6.EE Fishing Adventures 1

Alignments to Content Standards: 6.EE.B.8

Task

Fishing Adventures rents small fishing boats to tourists for day-long fishing trips. Each boat can hold at most eight people. Additionally, each boat can only carry 900 pounds of weight for safety reasons.

a. Let p represent the total number of people. Write an inequality to describe the number of people that a boat can hold. Draw a number line diagram that shows all possible solutions.

b. Let w represent the total weight of a group of people wishing to rent a boat. Write an inequality that describes all total weights allowed in a boat. Draw a number line diagram that shows all possible solutions.

IM Commentary

This task is the first in a series of three tasks that use inequalities in the same context at increasing complexity in 6th grade, 7th grade and in HS algebra. Students write and solve inequalities, and represent the solutions graphically. The progression of the content standards is 6.EE.8 to 7.EE.4 to A-REI.12.

This particular task could be used for instruction or assessment. The context lends itself to the use of inequalities, so it could also be used to introduce inequalities.

Note that the solutions to part (a) are discrete points and the solutions to part (b) are any points on a line segment (continuous).

Note that this problem introduces notations not explicitly required by the standard, such as $\leq$ and $\geq$, and the notation for combining two inequalities, as in $0 \leq p \leq 8$. This task would be suitable for a classroom where the teacher has introduced these notations.
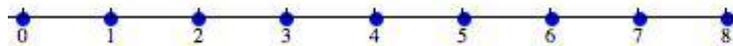
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Solution

a. If p is the number of people, and each boat can hold at most 8 people, then the number of people that can fit in a boat is represented as

$$0 \leq p \leq 8, \text{ where } p \text{ is a whole number.}$$

Since we cannot have a negative number of people or parts of people, we get the number line diagram below for the solution set.

b. If w is the total weight of a group of people, and each boat can carry at most 900 pounds, then the weight of a group that can be held in a boat is represented as

$$0 \leq w \leq 900.$$

Since we cannot have a negative weight for a group of people, we get the number line diagram below for the solution set. Note that this time any point on the blue line is a possible solution, it does not have to be a whole number like we saw in part (a).