Beals page 11, #7: The function $d(A, B)$ is symmetric in A and B, because $A \triangle B = B \triangle A$.

For transitivity, consider sets $A, B, C \subset$ and let $x \in A \triangle C$ be any element. Say for instance (and with no loss of generality) that $x \in A$ but $x \notin C$. Then if $x \in B$, it follows that $x \in B \triangle C$; and if $x \notin B$, it follows that $x \in A \triangle B$. Either way, $x \in A \triangle B \cup B \triangle C$. This proves that

$$A \triangle C \subset A \triangle B \cup B \triangle C,$$

Consequently,

$$m(A \triangle C) \leq m(A \triangle B) + m(B \triangle C).$$

It follows that d is transitive and a semi-metric.