1125-VM-2692 **Lidia Smith*** (`lidia.smith@blinn.edu`), 2423 Blinn Blvd., Bryan, TX 77802. *Probabilities in a Sensor Network.*

A problem of interest in engineering is placement of sensors for detection of events. For a water distribution system such events could be water contamination. Optimization problems that have as goal maximizing the probability of event detection given resource constraints are formulated as integer linear programming problems. The mathematical modeling starts with viewing the water system as a directed graph with vertices corresponding to junctions and edges corresponding to the pipes. Probabilities are associated with edges based on the known flow through the pipes. In this article we will discuss the equivalence between two different formulations of the optimization problem based on properties of expected value. (Received September 20, 2016)