

In superficial extent, or measurement of surface, 7 square feet + 2 square feet = 1 square yard, and 5 square feet + 4 square feet = 1 square yard; therefore 7 square feet + 2 square feet = 5 square feet + 4 square feet, since both compound quantities are equal to the same simple quantity.

In solids 20 cubic feet + 7 cubic feet = 1 cubic yard, but 15 cubic feet + 12 cubic feet = 1 cubic yard; therefore 20 cubic feet + 7 cubic feet = 15 cubic feet + 12 cubic feet, since both compound quantities are equal to the same simple quantity.

The pupil may apply a similar mode of reasoning to the next six Axioms.

II. If *equals* be ADDED to *equals*, the WHOLEs are equal.

III. If *equals* be TAKEN FROM *equals*, the REMAINDERS are equal.

IV. If *equals* be ADDED to *unequals*, the WHOLEs are unequal.

V. If *equals* be TAKEN FROM *unequals*, the REMAINDERS are unequal.

VI. Things which are DOUBLE of the *same*, are equal to one another.

VII. Things which are HALVES of the *same*, are equal to one another.

VIII. Magnitudes which COINCIDE with each other, that is, *which exactly fill the same space*, are equal to one another.

If we turn a round piece of wood of such a size that it will exactly fit into a metal cylinder or tube, and then turn another piece, which will also exactly fit into the same cylinder, we conclude that the pieces of wood are exactly similar in size, or, in the words of the Axiom, that the magnitudes coincide, and are equal to one another.

IX. The WHOLE is greater than its PART.

X. Two straight lines cannot enclose a SPACE.

Refer to note on Definition 14, to see what is the lowest number of straight lines that can enclose a space.

XI. ALL RIGHT ANGLES are equal to one another.

Every right angle is measured by the fourth part of the circumference of a circle, or an arc of 90 degrees.

XII. If a straight line meets two straight lines, so as to make the two interior angles on the same side together less than two right angles, these straight lines being continually produced, shall at length meet upon that side on which the angles which are less than two right angles.