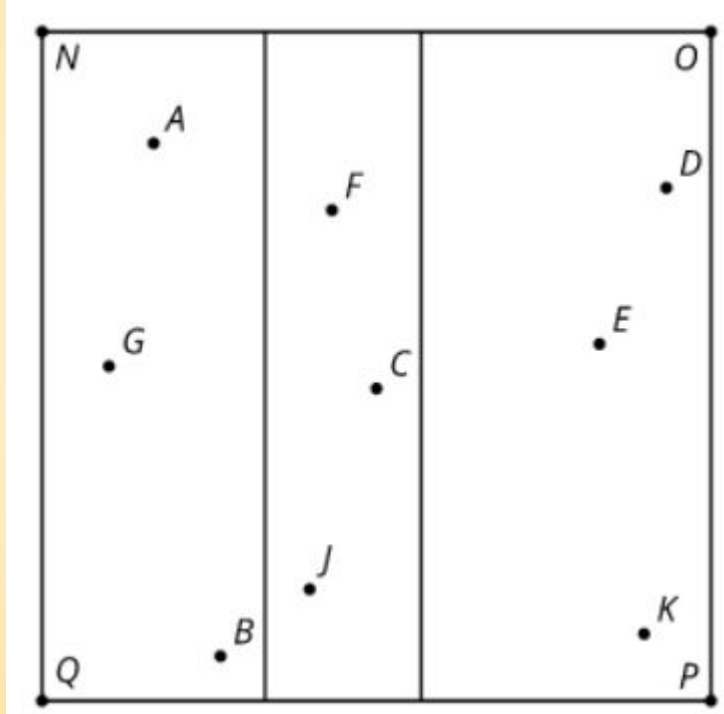# Speedy Delivery

Learning Goal

- I can construct perpendicular bisectors to help solve problems.

- I can use my geometry knowledge to solve problems.

9.1 Dots in a Square

What do you notice?

What do you wonder?

9.2 Who Is Closest?

Here is a square city with 3 locations of the same store.

1. The company wants to break the city down into regions so that whenever someone orders from an address, their order is sent to the store closest to their home. They have hired you to decide how to partition the city between the 3 stores. Explain or show your reasoning.

2. If there are 100 employees, how should they be distributed among the 3 locations?

3. Is there anywhere in the city that has the same distance to all 3 stores?

9.2 Who Is Closest?

4. Now a fourth store opens. Partition the city again.

Activity Synthesis
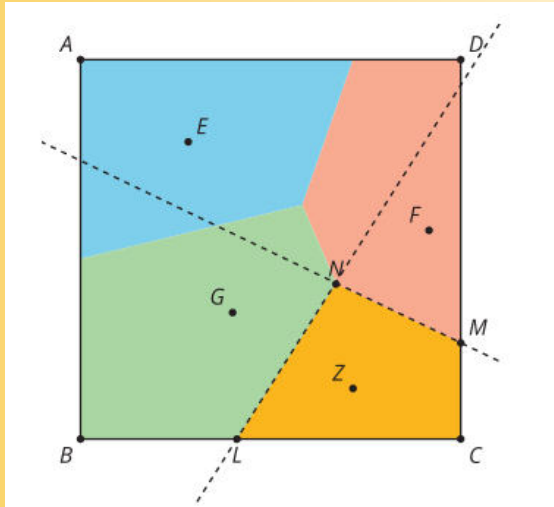
- How did you decide to divide the city?
- How did you use that information to decide on how many employees to station at each store?
- WOuld it be appropriate to assign 28.2 workers to a location?
- how they would change their thinking if they knew that the neighborhoods closest to the top left corner were the most densely populated in the city?

9.3 Now Who is Closest?

You can use the Voronoi command in GeoGebra Classic App in the Math Tool Kit or at geogebra.org/classic.

1. Use dynamic geometry software to create a Voronoi diagram from a map.

2. Who might be interested in this information?

3. Write a letter to the person or organization, explaining what the diagram tells them about the map you chose.

$a = 2$
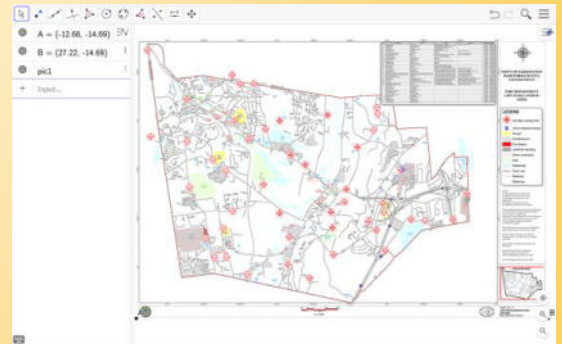
9.3 Now Who is Closest?

You can use the Voronoi command in GeoGebra Classic App in the Math Tool Kit or at geogebra.org/classic.

1. Use technology to explore the same type of problem from the earlier activity, "Who Is Closest?", with a larger number of points, such as all major airports in the U.S.
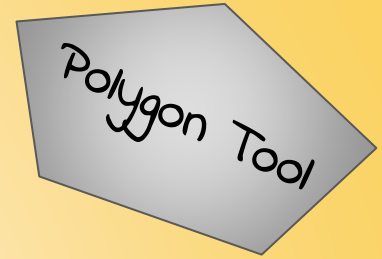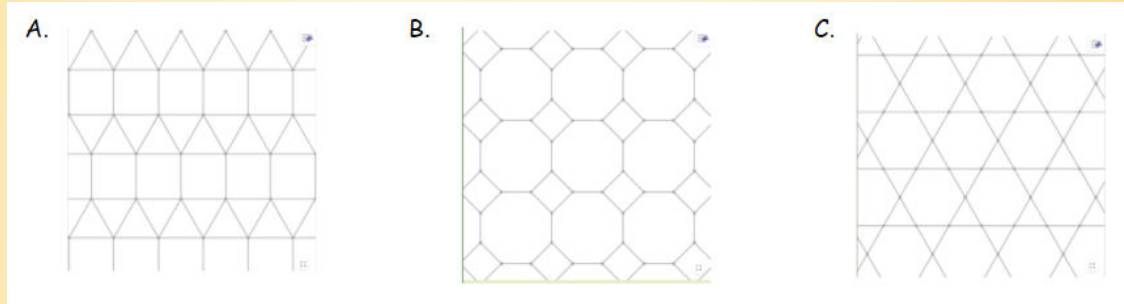
Activity Synthesis

- How is this activity the same as the previous activity?

- How is it different?

9.4 Another Layer

Polygon Tool
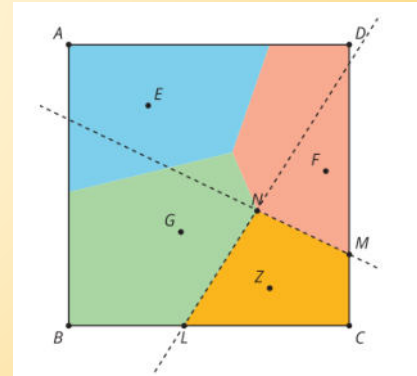
Your teacher will give you a tessellation

1. Mark the intersection points on the tessellation.
2. Imagine that each point is a store from the "Who Is Closest?" activity. Repeat the process you used there to define the regions that are closest to each of the points.
3. Use color or shading to enhance your design

Activity Synthesis

Let's look at the different tessellations we created:
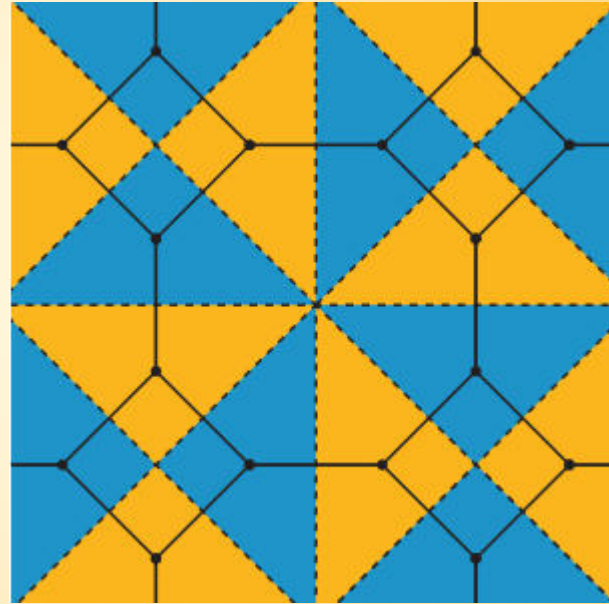
Lesson Synthesis

★ What context the current partitioning of the square would make sense?

★ Which context would that partitioning be unfair?