University of the State of New York

200TH HIGH SCHOOL EXAMINATION

ADVANCED ARITHMETIC

Tuesday, January 18, 1910 — 9.15 a. m. to 12.15 p. m., only

Write at the top of the first page of your answer paper (*a*) the name of the school where you have studied, (*b*) the number of weeks and recitations a week that you have had in advanced arithmetic.

Two recitations a week for a school year (or four recitations a week for half a school year), in a recognized academic school, is the regular requirement, and any statement showing less or other than this should be accompanied by a satisfactory claim or explanation made by the candidate and certified by the principal; otherwise such paper will be returned.

Answer eight questions, selecting two from each group. No credit will be allowed unless all operations (except mental ones) necessary to find results are given.

Group I 1 Find by division the highest common factor of 737 and 1608. Give a full explanation of your work, with reasons for each step to prove conclusively that your result is correct.

2 Prove that a number is divisible by 8 when the number represented by the last three digits is divisible by 8. [Illustration not accepted as proof.]

3 Prove that the exact interest of any sum for a given number of days is equal to the interest of the same sum for the same number of days by the 6% method diminished by $\frac{1}{73}$ of itself.

Group II 4 Reduce the circulating decimal .45 to a common fraction. Explain the process, giving reasons for each step.

5 On a certain piece of work A was employed 15 hours, B 22 hours and C 28 hours; the amount paid for their work was $41.60. Find the share of each. Give written analysis.

6 A man was offered $3500 for his house but he refused to sell as he would thereby lose $12\frac{1}{2}\%$; later he sold the house for $4800. Did he gain or lose and what per cent?

Group III 7 The sum of 16 terms of an arithmetic progression is 688; the first term is 13. Find the last term and the difference between the terms.

8 A grocer buys two kinds of tea at 45¢ and 60¢ a pound respectively and mixes them in the ratio of 5 to 3; what is his profit if he sells 40 pounds of the mixture at 75¢ a pound?

9 What is the interest on £521 3s 6d for 2 yr 9 mo. at 4%? Find the value of the interest in United States money.

Group IV 10 Two rafters, each 30 ft long, meet at the ridge of a roof 14 ft above a line joining the lower ends of the rafters; find the width of the house correct to *two* decimal places.

11 If it costs $600 to inclose a farm 96 rd long and 54 rd wide, how much less will it cost to inclose a square farm of equal area with the same kind of fence?

12 A cylindric quart measure is 6 inches high; find the diameter of its base.