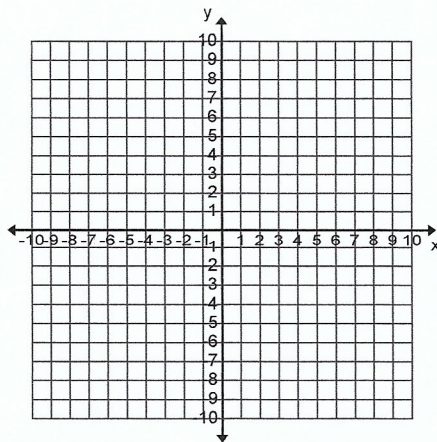
24). GRAPH THE LINE THAT GOES THROUGH $(-3, -5)$ AND SLOPE IS $\frac{5}{2}$



25). PUT THE EQUATION $2x - 3y = -3$ IN SLOPE INTERCEPT FORM. THEN STATE THE SLOPE AND Y-INTERCEPT AND GRAPH THE LINE.

Slope _____

y-intercept = _____



26). WRITE THE EQUATION OF A LINE IN SLOPE INTERCEPT FOR THE LINE WHOSE SLOPE IS $\frac{4}{5}$ AND Y-INTERCEPT IS -2

27). WRITE AN EQUATION OF A LINE BOTH IN POINT-SLOPE FORM AND SLOPE INTERCEPT FORM FOR THE LINE THAT GOES THROUGH (7,8) AND (-7,6).

Point-slope form _____

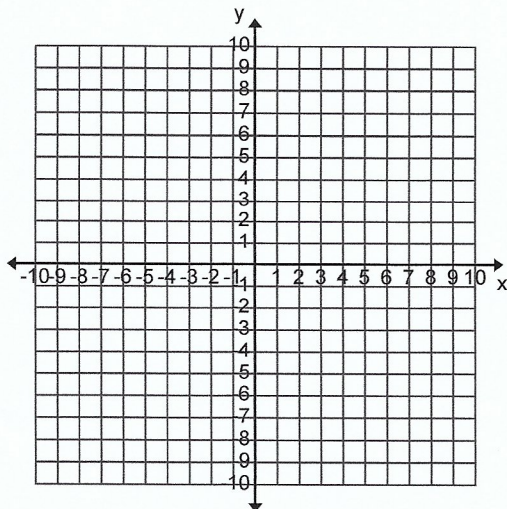
Slope-intercept form _____

DETERMINE IF THE GIVEN POINT IS A SOLUTION TO THE SYSTEM OR INEQUALITY. SHOW ALL WORK

28). (2,0) $3x + y = 6$ $x - y = 2$	29). (6, -2) $x + y > 4$ $x - y < 10$	30). (-2,3) $3x + 4y > 18$
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SOLVE THE FOLLOWING SYSTEM BY GRAPHING:

31). $\begin{cases} y = -x + 2 \\ y = x - 6 \end{cases}$



SOLVE EACH OF THE FOLLOWING BY SUBSTITUTION. SHOW ALL WORK.

$$32). \begin{cases} x = y + 4 \\ x + 7y = 20 \end{cases}$$

$$33). \begin{cases} 3x - 4y = 3 \\ y = -2x + 2 \end{cases}$$

SOLVE EACH OF THE FOLLOWING BY THE ELIMINATION METHOD:

$$34). \begin{cases} 2x - 4y = -4 \\ 2x + 4y = 20 \end{cases}$$

$$35). \begin{cases} x + y = 2 \\ 2x - y = 1 \end{cases}$$

$$36). \begin{cases} 9x + 7y = 4 \\ 6x - 3y = 18 \end{cases}$$

WITHOUT GRAPHING DETERMINE THE FOLLOWING:

A). THE TYPES OF LINES THAT MAKE UP THE SYSTEM (INTERSECTING, PARALLEL OR SAME LINE)

B). THE NUMBER OF SOLUTIONS (ONE, NONE, INFINITELY MANY)

C). IS THE SYSTEM CONSISTENT OR INCONSISTENT

D). IF THE SYSTEM INDEPENDENT, DEPENDENT OR NEITHER

37). $x + y = 0$
 $y = 3x - 12$

38). $y = 2x + 5$
 $y - 2x = 1$

39). $y = \frac{3}{2}x - 4$
 $-6x + 4y = 1$

a). _____

a). _____

a). _____

b). _____

b). _____

b). _____

c). _____

c). _____

c). _____

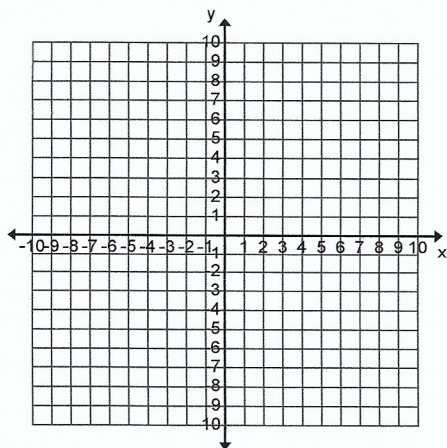
d). _____

d). _____

d). _____

GRAPH THE SOLUTIONS TO EACH OF THE FOLLOWING:

40). $y < x - 3$



SIMPLIFY EACH OF THE FOLLOWING:

41). $(5x^2 + 2x - 7) + (x^2 - 8x + 12) =$ _____

42). $(x^2 - 3x + 8) - (2x^2 - 3x + 7) =$ _____

43). $2x(x - 3) =$ _____

44). $(x - 2)(x + 7) =$ _____

45). $(x + 5)(x^3 - 3x + 4) =$ _____

46). $(x + 3)(x^2 + 5x - 8) =$ _____

47). $(3x - 2)(3x + 2) =$ _____