The University of the State of New York

EXAMINATION FOR QUALIFYING CERTIFICATES

ADVANCED ARITHMETIC

Monday, September 11, 1916—9.15 a. m. to 12.15 p. m., only

Answer eight questions. Papers entitled to less than 75 credits will not be accepted.

1 a Divide by .009 each of the following numbers: 108; 10.8; .0108.

b Arrange in order of magnitude to six decimal places the three values of \( \pi \): 3.1415926, \( \frac{\pi}{2} \), \( \frac{\pi}{3} \)

2 A solid board fence is 1000 feet long and 6 feet high; the boards are nailed to three rows of scantling 2" × 4" and the fence is supported by cedar posts 8 feet apart. If the boards cost $28 per M, the scantlings $32 per M and the posts 30 cents apiece, what will be the cost of the materials used?

3 A 90 day note for $750, dated July 31, 1916, and bearing interest at 6%, was discounted at the bank today at 6%; find the date of maturity and the proceeds.

4 A tank filled with vinegar is .975 meters high, 1.5 meters wide and 2.8 meters long; what is the value of the vinegar in francs when sold at 25 centimes a liter?

5 If 30 men can dig a ditch 180 rods long in 4 days, how many days will it take 40 men to dig a ditch 300 rods long?

6 A man discharges a debt in yearly payments in such a way that each payment is 3 times the preceding; if his first payment is $10 and his last $7290, what was his indebtedness?

7 The bottom of a cistern is a circle 7 feet in diameter and the top is 5 feet in diameter; if its depth is 7 feet, how many gallons will it hold?

8 A cake of ice 2\( \frac{1}{2} \) ft × 1 ft × 9 in. when melted just fills a cubic tank; the volume of the water is 92% of the volume of the ice. Find the dimensions of the tank in feet to three decimal places.

9 A house rents for $28 a month; the expenses for taxes, insurance and repairs are $144 a year. At what price must a man buy the house in order to realize 6% on his investment?

10 A man has $32,300 to invest; he can buy railway stock 6's at 85 or 7's at 95. Which is the more profitable investment and how much per year? [Do not consider brokerage.]