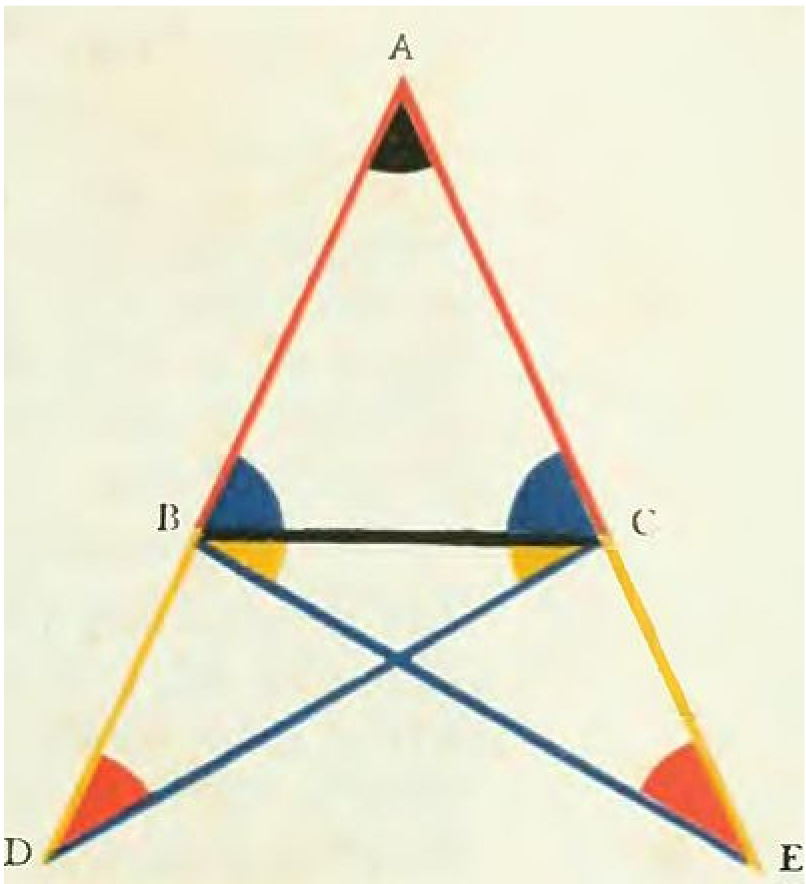
Note on the Isosceles Triangle Theorem

The proof given in the notes is attributed to Pappus of Alexandria from the 4th century A.D.. Euclid's proof of the "only if" implication in the ***Elements*** is considerably more complicated, and the theorem with this proof is known as ***Pons Asinorum*.** There is an extensive discussion of the subject in **https://en.wikipedia.org/wiki/Pons_asinorum.**
The name probably arises from the main drawing for the proof, the bottom or which may be viewed as resembling a bridge:



The idea of Euclid's proof is to choose **D** and **E** such that **|BD| = |CE|,** which implies that triangles **ABE** and **ACD** are congruent in the sense of the course notes. This means that the angles colored in orange have equal measures, which in turn implies that triangles **DBC** and **ECB** are congruent. The two congruences imply that angles **ACD** and **ABE** have equal measures, and likewise angles **BCD** and **CBE** have equal measures. By the additivity property of angle measures, it follows that angles **ABC** and **ACB** have equal measures, which is one implication direction of the proof.