

COMMON EXAMINATION FOR ENTRANCE TO PUBLIC SCHOOLS.

SUBJECT—GEOMETRY.

[One hour.]

[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.]

A.

I. A ladder AB, 30 feet long, rests with one end A against a vertical wall and the other end B on level ground at a distance of 10 feet from the wall. Find, by drawing a scale diagram, how far up the wall the ladder reaches. *State your scale.*

Construct, using only ruler and compass, the mid-point N of AB in your diagram. All construction lines must be shown clearly, but no description of the method is required.

II. In Fig. 1, AK is parallel to BC, BA is produced to P, and BMK is perpendicular to AC.

(i) Calculate $\angle ABC$ and $\angle KAC$.

(ii) Prove that $AB = AC$.

Give your reasons fully for each part of the question.

III. A parallelogram is defined as a four-sided figure whose opposite sides are parallel. Prove that its opposite sides are equal.

B.

[Begin a new sheet.]

IV. In Fig. 2, AD is parallel to BC and $\angle B = 90^\circ$.

(i) Calculate the area of $\triangle ACD$.

(ii) Calculate the length of CD.

(iii) Insert in the figure, which need not be shown up, the perpendicular AN from A to CD and calculate the length of AN.

Give your reasons fully for each part of the question.

V. In Fig. 3, AP and AQ are equal chords of the circle APBQ, and AB is a diameter of the circle. Prove that $BP = BQ$. State clearly in words the enunciation of any proposition about congruent triangles that you use in your proof.

VI. In Fig. 4, AQD, BQC are intersecting chords of the circle ABDC, drawn so that the circle through A, B, Q touches AC at A; $\angle CBD = 40^\circ$.

What other angles can you calculate in this figure? Find them, giving the 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.

