Exercise 1. Suppose we were to make two modifications to LMet:

1. Drop the requirement on objects that distance functions satisfy point and triangle inequality.
2. Add the requirement on morphisms that functions preserve distances \( \text{exactly} \), i.e. \( d_X(x, x') = d_Y(f(x), f(x')) \).

The resulting modified category can be defined concisely as a particular comma category. Determine which standard categories and functors \( A_1 \xrightarrow{F_1} B \xleftarrow{F_2} A_2 \) have the property that \( F_1 \downarrow F_2 \) is (isomorphic to) this modified category and briefly illustrate the reasoning.