**Signs of Solutions**

**Task:** Without solving them, say whether these equations have a positive solution, a negative solution, or no solution.

1. 3*x* = 5
2. 5*z* + 7 = 3
3. 7 – 5*w* = 3
4. 4*a* = 9*a*
5. *y* = *y* – 1

**Standard(s) and Pre-Task Activity Suggestions:**

* 8.EE.C.7.A – Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively **transforming the given equation** into simpler forms, until an equivalent equation of the form *x* = *a*, *a* = *a*, or *a* = *b* results (where *a* and *b* are different numbers).

Prior to beginning Signs of Solutions, teachers should utilize class time to practice the skills related to the task and standard. Activities could include integer operations with manipulative to develop number sense around the sign of simplified values, combining like terms, and collecting variables across the equal sign in equations.

**Instruction:**

Activate prior knowledge: Before having students complete the task play [Which One Doesn’t Belong (WODB](http://wodb.ca/)) for each expression in the image below. The goal is to provide an argument why each expression doesn’t match the others that are given. There are multiple answers for any puzzle.

|  |  |
| --- | --- |
| −2 – (−2) | 5 – 9 |
| 10 – 7 | −2(8) |

You could also consider having students solve equations such as *y* = 3 – 7 and ask them to state whether the value of *y* would be positive, negative or zero and explain their thinking.

Have students read the task. Ask students if it is necessary to solve each equation in writing to be successful.