

the straight line joining E to any angular point of the triangle is at right angles to the straight line drawn through that angular point parallel to the opposite side of the triangle.

422. Straight lines are drawn from two given points without a given plane meeting each other in that plane: find when their sum is the least possible.

423. Three straight lines not in the same plane meet at a point, and a plane cuts these straight lines at equal distances from the point of intersection: shew that the perpendicular from that point on the plane will meet it at the centre of the circle described about the triangle formed by the portion of the plane intercepted by the planes passing through the straight lines.

424. Give a geometrical construction for drawing a straight line which shall be equally inclined to three straight lines meeting at a point.

425. From a point E draw EC , ED perpendicular to two planes CAB , DAB which intersect in AB , and from D draw DF perpendicular to the plane CAB meeting it at F : shew that the straight line CF , produced if necessary, is perpendicular to AB .

426. Perpendiculars are drawn from a point to a plane, and to a straight line in that plane: shew that the straight line joining the feet of the perpendiculars is perpendicular to the former straight line.

XI. 13 to 21.

427. BCD is the common base of two pyramids, whose vertices A and E lie in a plane passing through BC ; and AB , AC are respectively perpendicular to the faces BED , CED : shew that one of the angles at A together with the angles at E make up four right angles, supposing A and E to be on opposite sides of BC .

428. Within the area of a given triangle is inscribed another triangle: shew that the sum of the angles subtended by the sides of the interior triangle at any point not in the plane of the triangles is less than the sum of the angles subtended at the same point by the sides of the exterior angle.

429. From the extremities of the two parallel straight