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University of the State of New York

Examination Department

128th examination

ADVANCED ARITHMETIC

Monday, March 11, 1895 — 9:15 a. m. to 12:15 p. m., only

100 credits, necessary to pass, 75

Answer 10 questions but no more. If more than 10 questions are answered only the first 10 of these answers will be considered. Division of groups is not allowed. 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 State a method of multiplying a fraction by a fraction and demonstrate the correctness of this method.

3 On what theory was the length of the meter originally determined? Show the relation of the metric units of capacity and weight to the unit of length.

4-5 Explain the six per cent method of computing interest. What error is involved in this method? Is the error in favor of the borrower or of the lender?

6-7 Explain the process of finding the greatest common divisor by division.

8 Write a full analysis of the following: (a) When wheat is worth 60 cents a bushel, how many bushels can be bought for \$36? (b) If 60 bushels of wheat cost \$36, what is the price a bushel?

9 Show that if four quantities are in proportion the product of the means equals the product of the extremes. Mention one application of this principle.

10 Compare the United States rule for partial payments with the merchants' rule. Which is more favorable to the payer?

11-12 Find the square root of 321 to two places of decimals and give reason for each step.

13-14 A bar of iron in the form of a cylinder, 6 feet long and 2 inches in diameter is forged into a square bar whose cross section is $2\frac{1}{4}$ square inches; find the length of the new bar.

15 In an arithmetic progression of 8 terms the first term is 3 and the last is 31; find the remaining terms and give the reason for each step.