Note.—Draw carefully and neatly each figure in construction or proof, using letters instead of numbers. Arrange work logically.

1. Define and illustrate (a) diedral angle; (b) regular prism; (c) frustum of a pyramid; (d) right section of a cylinder; (e) circular cone; (f) small circle of a sphere.

2. Name the regular polyhedrons. Why can no others be formed?

3. Prove that if two angles not in the same plane have their sides respectively parallel, their planes are parallel.

4. Prove that the lateral surface of a regular pyramid is equal to half the product of the perimeter of the base by the slant height.

5. Prove that a plane perpendicular to a radius of a sphere at its extremity is tangent to the sphere.

6. The volumes of two similar cones are 54 cu. ft. and 432 cu. ft. respectively. If the altitude of the first is 6 ft., what is the altitude of the second?

7. Find the lateral surface and the volume of a regular hexagonal prism whose altitude is $h$ and each side of whose base is $2a$.

8. The diameter of the upper base of a frustum of a cone is $2a$, of the lower base $2b$, and the altitude is $h$; find the volume and the convex surface.