University of the State of New York

211TH HIGH SCHOOL EXAMINATION

ADVANCED ARITHMETIC

Tuesday, June 16, 1914—9.15 a. m. to 12.15 p. m., only

Write at top of first page of answer paper (*a*) name of school where you have studied, (*b*) number of weeks and recitations a week in advanced arithmetic. The minimum time requirement is two recitations a week for a school year or four recitations a week for half a school year.

Answer eight questions. Credit will not be granted unless all operations (except mental ones) necessary to find results are given; simply indicating the operations is not sufficient.

1 What percentage of wood will be lost in turning a rod of square section down to a cylinder?

2 Find the total surface of a regular pyramid whose hight is 24 and whose base is a regular polygon with area 168 and inscribed radius 7.

3 The chimney of a factory is in shape a frustum of a regular pyramid. It is 270 feet in hight and its bases are squares whose sides are 24 feet and 15 feet respectively. The flue is also 270 feet in hight and has a uniform square section of $10\frac{1}{2}$ feet on each side. How many cubic feet of material does the chimney contain?

4 A drawing of a house and lot is made to the scale of $\frac{3}{8}'' = 1'$; find the number of square inches occupied on the drawing by the lot which is 75′ front and 192′ deep.

5 A company with a capital of $10,000,000, of which $4,500,000 is preferred stock paying 7% dividends and the balance is common stock, pays in one year as dividends $562,500; find the dividend on $14,500 worth of common stock.

6 A train 160 ft long is traveling at the rate of 25 mi. per hour; find in what time it will pass completely over a bridge 240 yd long.

7 The base of a right-angled triangle is 36 rods and the ratio of the other two sides is as 5:3; required the other two sides.

8 A dealer sells gaiters by the case of 24 pairs at $92.16 and gains 20%; if he should sell them at the rate of $2.80 per pair, would he gain or lose? Find the per cent of gain or loss.

9 A merchant imported 15 cases of silks, each case containing 10 pieces and each piece 65 yd, and paid $2552.55 duty at $12\frac{1}{2}¢$ per yard and 24% ad valorem; what was the invoice price per yard?

10 A man has a circular fishpond 176 feet in circumference and he wishes to increase its size $\frac{1}{2}$; how wide a circular belt or ring must be excavated?

11 Two balls of lead weigh respectively $4\frac{1}{2}$ pounds and $121\frac{1}{2}$ pounds; required the ratios of their diameters.