

COMMON EXAMINATION FOR
ENTRANCE TO PUBLIC SCHOOLS.

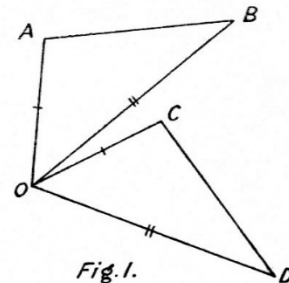
SUBJECT.—**GEOMETRY.**

[60 minutes.]

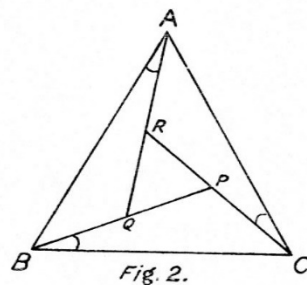
[Do A and B, or B and C, as you have been instructed.]

I. From a post on shore two ships are observed ; one is $2\frac{1}{2}$ miles away to the North-East ; the other is $3\frac{1}{4}$ miles away and its bearing is N. 75° E. By drawing to scale find the distance between the ships, and the bearing of the second as seen from the first.

II. In Fig. 1 $OA = OC$ and $OB = OD$ and $\angle AOC = \angle BOD$. Prove that $AB = CD$.



III. In Fig. 2 ABC is an equilateral triangle, and each of the marked angles is 20° . What is the magnitude of $\angle BPC$? (Give your reasons.) Prove that $\triangle PQR$ is equilateral.



[P. T. O.]

IV. Define a parallelogram, and prove that its opposite angles are equal.

V. Show how to find a point inside a triangle ABC equidistant from AB and BC and also equidistant from BC and CA. What do you know about this point?

VI. Prove that parallelograms on the same base and of the same height are equal in area.

VII. Calculate the area of a right-angled triangle which has a hypotenuse of 7 inches and a side of 5 inches.

VIII. On the same base and the same side of it are drawn three triangles of vertical angle 30° . Show that a circle can be drawn to circumscribe all three triangles, and that its radius is equal to the base.

IX. There are two concentric circles of radii 5 inches and 4 inches. Calculate the length of a chord of the outer circle which touches the inner circle.

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