City Map Project

	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.	$$\left(\frac{mx_2 + nx_1}{m+n}, \frac{my_2 + ny_1}{m+n} \right)$$ 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:

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)

2. (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

_____.

3. (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

_____.

4. (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

_____.

5. (10 points) Find the **distance** between City Hall and Target. Write that distance here

_____.

6. (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.

7. (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

    _____

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)   _____

    ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** *****

*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.

Name_____

y

x