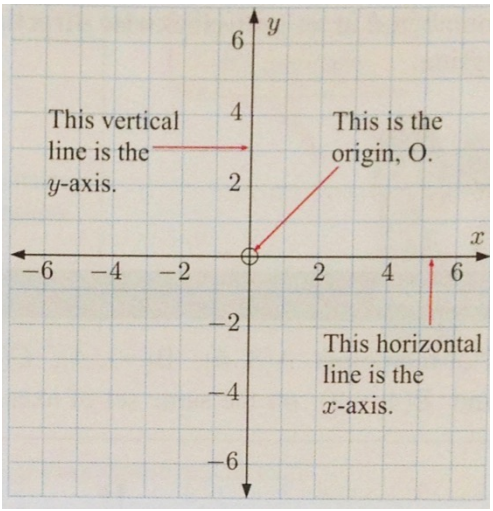
WORKSHEET: The Cartesian Plane

Name:

The **Cartesian plane** is a number grid, like the one given on the right of this page. The numbers, or **coordinates**, on it allow us to locate the exact location of a **point** on the plane.

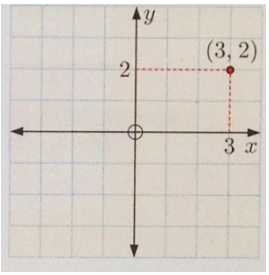
There is a centre point, called the **origin** (O). Two **axes** are drawn through the origin to make the Cartesian plane. These axes are called the **x-axis** (horizontal) and the **y-axis** (vertical).

Have a good look at the Cartesian plane pictured. Note that the x-axis has negative values to the left of O, and the y-axis has negative values below O.

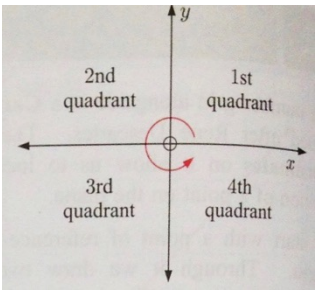


To specify the position of a point on the Cartesian plane, we use a **coordinate** (x,y).

For example, the position on the point in the plane on the right has an x-value of 3 and a y-value of 2. Therefore, it has a coordinate of **(3,2).**

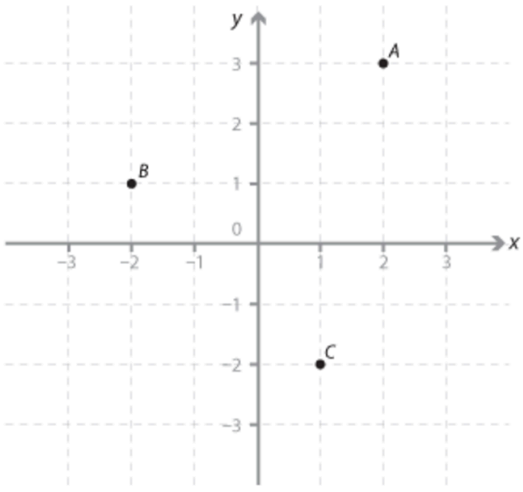


The x- and y-axes divide the Cartesian plane into four sections called **quadrants**. Quadrants are labelled in an anti-clockwise direction shown below.



QUESTIONS:

1. State the coordinates of A, B, and C.



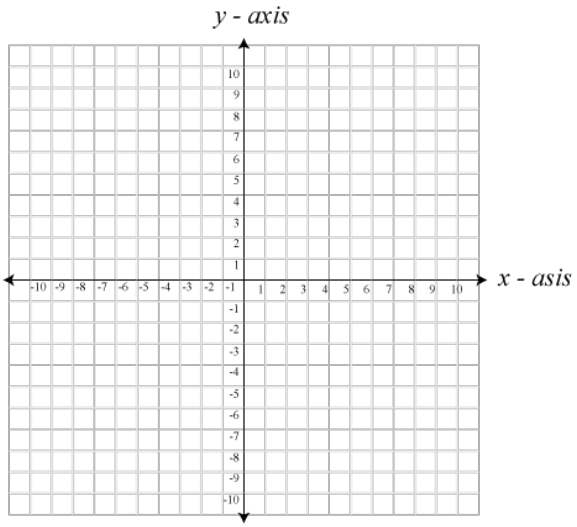
A (,)

B (,)

C (,)

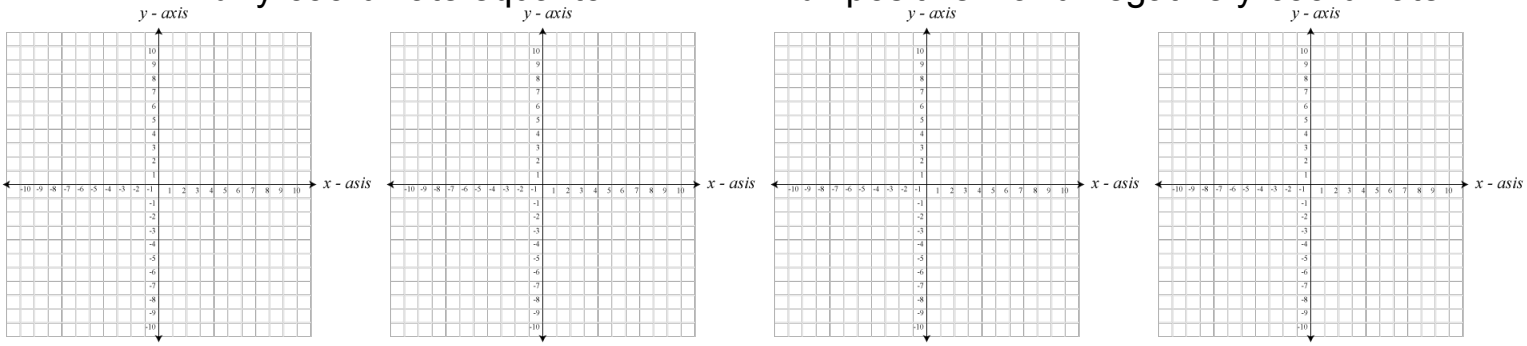
2. On the same set of axes below, plot the following points and state which quadrant the lie in:

a. A(1,5) QUADRANT: ___
b. B(7,0) QUADRANT: ___
c. C(-1,3) QUADRANT: ___
d. D(-5,-9) QUADRANT: ___
e. E(2,-4) QUADRANT: ___
f. F(0,1) QUADRANT: ___
g. G(-8,6) QUADRANT: ___
h. H(6,10) QUADRANT: ___



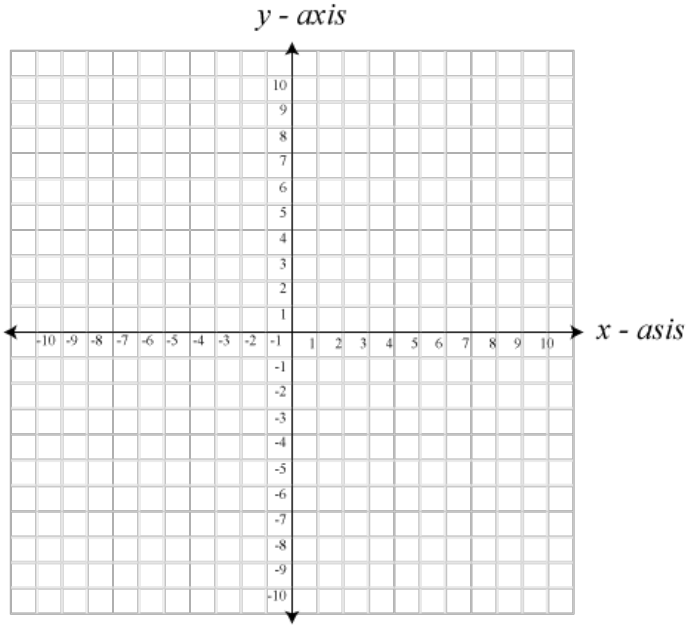
3. On different sets of axes below, show all the points with:

a. x-coordinate equal to 3
b. y-coordinate equal to -2
c. negative x-coordinate
d. positive x and negative y-coordinate



4. Consider the set of points {(0,0), (1,3), (2,6), (3,9)}.

a. Plot the points on a set of axes.
b. Determine whether the points lie in a straight line: yes / no
c. Determine which of the rules fits the set of points:
i. y = x + 1
ii. y = x + 3
iii. y = 3 – x
iv. y = 3x



WORKSHEET ANSWERS: The Cartesian Plane

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The **Cartesian plane** is a number grid, like the one given on the right of this page. The numbers, or **coordinates**, on it allow us to locate the exact location of a **point** on the plane.

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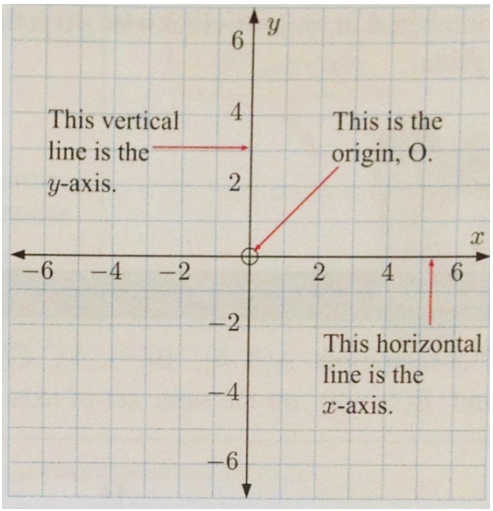
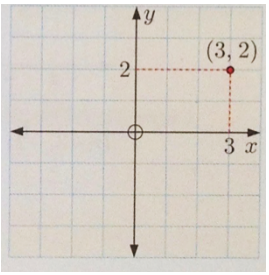
Have a good look at the Cartesian plane pictured. Note that the x-axis has negative values to the left of O, and the y-axis has negative values below O.

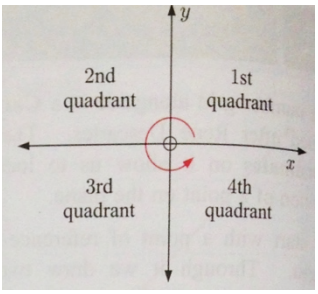


To specify the position of a point on the Cartesian plane, we use a **coordinate** (x,y).

For example, the position on the point in the plane on the right has an x-value of 3 and a y-value of 2. Therefore, it has a coordinate of **(3,2).**

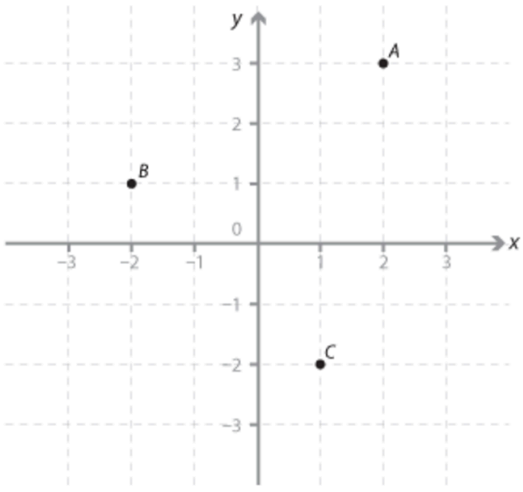


The x- and y-axes divide the Cartesian plane into four sections called **quadrants**. Quadrants are labelled in an anti-clockwise direction shown below.



QUESTIONS:

1. State the coordinates of A, B, and C.



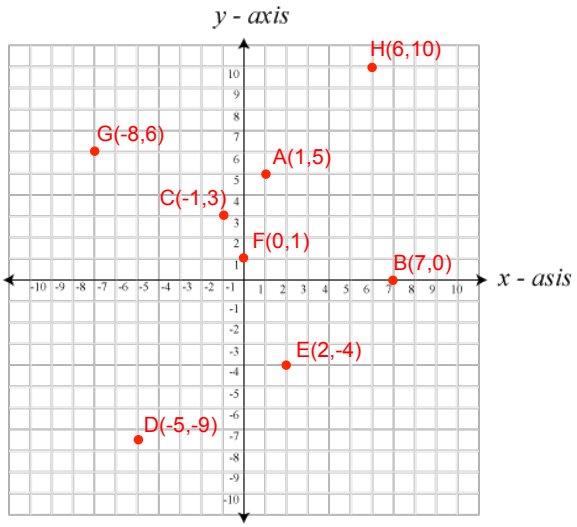
A (2 , 3)

B (-2 , 1)

C (1 , -2)

2. On the same set of axes below, plot the following points and state which quadrant the lie in:

a. A(1,5) QUADRANT: 1
b. B(7,0) QUADRANT: 1/2
c. C(-1,3) QUADRANT: 2
d. D(-5,-9) QUADRANT: 3
e. E(2,-4) QUADRANT: 4
f. F(0,1) QUADRANT: 1/2
g. G(-8,6) QUADRANT: 2
h. H(6,10) QUADRANT: 1



3. On different sets of axes below, show all the points with:

a. x-coordinate equal to 3
b. y-coordinate equal to -2
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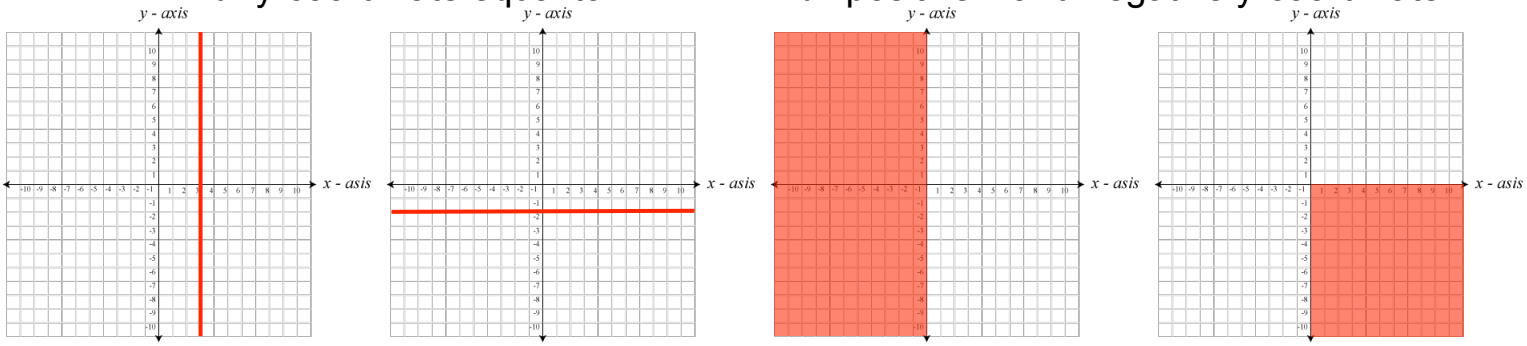
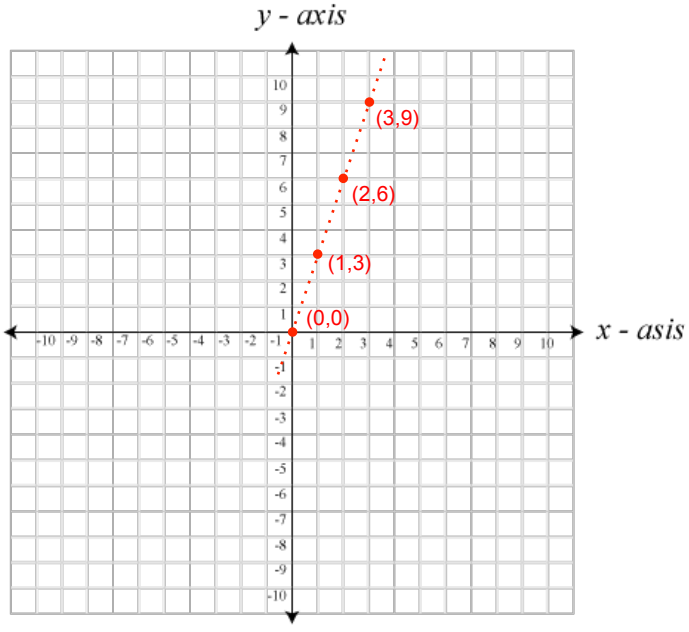


4. Consider the set of points {(0,0), (1,3), (2,6), (3,9)}.

a. Plot the points on a set of axes.
b. Determine whether the points lie in a straight line: yes / no
c. Determine which of the rules fits the set of points:

i. y = x + 1
ii. y = x + 3
iii. y = 3 – x
iv. y = 3x

Test by substituting x = 1
If x = 1, y = 3x
Therefore, y = 3 TRUE
Works for other coordinate values ✔



Name : _____ Score : _____

Teacher : _____ Date : _____

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For each Shape plot the ordered pairs on the axis and connect them in order.
Do not connect the Shapes to each other.

Shape 1

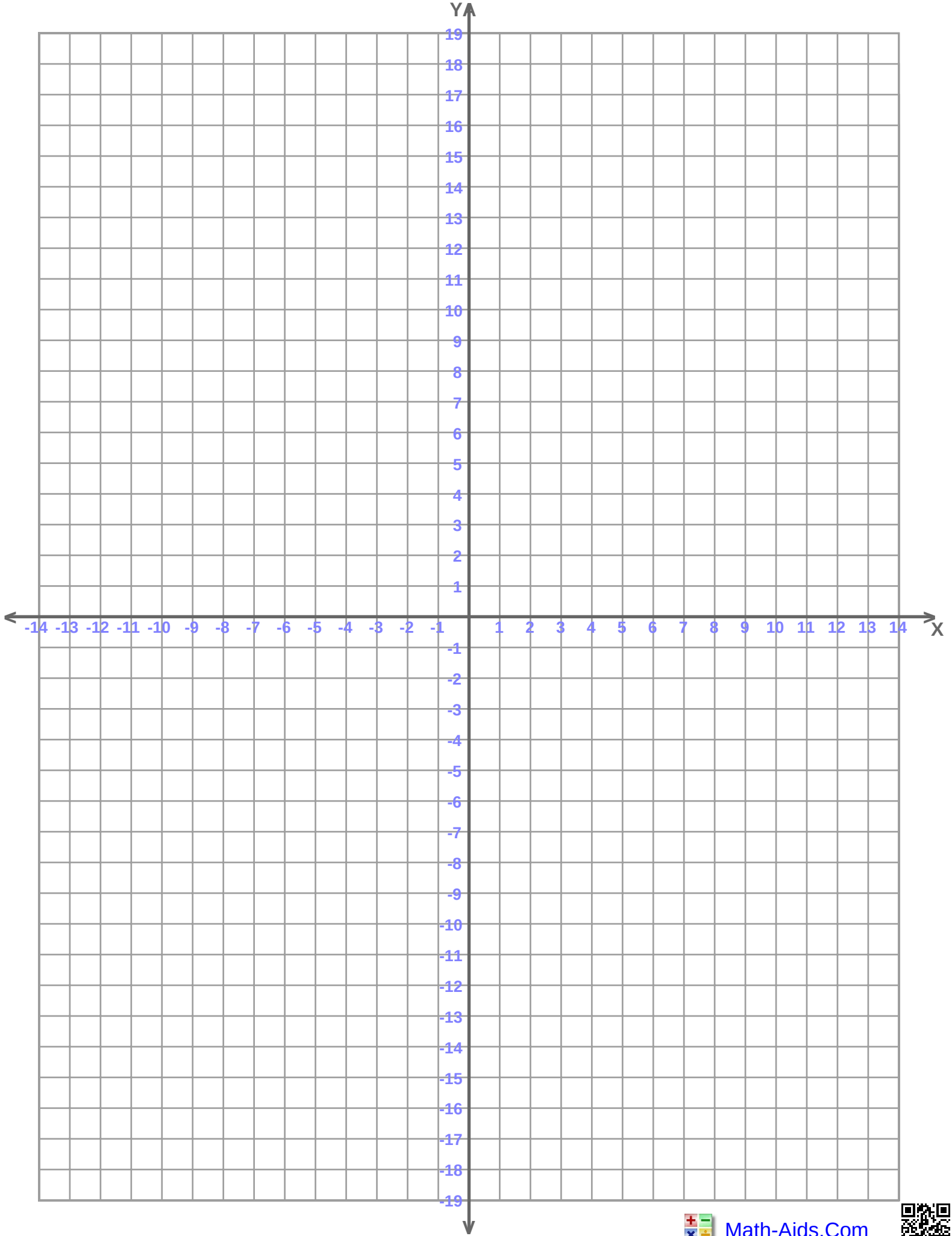
(7,6) , (8,5) , (9.5,4) , (11,3.5) , (13,3) , (10.5,2.5) , (8.5,1.5) , (7.5,0.5) , (5,.5) , (3.5,0)
(2.5,-1) , (2,-2) , (1,-1.5) , (-1,-1) , (-2.5,-1.5) , (-4,-2.5) , (-5,0) , (-7,1.5) , (-9,1.5)
(-8.5,4) , (-9.5,5.5) , (-12,6) , (-13,9) , (-14,10.5) , (-11,10.5) , (-9,10.5) , (-8,11) , (-7,8)
(-5.5,5.5) , (-4,4) , (-2.5,6) , (-2.5,5) , (-1.5,5) , (-0.5,4.5) , (0,5) , (-0.5,3) , (0,2.5)
(1,3) , (3,4) , (5,5) , (7,6)

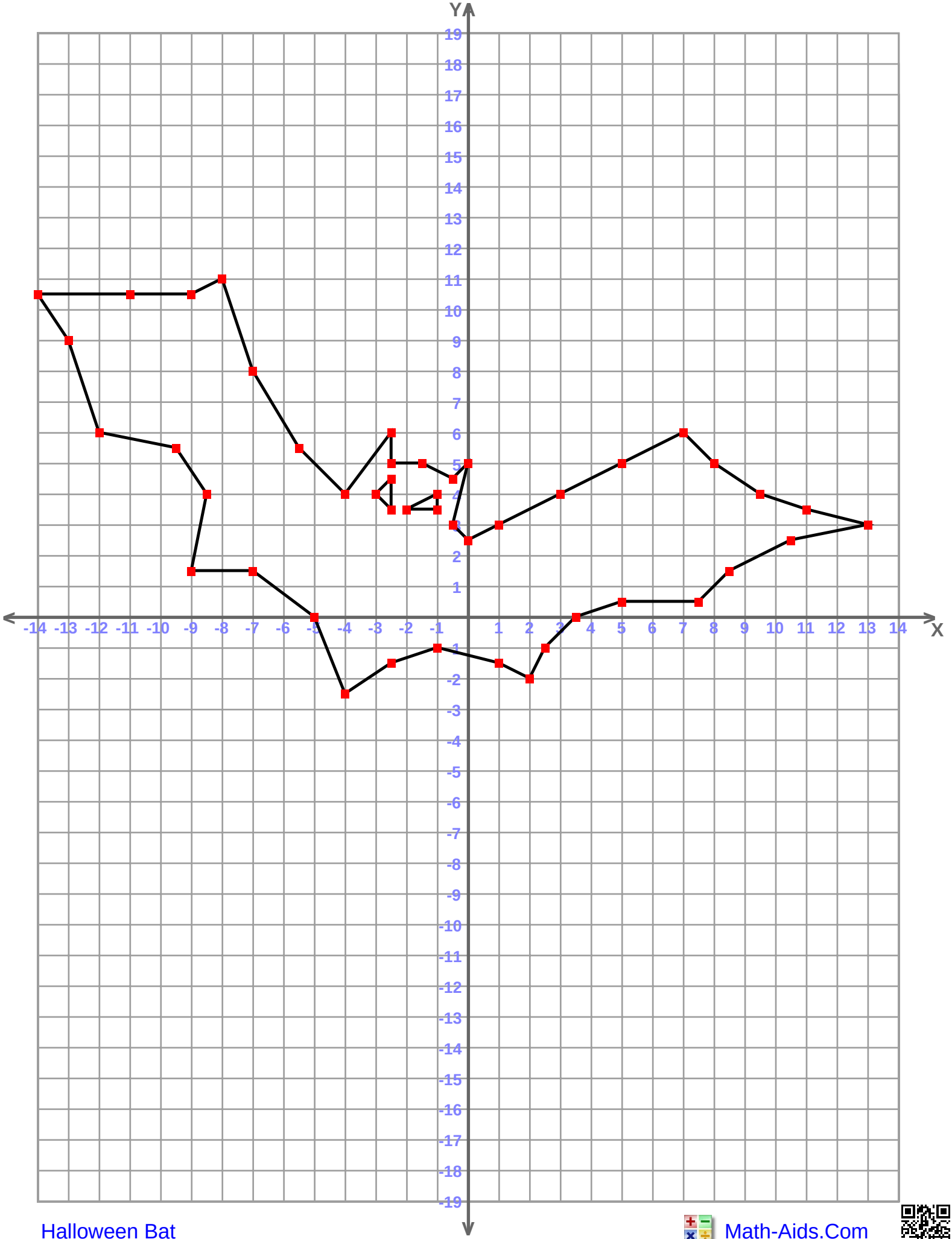
Shape 2

(-3,4) , (-2.5,4.5) , (-2.5,3.5) , (-3,4)

Shape 3

(-2,3.5) , (-1,4) , (-1,3.5) , (-2,3.5)





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