University of the State of New York

1917TH HIGH SCHOOL EXAMINATION

ADVANCED ARITHMETIC

Tuesday, January 26, 1909 — 9.15 a. m. to 12.15 p. m., only

Answer eight questions, selecting two from each group.

Group I 1 Show, without dividing, whether or not 36,431 is divisible by 8, 9, 11, 15.

2 Find the value of

a $72.2 \div 10 - 2 \div (0.5 \div 1.60) \div 2.125 \div (1.75 - 0.5)$

b $(\frac{1}{2} \times \frac{1}{3}\frac{1}{4} \times 8\frac{1}{2}) \div (3\frac{1}{17} \times \frac{1}{17} \times 5\frac{1}{2})$

3 From $2\frac{1}{3}$ subtract $1\frac{1}{2}$ and give a full explanation of each step in the process.

Group II 4 Explain in detail the 6% method of computing interest. Is interest computed by the 6% method greater or less than exact interest? Explain why.

5 If New York and New Haven R. R. sells at $180\frac{1}{2}$ and pays 7%, and West Shore sells at $108\frac{1}{2}$ and pays 4%, which is the better investment?

6 Water is 770 times as heavy as air and iron is 7.68 times as heavy as water; how many cubic meters of air will it take to weigh as much as 1 cubic decimeter of iron?

Group III 7 Explain the relation between longitude and time. When it is noon at Greenwich what is the longitude of that place at which it is (*a*) 6 p. m., (*b*) 3 a. m., (*c*) 40 min. 15 sec. after 9 p. m.?

8 Derive the formulas for the last term and the sum of n terms of an arithmetical series, the first term and the common difference being given.

9 Solve the following by proportion: If $150 at 3% simple interest for 1 year and 6 months produces $10.13 interest, how long will it take $140 to produce $14 interest at 4%?

Group IV 10 A cylindric vessel 14 inches high holds 3 cubic feet of water; what is the diameter of its base?

11 The contents of a cubic wooden packing case is $42\frac{7}{8}$ cubic feet; how many board feet are there in the six sides of this case?

12 If a cubic foot of water weighs $62\frac{1}{2}$ lb. what is the pressure per square inch at the bottom of a standpipe 40 feet high?