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| Unit: Systems | | Date: 12/9/2013 | | Lesson: Systems of Inequalities | |
| **Learning Target:** *As a result of today’s class, students will be able to:*  Graph solutions to a system of linear inequalities and understand what the solutions mean.   * CCSS: [CCSS.Math.Content.HSA-REI.D.12](http://www.corestandards.org/Math/Content/HSA/REI/D/12) Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. | | | | | |
| **Formative Assessment:** *How will students be expected to demonstrate mastery of the learning target during in-class checks for understanding?*  *(Embedded assessments, checking for understanding activities in order to assess if the students are meeting the stated* ***learning targets (objective****) and* ***sub-objectives****.)*  Students will be having discussions in their groups, graphing individually and together as a group, and will present to the class solutions to the system of inequalities including an explanation. | | | | | |
| **Probing Questions for Differentiation on Mathematical Tasks** | | | | | |
| **Assessing Questions** *(used to scaffold instruction for students who are “stuck” during the lesson or the lesson tasks)*  What would a graph of an equation look like? What does the inequality symbol represent? Should these lines be solid or dashed? Could you purchase a home on the canal/ middle of a street? | | | **Advancing Questions** *(used to further learning for students who are ready to advance beyond the standard during class)*  What does the solution of an inequality represent? Can you write an inequality to restrict Arcadia Dental Group from our desired location? What is the area of our desired location? | | |
| **Mathematical Practice:** *Which student mathematical practice(s) will be targeted for proficiency development during this lesson?*   * Make sense of problems and persevere in solving them. * Reason abstractly and quantitatively. * Construct viable arguments and critique the reasoning of others. * Model with mathematics. * Use appropriate tools strategically. * Attend to precision. * Look for and make use of structure. * Look for and express regularity in repeated reasoning | | | | | |
| **Activity/Tasks** | **What will the teacher be doing?** | | | | **What will the students be doing?** *How will students be actively engaged in each part of the lesson?* |
| **Beginning of class routines:** *Warm-up activity connecting to prior knowledge*  Show a map of the Arcadia area with a coordinate plane over it. Tell students they will be looking for homes for a family who would like to live in this area. The homes north of the canal are too expensive for their budget. Write an equality for the homes they can afford. | The teacher will be showing the map and checking in with the groups to see if the class can come to a consensus about an inequality that would represent the situation. | | | | Students will work in their groups to come up with an inequality that represents the situation. They will graph the inequality on their grid. |
| **Activity/Task 1:** *How will the students be engaged in understanding the learning targets?*  The enrollment boundary for the school the family wants their children to go to is east of 40th Street and north of Indian School Road. Write the inequalities for these boundaries and graph. | After presenting the task, the teacher will circulate the room stopping in to listen to group discussions and asking either assessing or advancing questions. | | | | Students will write the inequalities for the boundaries after discussing it with each person in their group and then graph the inequalities on the same grid as they graphed the previous inequality. |
| **Activity/Task 2:** *How will the task develop student sense-making and reasoning?*  Plot the following locations on the map.  (-6, -3), (-2, 3), (3, -5), (0, -10), (-1.5, -2), (-2, -1), (-4, -8), (1, -11), (0.5, -7). | After presenting the task, the teacher will circulate the room stopping in to listen to group discussions and asking either assessing or advancing questions. | | | | Students will plot the locations on their grids. |
| **Activity/Task 3:** *How will the task require student conjectures and communication?*  Identify which locations the family should consider as possible homes. | After presenting the task, the teacher will circulate the room stopping in to listen to group discussions and asking either assessing or advancing questions. | | | | Students will identify which locations would fit the family’s criteria for homes and which locations could be possible home locations. |
| *Student-led closure and checking for understanding of the learning target.*  Present to the class which locations the family should consider as possible homes using poster paper to share their findings. | After presenting the task, the teacher will circulate the room stopping in to listen to group discussions and asking either assessing or advancing questions. | | | | Students will make one poster per group showing their system of inequalities, different locations, findings on possible homes, and an explanation of why they chose those locations and not others. |
| **Materials Needed:**  Picture of Arcadia area map.  SMART Board  Large coordinate grid for individual students  Poster paper for each group | | | **Technology Tips:** | | |