

100 Marks. Time — One hour-and-a-half.

*All questions to be answered.*

1. (a) Show how to complete the circle when an arc is known.

(b) AB is a chord 1.6" long in a circle whose radius is 1.2".

How far is AB from the centre of the circle?  
[16 marks.]

2. Without using a protractor, describe a triangle having one side 4" and two of its angles  $22\frac{1}{2}^\circ$  and  $67\frac{1}{2}^\circ$ . Find the area of the triangle.  
[16 marks.]

3. (a) Show that the sum of the angles of a triangle is equal to two right angles.

(b) If the angles of a triangle are in the ratio 1 : 2 : 3, how many degrees in each angle?

(c) How many right angles are equal to the sum of all the angles in an 8-sided figure?  
[17 marks.]

4. (a) ABC is a triangle, having  $AB = 4''$  and  $AC^2 + BC^2 = AB^2$ . Draw the locus of the point C.

(b) Draw the locus of the vertices of all triangles standing on the same side of a base AB,  $2\frac{1}{2}''$  in length, and having an area of  $2\frac{1}{2}$  square inches.  
[17 marks.]

5. Draw any obtuse-angled triangle and describe a circle passing through its vertices.

[17 marks.]

6. A boy, 5' tall, stands at a distance of 10' from a lamp-post. His shadow, cast by the lamp on the ground, is  $7\frac{1}{2}'$  long. Draw a diagram and find the height of the lamp-post, correct to a half-foot.

[17 marks.]