



## Part A Answers

By Drake Cullen

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### 1 Statement a)

The statement is **True**. Start by finding the weight with the minimum value (smallest negative value). Add a constant factor large enough to make that value positive, and add that value to every other weight. Now, every weight is a positive value. We know that Dijkstras algorithm can be run on graphs with all positive values.

## 2 Statement b)

The statement is **False**. Weights with a value of one cause a problem. Other positive integers will grow larger when squared, but one will keep the same value when squared; therefore, the weights won't increase proportionally. The statement would be true if every weight was multiplied by a constant such as 2. The manner in which the statement fails can be seen in the example below.