

University of the State of New York

Examinations Department

107th examination

ADVANCED ARITHMETIC

Monday, January 23, 1893—9:15 a. m. to 12:15 p. m., only

100 credits, necessary to pass, 75

NOTE—Give each step of solution, indicating the operations by appropriate signs. Use cancelation when possible. Reduce fractions to lowest terms. Express final result in its simplest form and mark it *Ans.*

1 Name the principal unit of length, of surface, of capacity and of weight in the metric system and show the relation between these units. 9

2 The sum of two numbers is 260 and their difference is 12; find the numbers and demonstrate the principle involved. 10

3 A and B can do a piece of work in three days; B and C can do it in four days; A and C can do it in six days; if all work together for the same length of time what part of the sum paid to all should each receive? 12

4 Demonstrate the following:

If the greater of two numbers be divided by the less and the less be divided by the remainder, and this process be continued till there is no remainder the last divisor will be the greatest common divisor. 10

5 Add the following repetends and convert the sum into a common fraction: $.10\dot{3}$, $.24\dot{3}2$, $.112\dot{2}4$. Give reasons for each step. 10

6 Find the fourth term of the following proportion and demonstrate the principle on which the operation is based: $8:12=10:x$. 10

7 Columbus discovered America October 12, 1492. Explain why the four hundredth anniversary of that event was celebrated October 21, 1892. 8

8 A cylindrical cistern is 8 ft in diameter; how deep must it be to contain 75 barrels of water? 9

9 A note for \$250, due in one year, with interest at 6%, is dated January 1, 1892; what is the true value of this note October 1, 1892? 8

10 Find the diagonal of a right parallelopiped whose edges are 6 ft, 8 ft and 4 ft. 8

11 Find in inches to two places of decimals the diagonal of a cube whose volume is 9 cubic feet. 6