9 In the accompanying figure, \( ABCDEF \) represents a solid cube. The side of this cube is \( p+q \) inches. The lines \( xx', yy', zz' \) are parallel to the edges.

\[ Ax = By = Cz = q \text{ inches, so that} \]
\[ Ex = Ay = Bz = p \text{ inches.} \]

Saw cuts are made through the cube horizontally along \( xx' \) and vertically along \( yy' \) and \( zz' \), parallel to the faces.

a How many pieces are thus formed?
b Write the expression for the volume of each of these pieces.
c What algebraic identity results when the sum of all these volumes is set equal to the volume of the cube?

10 The following figure represents two right circular cones with a common vertex and a common axis; if \( PO = 2OQ \) prove that the total volume of the figure is equal to the volume of a cylinder having \( POQ \) as an axis and the smaller section as a base.

11 A cone is inscribed in a regular triangular pyramid of altitude \( a \) inches and base \( b \) square inches. Find the number of cubic inches between the surfaces of the two solids.

12 Compute the number of square inches in the area of a triangle drawn on a sphere whose diameter is 14 inches, the angles of the triangle being \( 84° 28' \), \( 115° 21' \) and \( 142° 11' \).