**City Map Project**

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|  | SECTION FORMULA  (instead of midpoint, it’s like ¾ point or 1/3 point) |
| For distance, use the Pythagorean Theorem.  For midpoint, you need to find the point halfway between the x coordinates and halfway between the y coordinates. | ratio  <http://math.tutorvista.com/geometry/>  section-formula.html  The idea with the section formula is that the distance between the two points is divided into sections of lengths, m and n where m or n will be given in the numerator of the ratio, and the sum, m+n, will equal the denominator of the ratio. If the closer end point is to the left of the desired point on the graph, m is the numerator; if the closer end point is to the right of the desired end point on the graph, n is the numerator. For instance, the ½ point has m=1 and n=1, the ¼ point would have m=1 and n=3. |

(5 points) Begin by drawing and labeling the x and y axis on the attached graph paper. It should run from -12 to 12 on the x-axis and -15 to 15 on the y-axis. Imagine that each number represents ONE MILE

1. (7 points) Plot and label the following locations on your Dearbornville map to begin:

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| --- | --- |
|        Burger King at (-2, 3)         Panera Cares at (12, 1)         City Hall at (-9, -7)         Post Office at (-3, 13) |        Wal-Mart at (4, -4)         Target at (-12, 7)         BP gas station at (1, -10) |

1. (10 points) Yogurt Town is located at the **midpoint** of Burger King and Target.  Plot and label Yogurt Town on the map and write the coordinates of Yogurt Town here \_\_\_\_\_\_\_\_\_\_\_\_\_.
2. (10 points) The library is located at the **midpoint** of City Hall and the post office.  Plot and label the library on the map and write the coordinates of the library here

\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. (14 points) Kroger is located at the 2/3 point (**section** formula, m=1;n=2) between Wal-Mart and Panera (but closer to Walmart).  Plot and label Kroger on the map and write the coordinates of Kroger here

\_\_\_\_\_\_\_\_\_\_\_\_.

1. (10 points) Find the **distance** between City Hall and Target. Write that distance here

\_\_\_\_\_\_\_\_\_\_\_\_.

1. (10 points) Find the **distance** between City Hall and the fire station.

Write that distance here \_\_\_\_\_\_\_\_\_\_\_\_.

If the fire station is the **midpoint** between City Hall and Greenfield Village, what are the coordinates for Greenfield Village? Write the coordinates for Greenfield Village here

\_\_\_\_\_\_\_\_\_\_\_.

Plot and label Greenfield Village on the map.

1. (14 points) O’Sushi is located ¼ (**section** formula, m=3;n=1) of the distance between the post office and Panera Cares (but closer to Panera). Plot and label O’Sushi on the map and write the coordinates for O’Sushi here

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8. (20 points) If the city limits run from the Post Office to Target to City Hall to the BP to WalMart to Panera and back to the Post office, calculate the following-

a) the perimeter of the city limits (in miles) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) the total area of the city (in square miles) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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\*MAPS WILL BE GRADED ON NEATNESS, COLORFULNESS, AND PRECISION.

\*ANSWERS SHOULD BE RECORDED ABOVE, HOWEVER STUDENTS MUST SHOW ALL WORK ON A SEPARATE PAGE TO RECEIVE FULL POINTS.

\*ANSWER ALL DISTANCE AND AREA QUESTIONS CORRECTLY AND YOUR GRADE WILL BE IN THE “C” RANGE. ANSWER THE ADDITIONAL MIDPOINT QUESTIONS CORRECTLY FOR A GRADE IN THE “B” RANGE. ANSWER THE ADDITIONAL SECTION FORMULA QUESTIONS CORRECTLY FOR A GRADE IN THE “A” RANGE.

