Important Concepts . . .

Preview Review

Mathematics Grade 7

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

Important Concepts of Grade 7 Mathematics

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

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

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

Materials Required

Math Set
Calculator

No Textbook Required

This is a stand-alone course.

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Preview/Review Concepts for Grade Seven Mathematics

W3 – Lesson 4:

Plots and Plotting on a Cartesian Plane

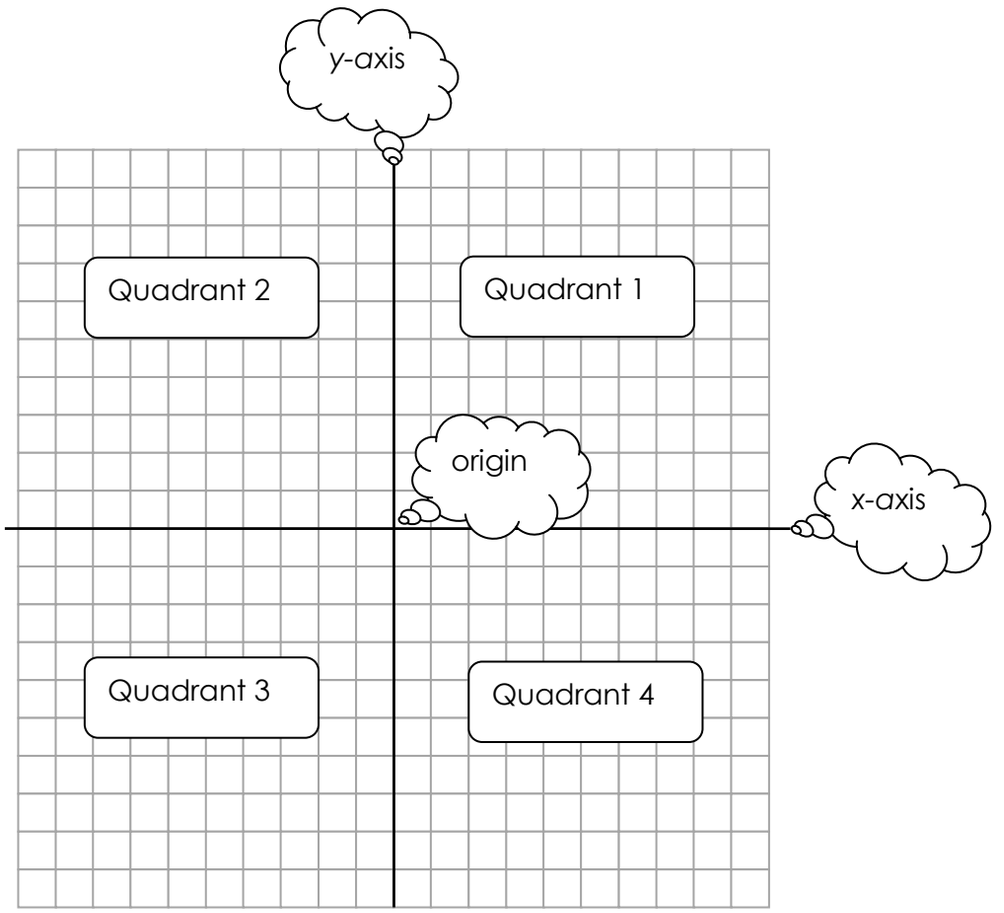
W3 – Lesson 4: Plots and Plotting on a Cartesian Plane

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:

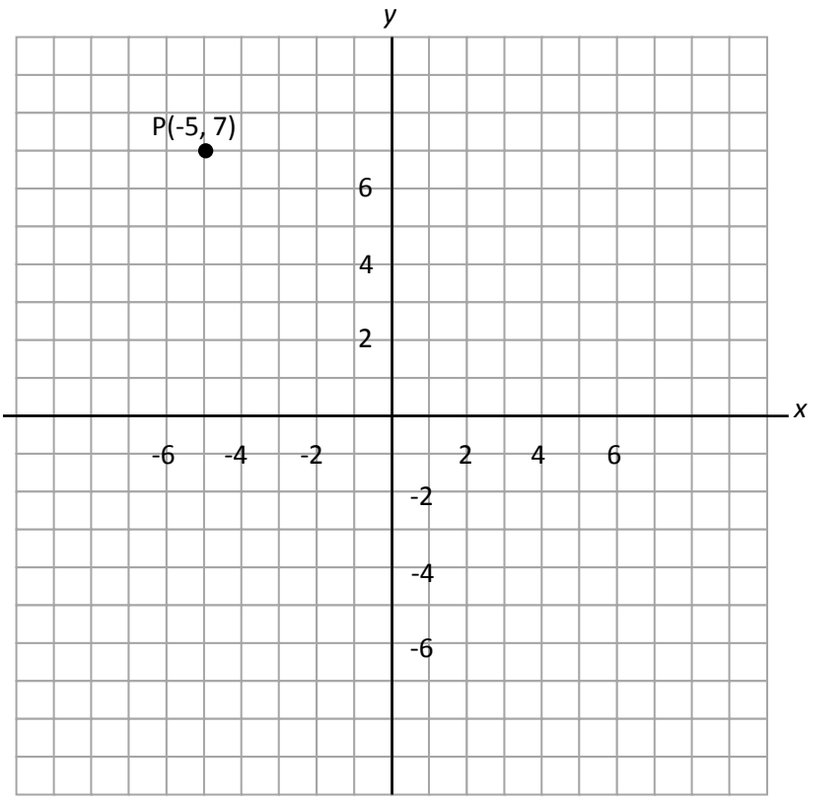
- *I can plot points on a cartesian plane.*

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.

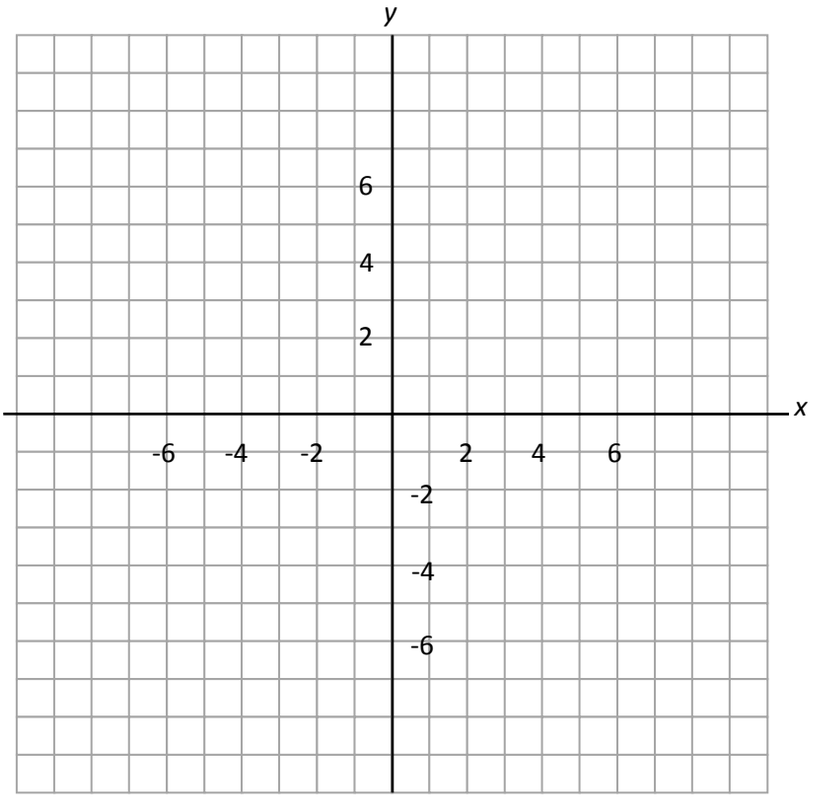
   A(4, 5) B(-3, -1) C(-2, 4) D(0, 7) E(6, 0) F(3, -6)

   b. What is the x coordinate for point C?

   c. What are the coordinates for the origin?

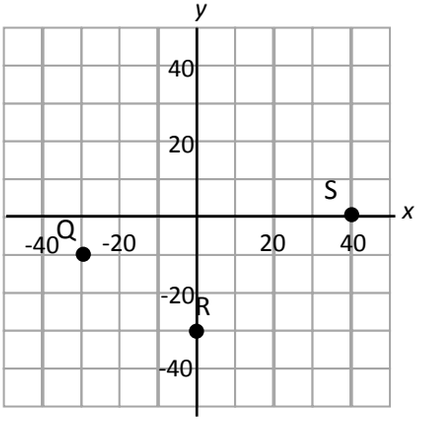
   d. Which quadrant is point B in?

   e. What is the y coordinate for point D?



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

   i. Q ii. R iii. S



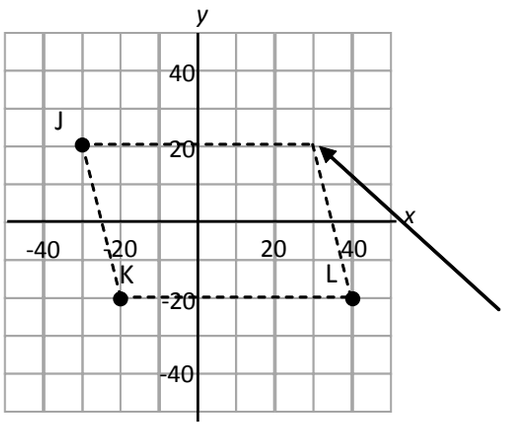
   b. Plot each point on the grid.

   i. W(0, -15)

   ii. Z(30, 0)

Objective:

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



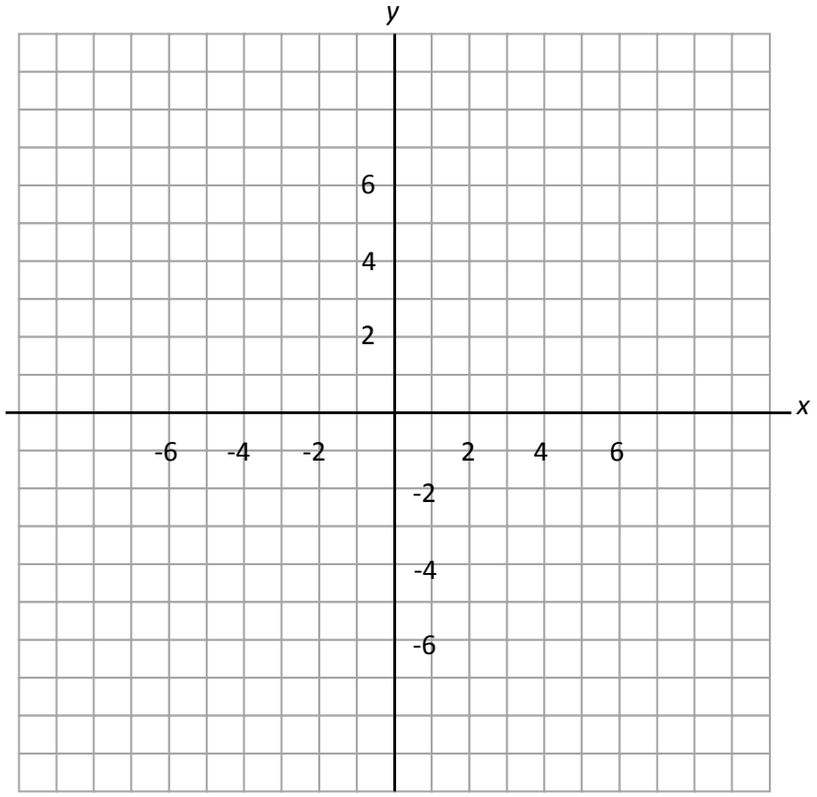
Example: Points J, K, and L are three points of a parallelogram, what coordinates should point M be to complete the figure?

M(30, 20) would complete the parallelogram.

Practice:

1. a. Draw a closed five sided figure on the grid below.

   b. List the coordinates of the vertices for the figure you drew.



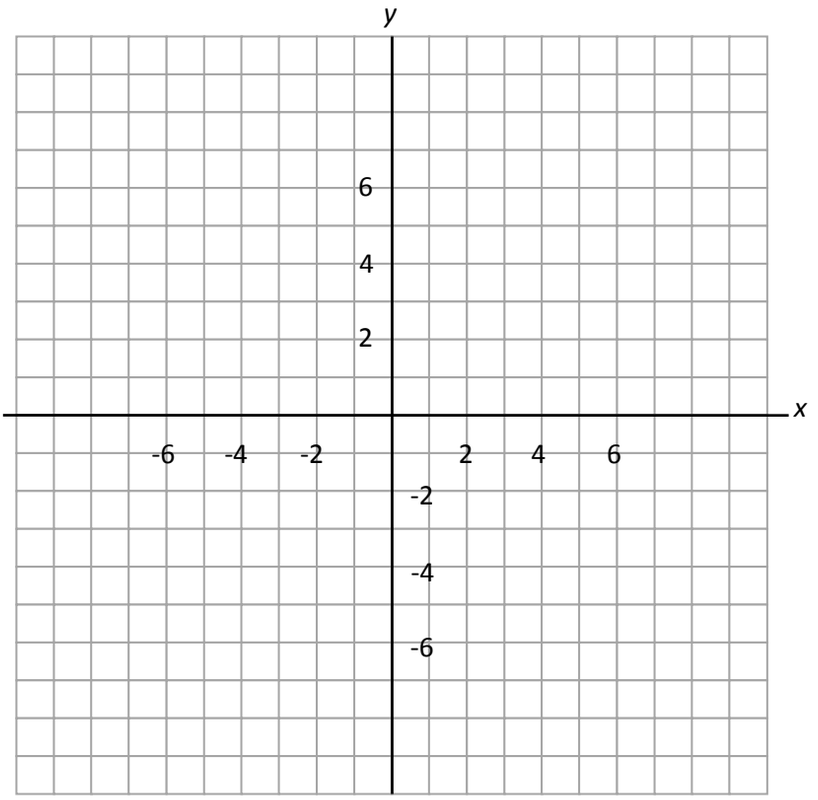
2. Plot and connect the following series of points.

   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)

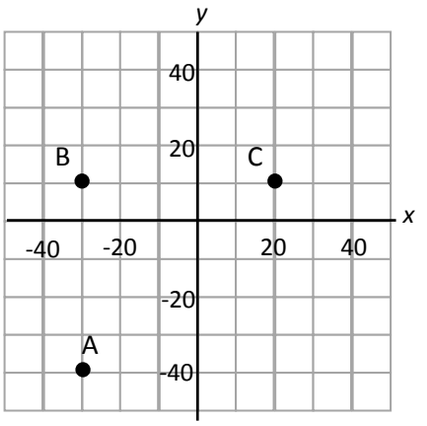
   d. Shape D: (-3, -2), (-5, -4), (-7, -2), (-9, -4), (-5, -8), (-1, -4)



   e. What quadrant is shape D in?

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

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.

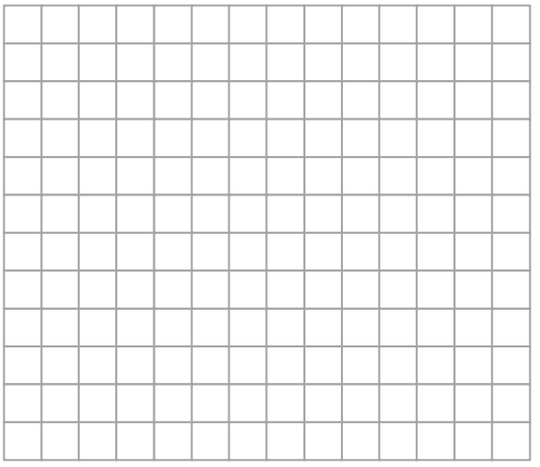


4. a. Draw a Cartesian plane using appropriate units for the axes so the following points can be plotted.

   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?



1. Fill in the blanks.

   a. An ordered pair is in **Quadrant 1** when the x coordinate is a _____ integer, and the y coordinate is a _____ integer.

   b. An ordered pair is in **Quadrant 2** when the x coordinate is a _____ integer, and the y coordinate is a _____ integer.

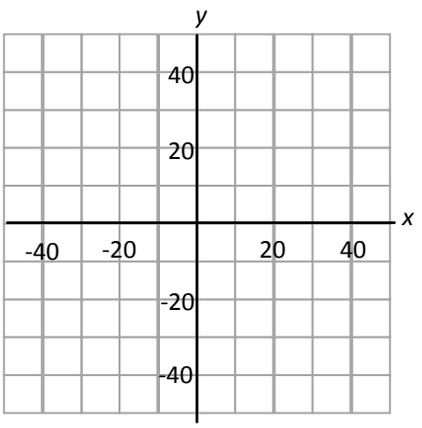
   c. An ordered pair is in **Quadrant 3** when the x coordinate is a _____ integer, and the y coordinate is a _____ integer.

   d. An ordered pair is in **Quadrant 4** when the x coordinate is a _____ integer, and the y coordinate is a _____ integer.

   e. When the x coordinate is equal to 0 the point is in no quadrant because it is on the _____.

   f. When the y coordinate is equal to 0 the point is in no quadrant because it is on the _____.

2. a. Plot the following points.



A(0, 30) B(10, 0)

C(-35, 0) D(-15, -15)

E(-20,-45) F(0, -30)

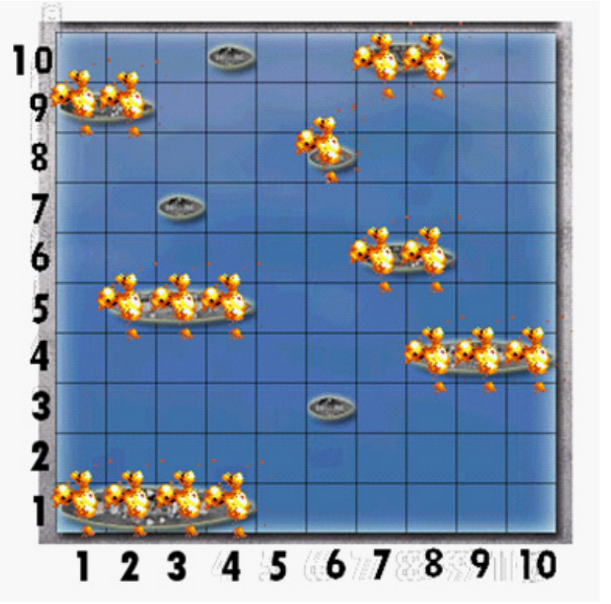
G(20, -45) H(15, -15)

I(35, 0) J(10, 0)

K(0, 30)

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

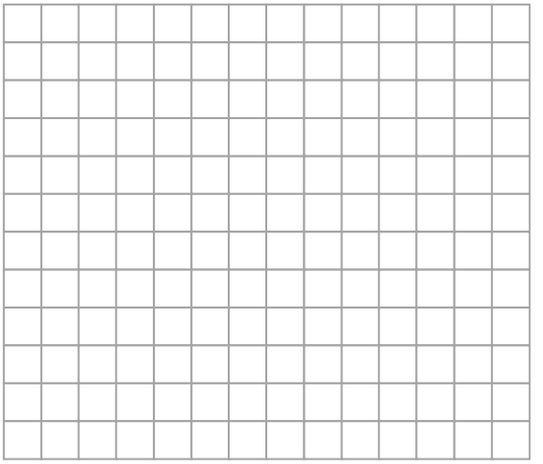
3. Patrick was playing a game of Battleship with his brother. If his brothers' ships were arranged like the image below, what are the three coordinates Patrick needs to win the game? (You are looking for the coordinates of the unmanned ships.)



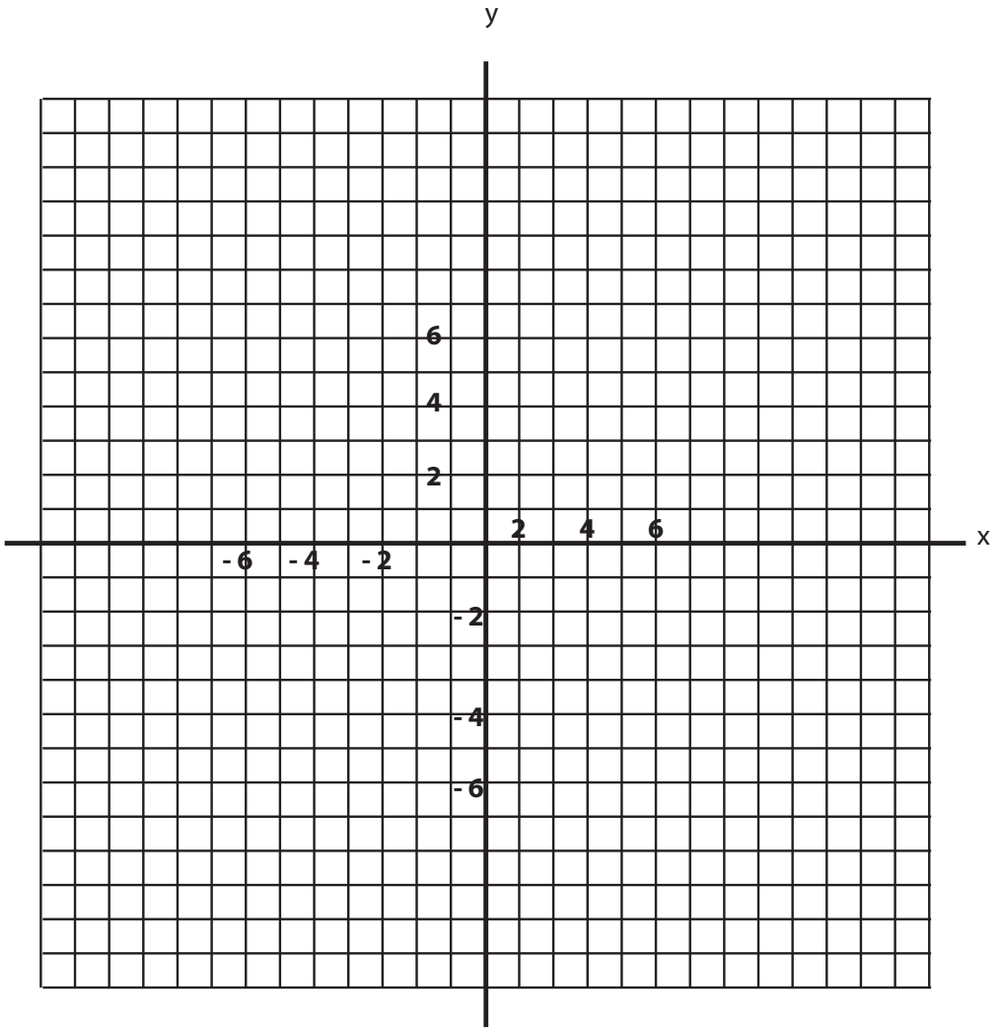
4. a. Draw a Cartesian plane using an appropriate unit for the axes.

   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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