

Geometry Summer Packet



June 2022

This packet will be due the first week of school and will be your first grade. Be sure to show all of your work and box your final answer. Your work should be neat and legible. If you need more space than is provided, you can attach a separate sheet of paper with problems numbered and in order.

Have a happy and safe summer, and we look forward to seeing you in Geometry in the fall.

Archbishop Curley Math Department

I. Basic Algebra Equations

You will need to solve equations as you did in Algebra 1 throughout Geometry. Solve the following equations:

1. $3x + 8 = 7x - 16$

2. $2x - 25 = 7x$

3. $-4(3 - x) = 2(x + 6)$

4. $3x - 5(x + 6) = 0$

5. $6x + 7 - 2x + 4 = 2x + 6$

6. $2x + 4 = 6$

7. $7x + 16 = 5x$

8. $x + 2x + 3x + 4x = 10$


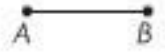
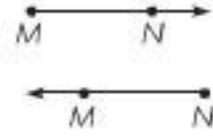
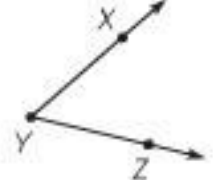


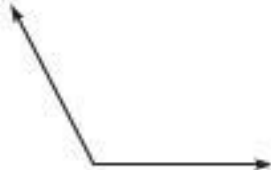

9. $x + 2x + 3x + 4x + 5x = 50 + 75 + 100$

10. $3x + 4 = 12 + x$

II. Basic Geometry Terms

Let's take a look at some basic Geometry vocabulary. You'll be using these words, symbols, and naming conventions throughout the year, so do your best to practice now!

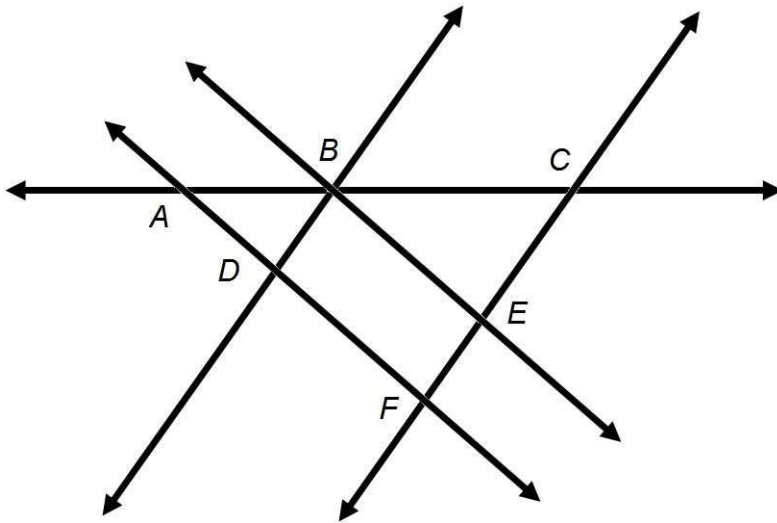
Lines, Rays, and Angles

Name	What it looks like	Think	
point D	$D \bullet$	A point names a location in space.	
line AB ; \overleftrightarrow{AB} line BA ; \overleftrightarrow{BA}		A line extends without end in opposite directions.	
line segment AB ; \overline{AB} line segment BA ; \overline{BA}		"Segment" means part. A line segment is part of a line. It is named by its two endpoints.	
ray MN ; \overrightarrow{MN} ray NM ; \overrightarrow{NM}		A ray has one endpoint and extends without end in one direction. A ray is named using two points. The endpoint is always named first.	
angle XYZ ; $\angle XYZ$ angle ZYX ; $\angle ZYX$ angle Y ; $\angle Y$		Two rays or line segments that share an endpoint form an angle. The shared point is the vertex of the angle.	
A right angle forms a square corner.	An acute angle opens less than a right angle.	An obtuse angle opens more than a right angle and less than a straight angle.	A straight angle forms a line.
			

Notice that it's possible to name a line using the letters and the line symbol over them, or saying "line AB ." Either works!

Important note: Points, lines, and rays have **NO WIDTH or THICKNESS**. Therefore, the illustrate locations and lines in space, but they don't occupy space themselves.

11. Name as many a.) *LINE SEGMENTS*, b.) *ANGLES*, c.) *RAY*S from the following picture as you can. Be sure to include multiple ways to represent them:



III. **Rational, Radical and Exponential Expressions**

12. Simplify $\sqrt[3]{27}$

13. Simplify $\left(\frac{81}{64}\right)^{-\frac{1}{2}}$

14. Simplify $\sqrt{196x^4y^6}$

15. Simplify

a.) $\sqrt{40}$

b.) $\sqrt{32}$

c.) $\sqrt{6} * \sqrt{14}$

d.) $\sqrt{5} * \sqrt{2}$

16. Add, Subtract, Multiply, or divide to solve the following equations involving rational numbers

a.) $\frac{1}{3} + \frac{2}{5} = ?$

b.) $\frac{7}{10} - \frac{8}{5} = ?$

c.) $\frac{7}{12} * \frac{3}{4} = ?$

d.) $\frac{5}{3} \div \frac{6}{11}$

e.) $\frac{\frac{23}{5}}{5}$

f.) $3\frac{2}{3} \div \frac{6}{5}$

IV. **Systems of Equations and Linear Inequalities**

17. Solve the following system of equations using **substitution**

$$\begin{cases} 2x + 5y = -5 \\ x + 3y = 3 \end{cases}$$

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18. Solve the following system of equations using **elimination**

$$\begin{cases} 6x + 2y = 8 \\ 4x + 2y = 10 \end{cases}$$

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19. In one week, a music store sold 9 guitars for a total of \$3611. Electric guitars sold for \$479 each and acoustic guitars sold for \$339 each. How many of each type of guitar were sold? Set up a system of equations and use any method to solve.

V. Polynomials and Factoring

20. Multiply and simplify: $7(-5v - 8) =$

21. Multiply and simplify: $(2x - 1)(x + 3)$

22. Multiply and simplify: $(n^2 + 6n - 4)(2n - 4) =$

23. Simplify: $\frac{-32x^3y^2z^4}{8x^6y^2z} =$
*Use Multiplication/Division
Properties of exponents*

24. Factor completely: $3x^3 + 6x^2 + 27x =$
*Cubic trinomial. Finding
linear factors*

25. Factor completely: $36x^2 - 64 =$
*Difference of two squares
factoring*

26. Factor completely: $t^2 + 4t - 32$
Factoring quadratics

27. Factor completely and then simplify: $\frac{x^2 - 4x - 1}{(x+4)(x+2)}$
*Factoring quadratics and
simplifying a rational expression*

28. Factor completely and then simplify: $\frac{16x^4 - 8x^2 + 16}{(x+4)(x+2)}$
*Factoring quadratics and
simplifying a rational expression*

VI. Linear Equations, Lines and Slope

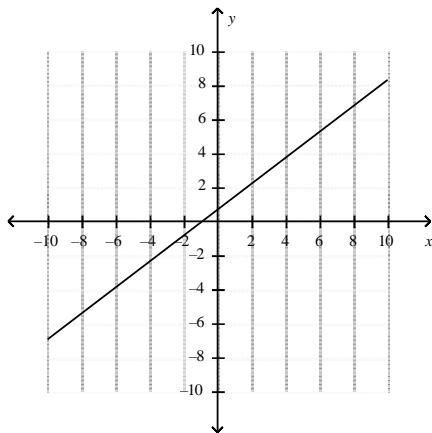
29. Write an equation of the line in slope-intercept form with x -intercept of -3 and a y -intercept of -5 .

30. The rental rates at Snappy Car Rental are \$30 per day plus \$0.25 per mile for each mile driven. Joe rented a car for one day and drove 300 miles. What is the total amount Joe paid to rent the car?

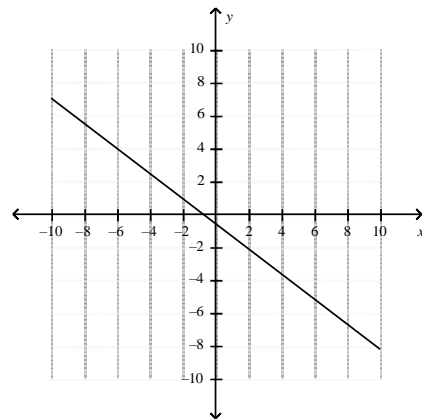
27. Match the equation with its graph.

$$\frac{2}{3}x - \frac{7}{8}y = -\frac{7}{12}$$

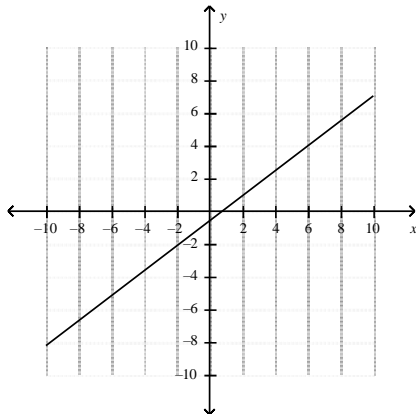
a.



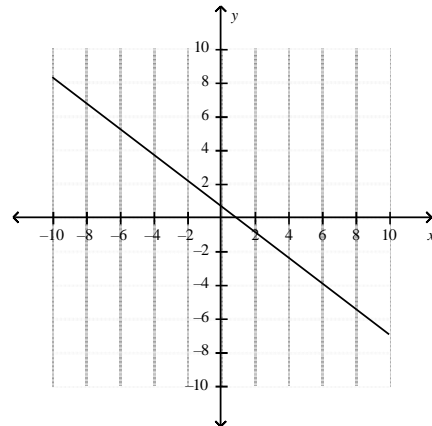
c.



b.



d.



28. Write the equation for the line that goes through the two points

In slope-intercept form: (1, 1) and (-1, -3)

29. Write the equation for the line that goes through the two points

In point-slope form: (-2, -1) and (-4, 3)

30. Graph the following linear function: $4x + 2y = 6$

Identify the slope and label the intercepts.

