# Garfield's Neighborhood Coordinate Plane Project

*(Images from [https://garfield.com/characters?page=1](https://garfield.com/characters?page=1))*

**Group #_____**

**CEO: _____     CFO: _____     HR: _____**

*Score:* Test Grade

*Objective:* Create a map of an imaginary version of Garfield's world.

*Procedure:* <u>Part 1:</u>  Follow the instructions on this page to **create an individual rough draft** of your map.  Once an individual rough draft is constructed, **compare maps** with your group mates.  Lastly, as a group, **transfer the map** to a large poster.

## <u>Part 1:  Map</u>

Follow the steps below to create the map:

| Character | Instructions | Points |
|---|---|---|
| Set-up your Cartesian Plane | 1)  Identify and label the origin, x-axis, and y-axis.  Place your origin approximately in the center of your map.<br>   a.  Label the x-axis "X Avenue"<br>   b.  Label the y-axis "Y Street"<br>2)  Identify and label the four quadrants (write these in the upper corners of the quadrants).<br>3)  Identify and label the positive and negative sides of the axes (label at the endpoints of the axes).<br>4)  The map is a compass that is N, S, E, & W.  Label it.<br>5)  Each unit is 1/12 mile.  Indicate this with a legend. | |
|  | **Jon Arbuckle's house**<br>1)  Jon's house is around the origin.<br>2)  **Plot** the following ordered pairs to **create a polygon**:<br>   a.  A (1,1)<br>   b.  B (-1, 1)<br>   c.  C (-1,-1)<br>   d.  D (1,-1)<br>3)  **Connect** the vertices of the polygon to **create a square**.<br>4)  Add a roof to the house by adding point E (0, 3).  Connect EB.  Connect EA. | |
|  | **Dr. Liz Wilson's Veterinarian Office**<br>1)  The office is located in Quadrant III.<br>2)  **Plot** point G (-9,-8) and point I (-4,-6)<br>3)  The height of the building is two units, and the length of the building is 5 units.<br>4)  **Plot** the two remaining points and **connect** the vertices to **create a rectangle.**<br>   a.  Point F (_____,_____)<br>   b.  Point H (_____,_____)<br><br>5) The perimeter of the office = _____ units.<br>Convert this into miles using your legend. The perimeter is _____ miles. | |

| | | |
|---|---|---|
| | **Garfield**<br>1) Garfield is hanging out at the local Italian restaurant.<br>2) In order to draw the restaurant, you must:<br>    a. **Plot the reflection** over the *y-axis* of each vertex needed for the veterinarian's office.<br>    b. **Label** the new points appropriately.<br>    c. **Connect** the vertices to **create a rectangle**.<br><br>3) Garfield is 7 blocks south and 7 blocks east from the Origin.<br><br>    a. **Plot and label Garfield** inside the restaurant. | |
| | **Pooky**<br>1) Pooky gets lost on the way to the Italian Restaurant!<br>2) Pooky was last seen on X Avenue<br>3) Pooky is 7 units away from Garfield's location. Label Pooky's location. | |
| | **Odie**<br>1) Odie is off running in the local Dog Park.<br>2) Create the Dog Park by:<br>    a. **Reflecting each vertex** of the veterinarian's office over the *y-axis* **and** the x-axis.<br>    b. **Label the ordered pairs** of the new points.<br>    c. **Connect** the vertices to **create a rectangle**.<br>3) Odie is 7 units from poor, lost Pooky.<br><br>    a. **Plot and label Odie** inside the Dog Park. | |
| | **Nermal**<br>1) Nermal is getting his beauty rest inside his cozy home.<br>2) Nermal's house starts at point J (-6, 7). **Plot** the following three points.<br>    a. Point K is two units to the left of point J.<br>    b. Point M is two units up from point J.<br>    c. *Determine where point L must be if the house is a square.*<br>    d. **Connect the vertices** to create a polygon.<br>3) The coordinates for the ordered pairs are:<br>    a. Point J (-6, 7)<br>    b. Point K (_____,_____)<br>    c. Point L (_____,_____)<br>    d. Point M (_____,_____)<br>4) **Add a roof** that is a triangle that is two units high from the middle of the main building. Where is this vertex? Point N (_____,_____)<br>5) **Connect** NL. Connect NM. | |

**Mom Arbuckle's house**

1) Mom Arbuckle's house is in the same quadrant as Nermal's house.

2) **Point S is the vertex of the roof**. The vertex is 6 units south, and 2 units east from the vertex of Nermal's rooftop. **Plot** Point S (_____,_____)

3) The vertex of the roof is centered to the rest of the house.
   The *roof* is **two units in height**. The **base of the roof is six units** in length. The *main building* is **two units in height**.
   a. **Complete** the missing coordinates.
   b. **Connect** the points to *create a house with a triangular roof.*

   a. Point O (_____,_____)
   b. Point P (_____,_____)
   c. Point Q (_____,_____)
   d. Point R (_____,_____)

   e. What is the **area** of the entire house on the map (including building and roof)? Area = _____ square units and _____ square miles.