

COMMON EXAMINATION FOR
ENTRANCE TO PUBLIC SCHOOLS AND
ROYAL NAVAL COLLEGE, DARTMOUTH.

SUBJECT—**GEOMETRY.**

[75 minutes.]

[*N.B.*—All boys MUST do A before going on to B, but are recommended to do as much of B as they can. DO NOT REPRODUCE THE FIGURES UNLESS you think it necessary. In Questions I, IV and VI all lines used in the constructions must be shown: no description of the constructions used need be written, BUT THE FIGURES MUST SHOW CLEARLY THE METHODS OF CONSTRUCTION.]

A.

I. Draw a triangle ABC in which :—

$$AC = 2.8\text{ in.}, BC = 3.6\text{ in.}, \angle BAC = 58^\circ.$$

Measure AB.

Using the same figure, *construct* with ruler and compasses the line bisecting $\angle ACB$.

II. In Fig. 1, $CA = CB$, and BC is parallel to AD ;
 $\angle BAC = 50^\circ$; $\angle ACD = 20^\circ$.

Calculate $\angle BCA$, giving your reasons fully.

Prove that $CA = CD$.

III. In Fig. 2, AD is equal and parallel to BC. Prove that DC is parallel to AB.

IV. *Construct, using ruler and compasses only*, a square whose diagonal is 7.5 cm. long.

V. In Fig. 3, ABCD is a parallelogram and X is any point on AB produced.

Prove that the quadrilateral DBXC is equal in area to the triangle DAX.

B.

[*Begin a new sheet.*]

VI. Draw a triangle ABC in which :—

$$BC = 5\text{ cm.}, CA = 7\text{ cm.}, AB = 6\text{ cm.}$$

Construct a triangle equal in area to triangle ABC and such that two of its sides are of length 7 cm.

Compasses and set-squares may be used. Indicate any parallel lines you draw by inserting arrows as in Fig. 1.

[P. T. O.]

VII. In Fig. 4, O is a point inside the triangle ABC such that $OA = OB = OC$. Prove that $\angle ACB$ is equal to half $\angle AOB$.

[The straight line CON has been inserted in the figure to help you.]

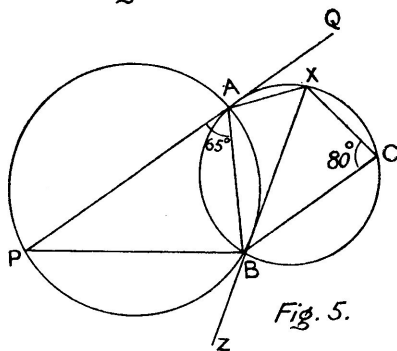
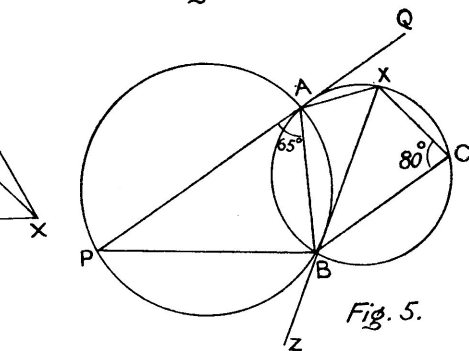
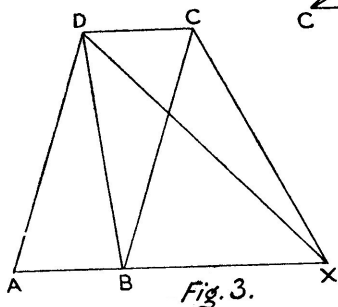
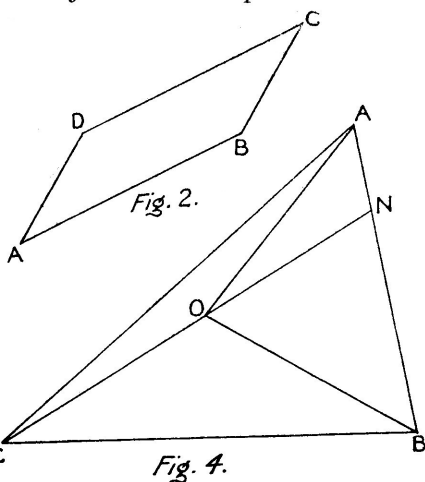
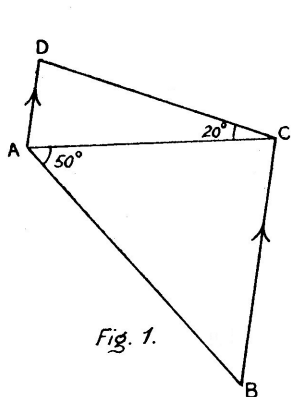
VIII. In Fig. 5, PAQ touches the circle ABCX and ZBX touches the circle ABP; $\angle PAB = 65^\circ$; $\angle BCX = 80^\circ$.

Calculate (i) $\angle QAX$; (ii) $\angle APB$.

Give your reasons fully.

FIGURES FOR GEOMETRY PAPER.

N.B.—These figures are NOT accurately drawn and no measurements should be taken from them except those shown.



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