

Important Concepts . . .

Preview Review



Mathematics Grade 7 TEACHER KEY
**W3 - Lesson 4: Plots and Plotting on a
Cartesian Plane**

Important Concepts of Grade 7 Mathematics

W1 - Lesson 1Divisibility Rules
 W1 - Lesson 2 Decimal Numbers
 W1 - Lesson 3Fractions
 W1 - Lesson 4 Improper Fractions, Mixed Numbers, Percents, and Decimals
 W1 - Lesson 5Integers, Number Lines, and Sequencing
 W1 - Quiz

W2 - Lesson 1 Table of Values and Graphing Linear Equations
 W2 - Lesson 2Modeling Expressions, Equations, and the Preservation of Equality
 W2 - Lesson 3 Algebra and Linear Equations
 W2 - Lesson 4Statistics
 W2 - Lesson 5 Circle Graphs and Calculating Probability
 W2 - Quiz

W3 - Lesson 1 Circles
 W3 - Lesson 2 Area of Triangles and Parallelograms
 W3 - Lesson 3Line Segments
 W3 - Lesson 4 Parts and Plotting on a Cartesian Plane
 W3 - Lesson 5Transformations
 W3 - Quiz

Materials Required

Math Set
Calculator

No Textbook Required

This is a stand-alone course.

Mathematics Grade 7

Version 6

Preview/Review W3 - Lesson 4

ISBN 1-894894-75-8

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Preview/Review Concepts for Grade Seven Mathematics

Teacher Key



W3 – Lesson 4:

***Plots and Plotting on a
Cartesian Plane***

Introductory Information for Teachers

Preview/Review courses are aimed mainly at students who have completed the regular course but who need to review some of the material before beginning the next grade. Other students may find Preview/Review courses useful in preparing for the new concepts they will study in their next grade.

No Preview/Review course is intended to replace the regular course because each covers only what the writers have decided are the top 15 concepts from the Program of Studies for that course.

Preview/Review materials are intended for use by teachers and students in one-subject and one-grade classrooms. This Preview/Review course contains fifteen lessons in three sections. Each section has five lessons. A short quiz is provided at the end of each section to test student knowledge of the material studied. In a classroom the course will likely be completed in three weeks.

This Preview/Review course is written to be stand-alone. There is no textbook required.

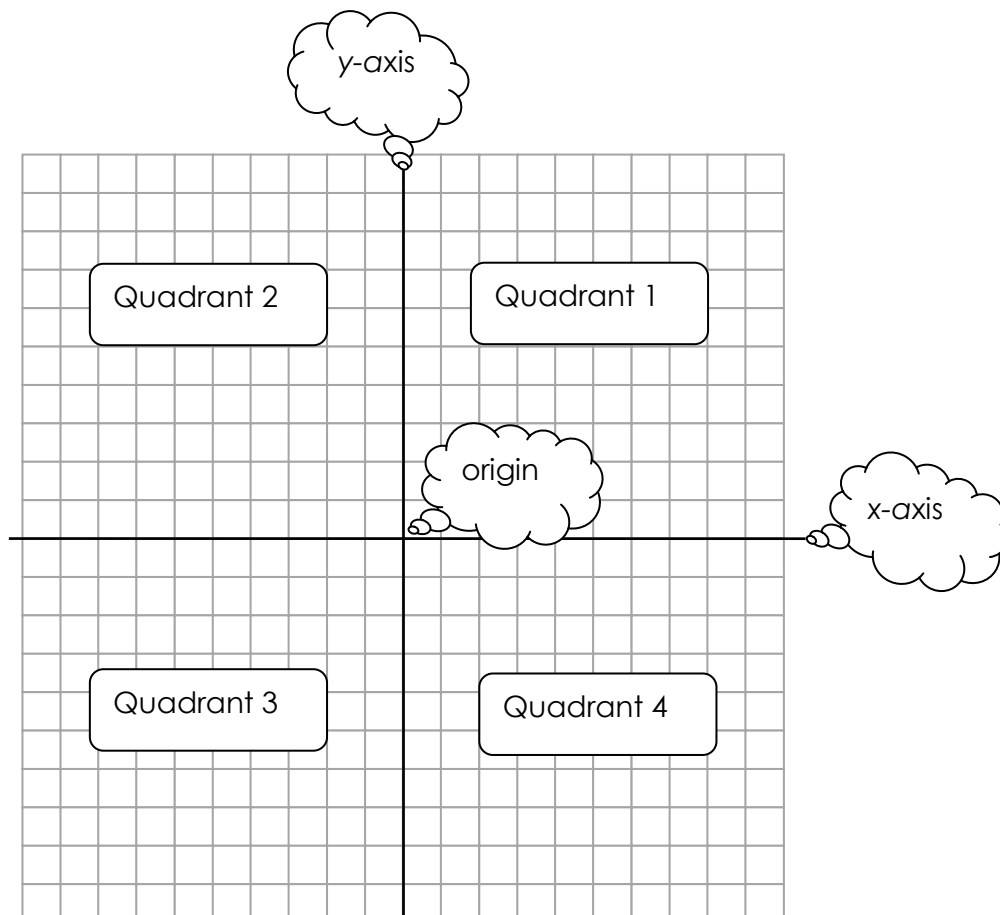
W3 – Lesson 4: Plots and Plotting on a Cartesian Plane

Objective:

- I can identify parts of a cartesian plane.*

Cartesian plane

Also called a **coordinate grid**, the plane is formed when two perpendicular number lines intersect at 0. The horizontal line is the **x-axis**, and the vertical line is known as the **y-axis**. The point where the two lines meet is called the **origin**. Each section of the grid is called a **quadrant** (1, 2, 3, and 4).



Objective:

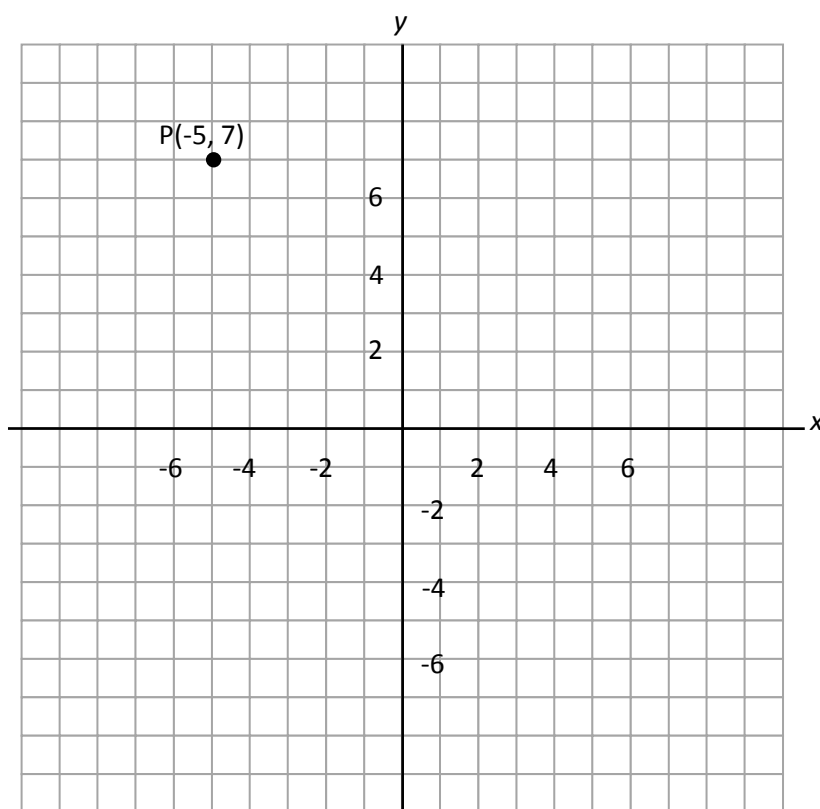
- *I can plot points on a cartesian plane.*

Ordered Pairs

A point on the plane is located by an **ordered pair** (x, y).

The first integer (x-coordinate) tells how far to go on the x axis. The second integer (y-coordinate) tells how far to go on the y-axis.

Example: $P(-5, 7)$ means a point labeled P that is 5 units left, and 7 units up.



Practice:

1. a. Plot and label the following points on the grid below.

A(4, 5) B(-3, -1) C(-2, 4) D(0, 7) E(6, 0) F(3, -6)

- b. What is the x coordinate for point C?

-2

- c. What are the coordinates for the origin?

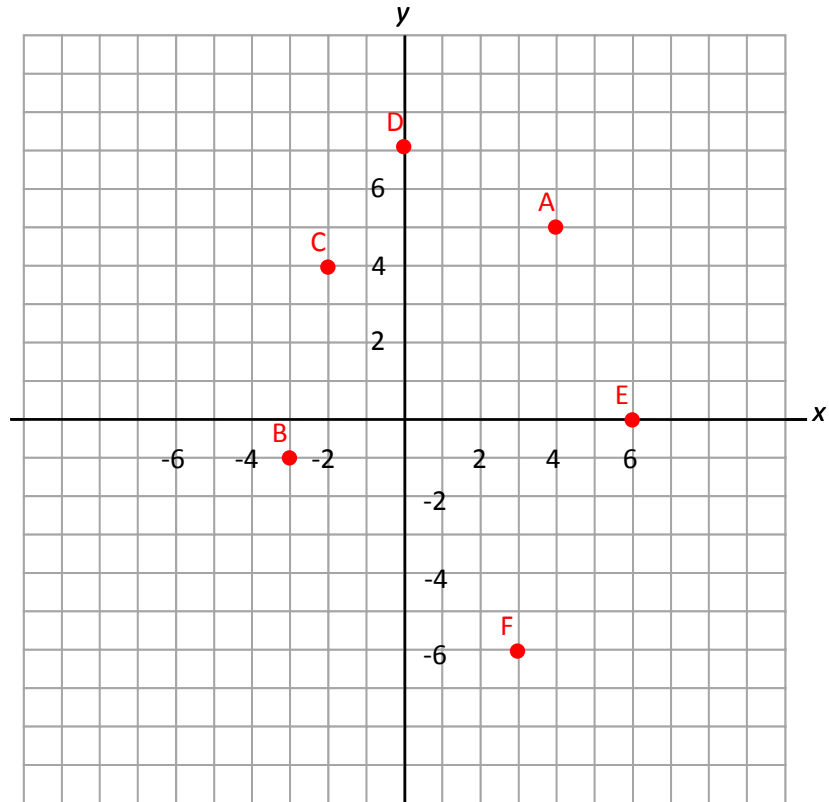
(0, 0)

- d. Which quadrant is point B in?

Quadrant 3

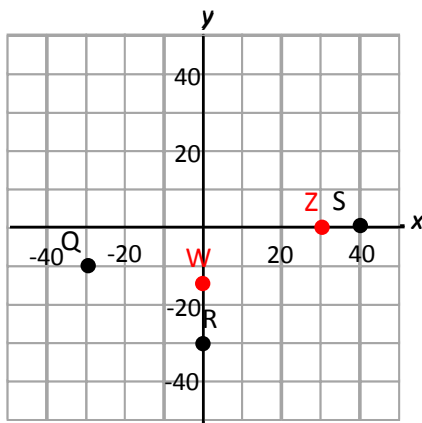
- e. What is the y coordinate for point D?

7



2. a. What are the coordinates of each point?

i. Q ii. R iii. S
(-30, -10) **(0, -30)** **(40, 0)**



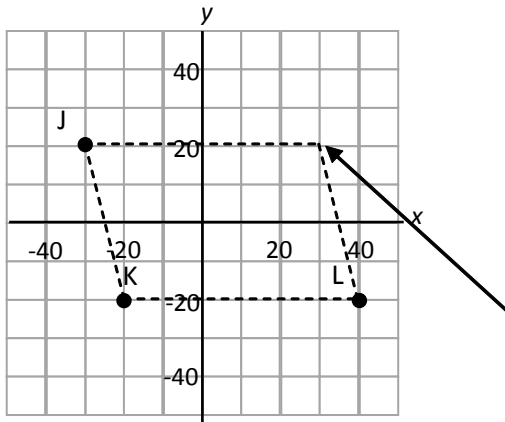
- b. Plot each point on the grid.

i. W(0, -15)

ii. Z(30, 0)

Objective:

- I can create shapes and designs using points on a cartesian plane.*

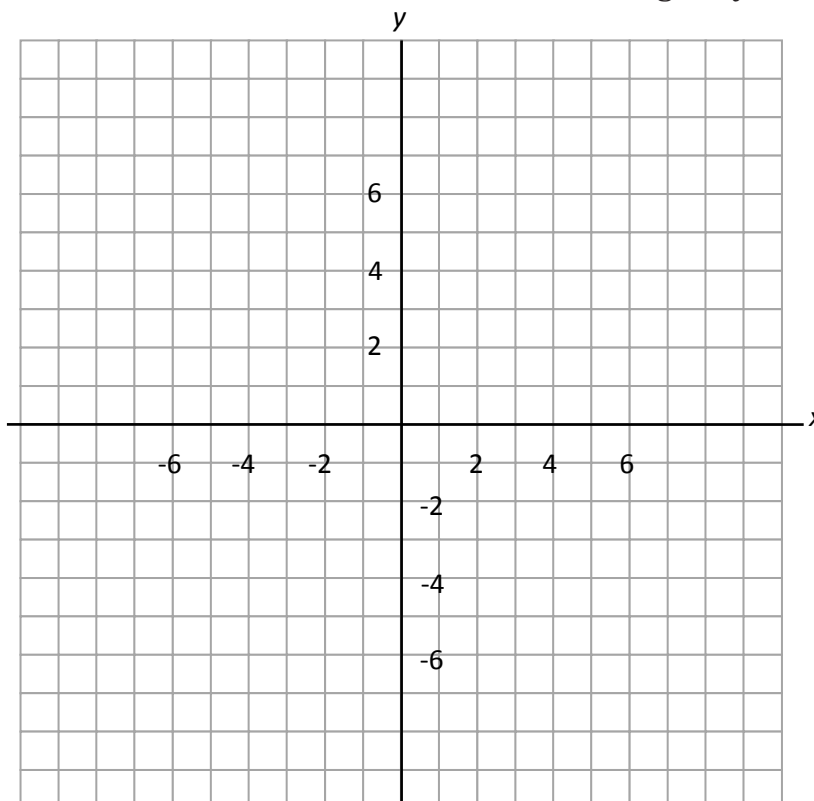


Example: Points J, K, and L are three points of a parallelogram, what coordinates should point M be to complete the figure?

M(30, 20) would complete the parallelogram.

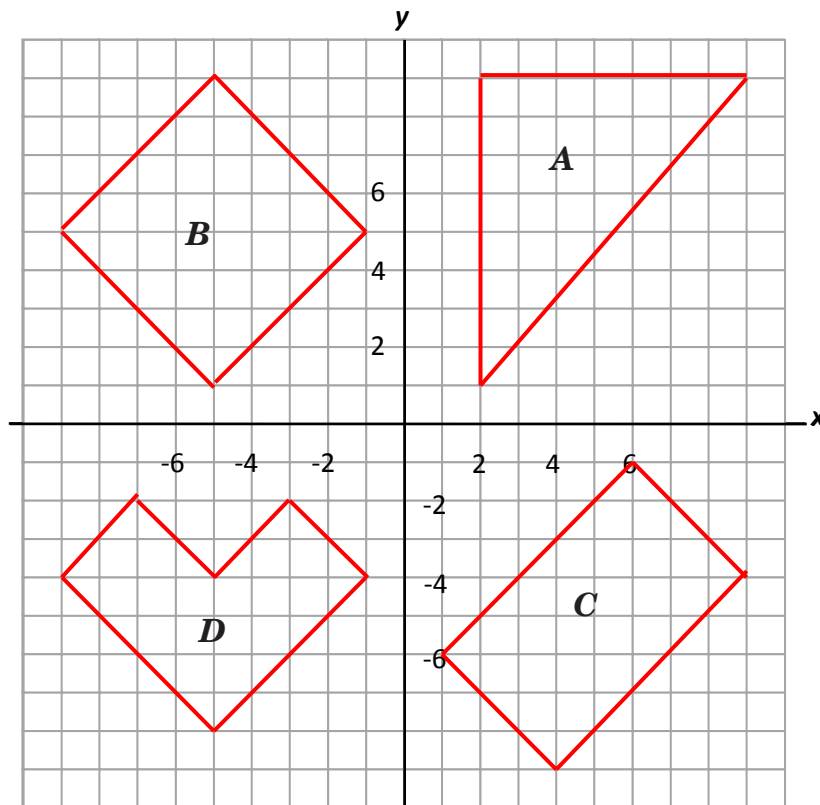
Practice:

- Draw a closed five sided figure on the grid below. **Answers will vary.**
 - List the coordinates of the vertices for the figure you drew. **Answers will vary.**



2. Plot and connect the following series of points.

- a. Shape A: (2, 1), (2, 9), (9, 9)
- b. Shape B: (-5, 1), (-1, 5), (-5, 9), (-9, 5)
- c. Shape C: (6, -1), (9, -4), (4, -9), (1, -6)
- d. Shape D: (-3, -2), (-5, -4), (-7, -2), (-9, -4), (-5, -8), (-1, -4)



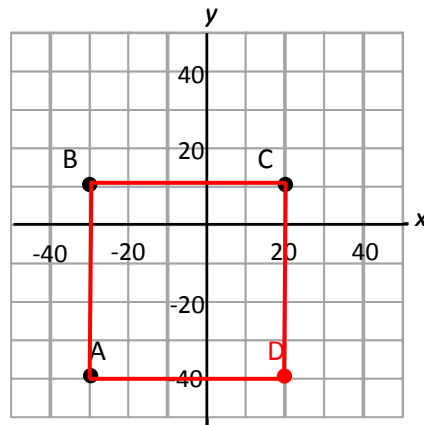
- e. What quadrant is shape D in?

Quadrant 3

- f. Is there a way to tell which quadrant shape A would be in before plotting the points?

Since all the ordered pairs are positive it will be in Quadrant 1.

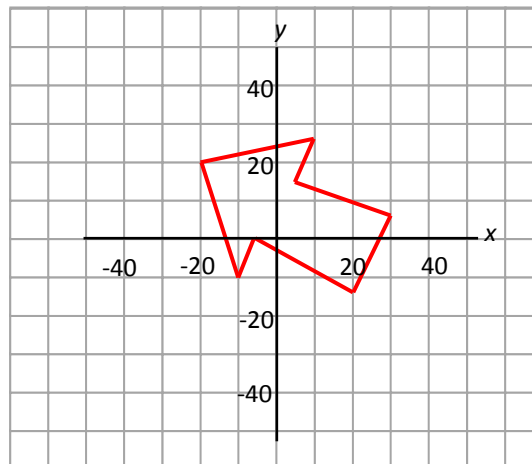
3. Points A, B and C are the vertices of a square, what are the coordinates for point D that would complete the square? Plot the coordinate and draw the shape.



The coordinates are (20, -40).

4. a. Draw a Cartesian plane using appropriate units for the axes so the following points can be plotted.
- b. Plot the following points.
- $(-10, -10), (-5, 0), (20, -15), (30, 5), (5, 15), (10, 25), (-20, 20)$
- c. Connect the points in order. Which quadrant is the shape pointing to?

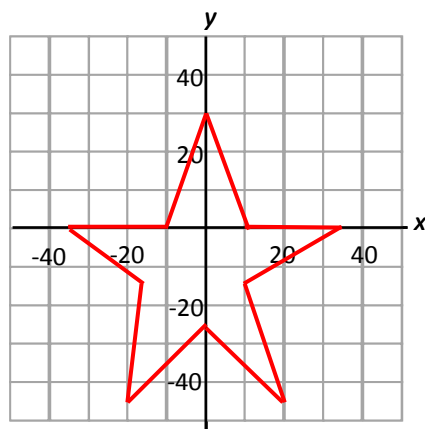
Quadrant 2



1. Fill in the blanks.

- An ordered pair is in **Quadrant 1** when the x coordinate is a positive integer, and the y coordinate is a positive integer.
- An ordered pair is in **Quadrant 2** when the x coordinate is a negative integer, and the y coordinate is a positive integer.
- An ordered pair is in **Quadrant 3** when the x coordinate is a negative integer, and the y coordinate is a negative integer.
- An ordered pair is in **Quadrant 4** when the x coordinate is a positive integer, and the y coordinate is a negative integer.
- When the x coordinate is equal to 0 the point is in no quadrant because it is on the y axis.
- When the y coordinate is equal to 0 the point is in no quadrant because it is on the x axis.

2. a. Plot the following points.

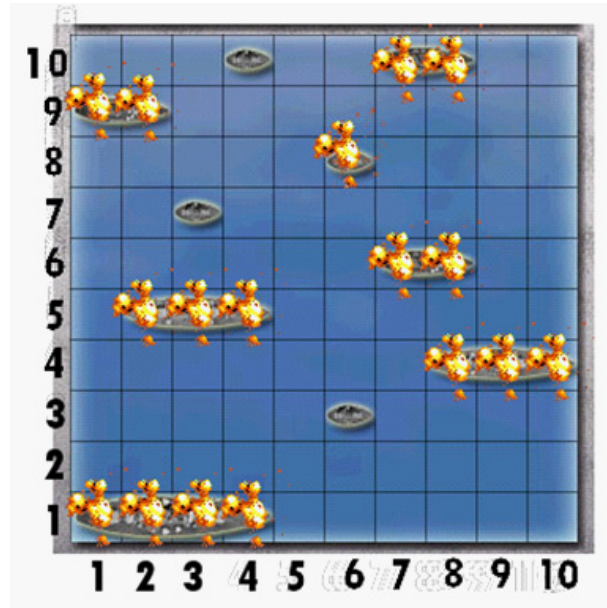


- | | |
|-------------|-------------|
| A(0, 30) | B(10, 0) |
| C(-35, 0) | D(-15, -15) |
| E(-20, -45) | F(0, -30) |
| G(20, -45) | H(15, -15) |
| I(35, 0) | J(10, 0) |
| K(0, 30) | |

- Connect the points in order from A to J. Which quadrants have a point of the figure in them?

Quadrants 3 and 4.

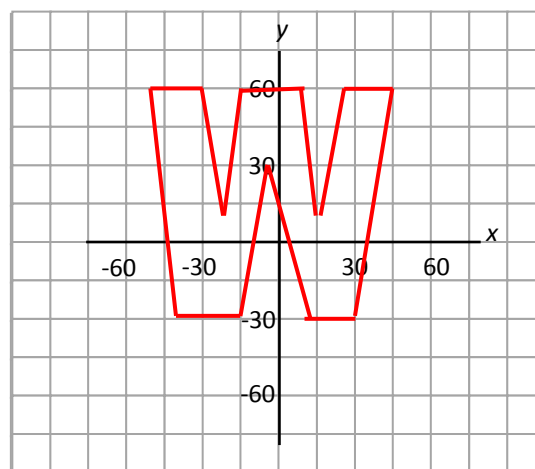
3. Patrick was playing a game of Battleship with his brother. If his brothers' ships were arranged like the image below, what are the three coordinates Patrick needs to win the game? (You are looking for the coordinates of the unmanned ships.)



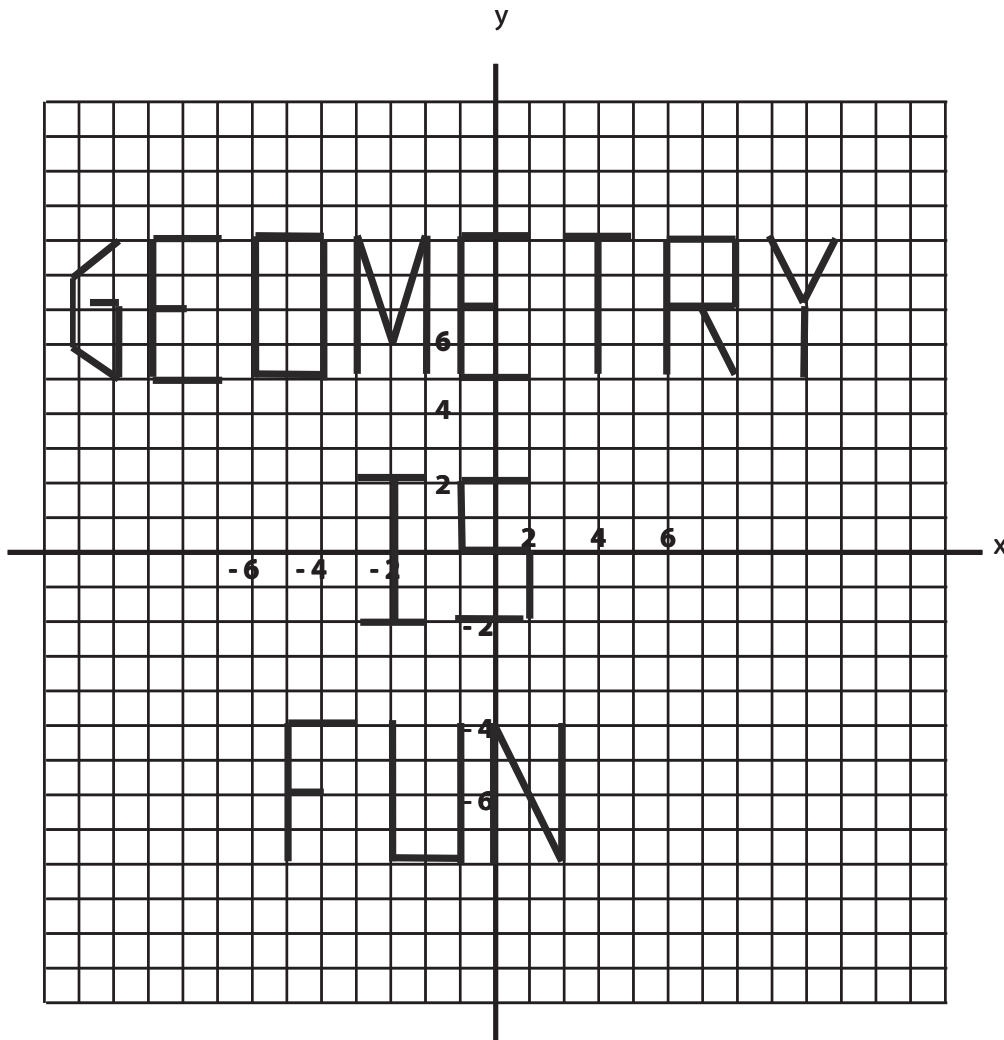
(4, 10)
(3, 7) and
(6, 3)

4. a. Draw a Cartesian plane using an appropriate unit for the axes.
- b. Plot the following points.

(30, 50), (30, 130), (10, 130), (10, 90), (-10, 130), (-30, 90), (-30, 130), (-50, 130),
 (-50, 50), (-30, 50), (-10, 90), (10, 50)



5. Plot and connect the points of each series.



- | | |
|--|--|
| a. $(-3, -2) + (-1, -2)$ | b. $(1, -9) + (1, -5) + (3, -9) + (3, -5)$ |
| c. $(10, 7) + (10, 5)$ | d. $(2, 5) + (0, 5) + (0, 9) + (2, 9)$ |
| e. $(7, 7) + (8, 5)$ | f. $(0, 7) + (1, 7)$ |
| g. $(-5, -9) + (-5, -5) + (-3, -5)$ | h. $(0, -2) + (2, -2) + (2, 0) + (0, 0) + (0, 2) + (2, 2)$ |
| i. $(-5, -7) + (-4, -7)$ | j. $(4, 9) + (4, 5)$ |
| k. $(-10, 9) + (-12, 8) + (-12, 6) + (-10, 5) + (-10, 7) + (-11, 7)$ | |
| l. $(-6, 5) + (-6, 9) + (-4, 9) + (-4, 5) + (-6, 5)$ | |
| m. $(-3, 5) + (-3, 9) + (-2, 6) + (-1, 9) + (-1, 5)$ | |
| n. $(-9, 7) + (-8, 7)$ | o. $(9, 9) + (10, 7) + (11, 9)$ |
| p. $(3, 9) + (5, 9)$ | q. $(-3, 2) + (-1, 2)$ |
| r. $(6, 5) + (6, 9) + (8, 9) + (8, 7) + (6, 7)$ | s. $(-2, -5) + (-2, -9) + (0, -9) + (0, -5)$ |
| t. $(-2, -2) + (-2, 2)$ | u. $(-7, 5) + (-9, 5) + (-9, 9) + (-7, 9)$ |



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