1 Define cylindric surface, frustum, pyramid, surface of revolution, diedral angle.

2 How many points are required to determine the position of a plane? Give proof.

3–4 Prove that a line perpendicular to each of two lines at their intersection is perpendicular to the plane of those lines.

5 Prove that any section of a sphere made by a plane is a circle.

6–7 Prove that through any four points not in the same plane one spheric surface may be made to pass and but one.

8–9 A hollow iron column 15 feet long, whose outer diameter is 8 inches, weighs 1835 pounds; find its thickness. (Assume one cubic foot of iron weighs 468 lbs.)

10 Find an expression for the volume of a cube inscribed in a sphere whose radius is \( r \).

11–12 Complete and demonstrate the following: The area of the surface generated by a straight line revolving about an axis in its own plane is equal to . . .

13 Show how to divide a cone into two equivalent parts by a plane parallel to its base.

14 Show how to construct a plane tangent to a sphere and containing a given line outside the sphere.

15 The diameter of the base of a cone is 2 feet and the altitude is 6 feet; find the volume of a square pyramid inscribed in this cone.