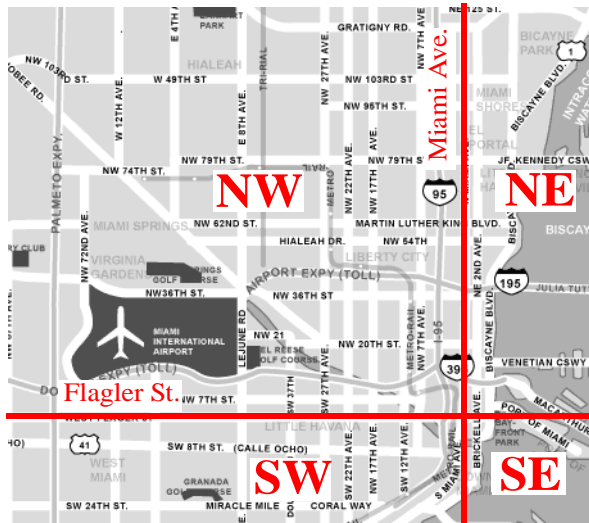


Section 3.1

Coordinate Plane

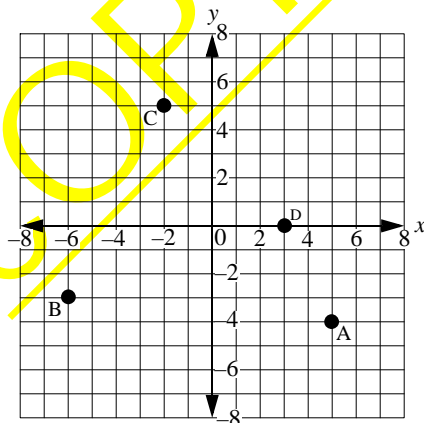
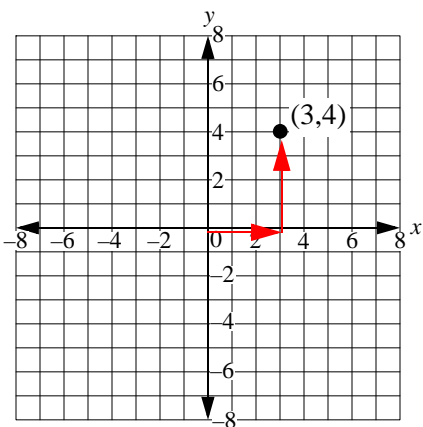
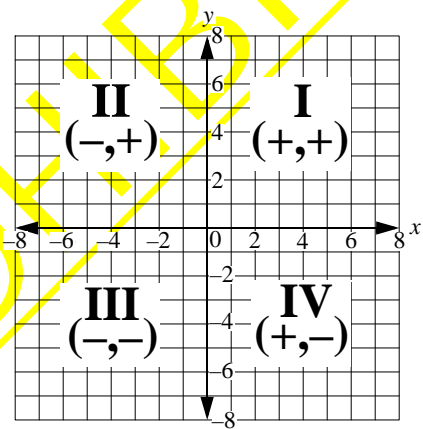


The map of the city of Miami divides the city into four sections or quadrants. Starting from the top right and moving in a counter-clock direction, the quadrants are Northeast (NE), Northwest (NW), Southwest (SW), and Southeast (SE). Notice how Flagler Street divides north from south and how Miami Avenue divides east from west. This arrangement of dividing streets and avenues is called a “coordinate plane.”

In math, we use the coordinate plane to plot points. Points plotted on a coordinate plane are called a “set of coordinates”

or a “coordinate pair.” Just like in the map of the city of Miami, a coordinate plane is divided into four quadrants. Named Roman numerals I, II, III and IV, these quadrants divide both axes into positive and negative sides. Because in the coordinate plane *positive* is to the right of the *vertical* axis AND above the *horizontal* axis, quadrant I is positive-positive. Quadrant II is negative-positive (to the left of the *vertical* axis and above the *horizontal* axis). Quadrant III is negative-negative (to the left of the *vertical* axis and below the *horizontal* axis). Quadrant IV is positive-negative (to the right of the *vertical* axis and below the *horizontal* axis).

To make our work simpler, we have named the horizontal axis “*x*” and the vertical axis “*y*.” Also, because in the alphabet *x* is before *y*, the coordinate sets will always be written in the order (*x*,*y*). Therefore, when, for example, in algebra we write point (3,4), this means to go 3 in the *x* direction and 4 in the *y* direction. It falls into the first quadrant. See coordinate plane to the right.



Examples

Write a set of coordinates for the points shown in the graph to the left.

1. Point A is set 5 units to the right and -4 units down. Its location is in the IV quadrant. $(5,-4)$
2. Point B is -6 units on the *x*-axis and -3 unit along the *y*-axis, placing it in the III quadrant. $(-6,-3)$
3. Point C is -2 units away from the origin along the *x*-axis and 5 units away along the *y*-axis. $(-2,5)$ is in the II quadrant.
4. Point D is ON the *x* axis 3 units away from the origin, with no value for *y*, and no specific quadrant. $(3,0)$.

Practice

On paper, mark two intersecting axes, x and y , and plot the following sets of coordinates.

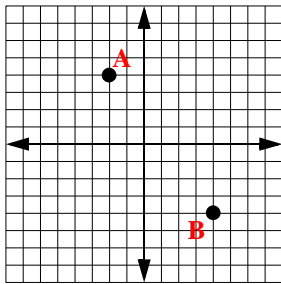
- | | | | |
|------------|-------------|-------------|-------------|
| 1. (5,1) | 7. (0,-5) | 13. (-6,-1) | 19. (-4,0) |
| 2. (-3,-2) | 8. (-4,-1) | 14. (3,-1) | 20. (2,2) |
| 3. (4,2) | 9. (3,-7) | 15. (1,3) | 21. (7,-2) |
| 4. (6,-4) | 10. (0,0) | 16. (3,0) | 22. (-1,-1) |
| 5. (-1,3) | 11. (-1,5) | 17. (-5,3) | 23. (-2,4) |
| 6. (7,-4) | 12. (-3,-6) | 18. (-4,-4) | 24. (5,5) |

Plot the points given. Join the dots and determine the geometric figure that forms.

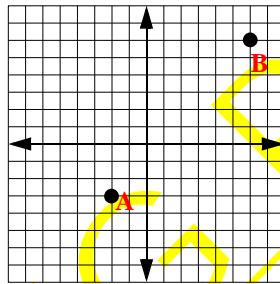
- | | |
|------------------------------------|---|
| 25. (-3,4), (-7,-6), (1,-6) | 31. (2,-5), (5,6), (-1,6) |
| 26. (3,7), (6,7), (2,-3), (-1,-3) | 32. (-3,-1), (4,-4), (-1,3) |
| 27. (-1,6), (-5,0), (3,0), (-1,-6) | 33. (5,3), (6,-2), (-4,-4), (-3,3) |
| 28. (0,0), (0,4), (6,4), (6,0) | 34. (0,5), (3,3), (2,-1), (-2,-1), (-3,3) |
| 29. (5,5), (5,-2), (-3,-2) | 35. (2,0), (2,-6), (-8,-6), (-8,0) |
| 30. (-4,2), (5,2), (5,-3), (-4,-3) | 36. (3,6), (6,2), (6,-3), (3,-6) |

In the graphs below, write the set of coordinates that represent each point and name each quadrant.

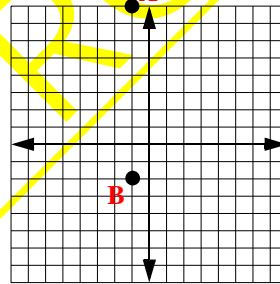
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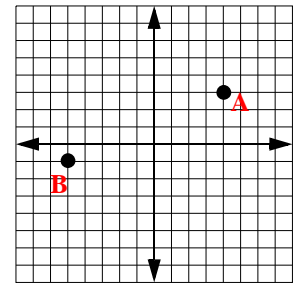
38.



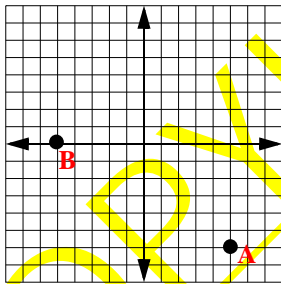
39.



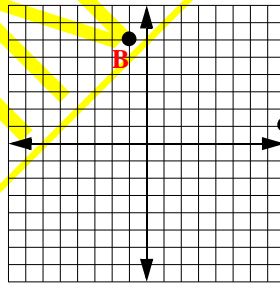
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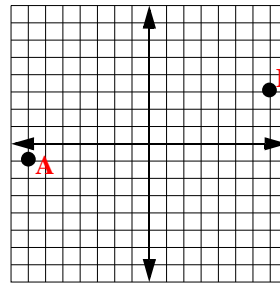
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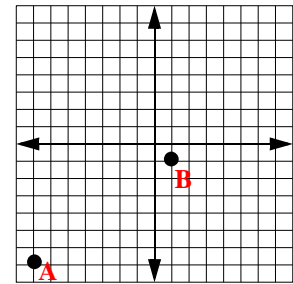
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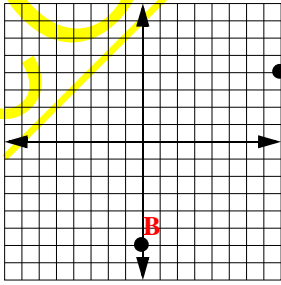
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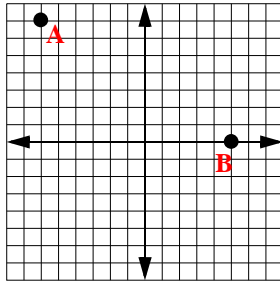
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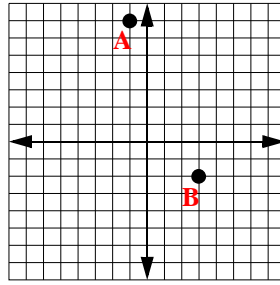
45.



46.



47.



48.

