Topic 9: Reasoning with Equations and Inequalities

Purpose: The purpose of the first three examples is to get students to match the graph of the inequality with its symbolic inequality. The final three examples ask students to apply what they know about inequalities to model situations and solve problems. Please use your professional judgment when following this guide, if students are struggling with the content and need more support, then provide that additional support.

Core Standards Focus:
A.REI 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.

Launch (Individual time): Starting with example 1, ask students to take 1 minute individually to identify the inequality that they think matches the graph. Some students may not be able to start on this task. Identify those students and consider pairing them with another student who may be able to provide additional support. If most of the class is unable to start on the task then facilitate the first example as a whole class think-aloud. Make sure all students understand the first example before moving on to the next example. Otherwise, move on to the explore phase.

Explore (pairs): Using example 2, give students a few minutes to work together to justify their choices for the inequality that matches the graph. A common pitfall is not knowing what the four inequality symbols represent. You may need to stop the whole class to explain what each of the four symbols represent. If most of the students are able to correctly identify the inequality then move on to example 3 in pairs. Otherwise, lead the class through your reasoning (or another student's) for example 2 to reinforce the concept.

Discuss (Whole Class): Call on some students to share their choices and talk about their reasoning. Be selective with the student work you use and sequence the work in a way that will connect a variety of ideas. Use the FluidMath program to check their work. The second and third examples for this topic can be completed in an accelerated manner as long as the first example was completed thoroughly. After the first three examples have been completed then you can repeat the cycle for examples 4 through 6.