

## 21a

University of the State of New York

## Examination Department

122d examination

### ADVANCED ARITHMETIC

Monday, June 11, 1894 — 9:15 a. m. to 12:15 p. m., only

100 credits, necessary to pass, 75

*Answer 10 questions but no more. Division of groups is not allowed. If more than 10 questions are answered only the first 10 of these answers will be considered. 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. Each complete answer will receive 10 credits.*

1-2 Explain and illustrate a method of finding greatest common divisor.

3-4 When it is Monday 7 a. m. at San Francisco, longitude  $122^{\circ} 24' 15''$  W., what day and time of day is it at Berlin, longitude  $13^{\circ} 23' 55''$  E.?

5 Prove that the product of the greatest common divisor and the least common multiple of any two numbers is equal to the product of the numbers.

6-7 Name the principal unit of the metric system. How was this unit determined? How are the units of capacity and of weight related to that of length?

8-9 Derive a rule for finding the sum of an arithmetic progression when the first term, common difference and number of terms are known.

10 Find the cube root of 1897 to two places of decimals.

11 Find the face of a note that will yield \$861.44 proceeds when discounted for 90 days at 6%.

12 The longer sides of an oblong rectangle are 15 feet and the diagonal is 20 feet; find its area.

13-14 Jan. 1, 1893, A invests \$2000 and B \$3000 in a partnership. April 15, 1893, C joins the firm and invests \$1800. Jan. 1, 1894, the present worth of the concern is \$12000. Each partner is allowed \$100 a month for services. What is each partner's share of the profits?

15 Find the surface and the volume of a sphere whose diameter is 4 feet.