

## Topic 1: Creating equations (F.IF.4)

**Purpose:** The purpose of the first three examples is to get students to identify  $x$  and  $y$  intercepts of a given function and to justify their decisions using mathematics (substitution, a table, or graphing). The final three examples ask students to identify the graph with the given features. 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:**

F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*

**Launch (Individual time):** Starting with example 1, ask students to take 1 minute individually to identify the  $x$  and  $y$  intercepts from the list for the given function. 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  $x$  and  $y$  intercepts. Consider suggesting that students substitute their choices into the function to find out if the chosen ordered pair is on the graph of the function. Repeat this process with example 3 to provide students additional practice and to solidify their thoughts.

**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, return to the launch, explore, discuss cycle with examples 4 through 6.