

ADVANCED ARITHMETIC

Tuesday, June 20, 1916—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.

- 1 a Show how to test the divisibility of a number by 2, 3, 4, 8 and 9.
b Test the accuracy of the result in the following problem by casting out 9's: $896721 \div 328 = 2734\frac{3}{8}$
- 2 A waterworks standpipe is 125 feet high by $12\frac{1}{2}$ feet in diameter; find its capacity in gallons, allowing 231 cubic inches to a gallon.
- 3 How long after the sun passes the meridian of $5^{\circ} 30'$ east will it pass the meridian of $32^{\circ} 15'$ west? Explain.
- 4 A man invests a certain sum of money at $5\frac{1}{2}\%$; at the end of 2 years 3 months he finds that the sum of the amount invested and the interest received is \$629.30. What was the sum invested? Prove the correctness of your work.
- 5 A river that is 0.56 of a kilometer wide and has an average depth of $10\frac{1}{2}$ meters flows at the rate of 5 kilometers an hour; determine the number of kiloliters of water that flow in one second past a given point.
- 6 Assuming that the diameter of the earth is 8000 miles and the height of Mt McKinley is 3.8 miles, state what should be the height of the representation of Mt McKinley on a relief globe 4 feet in diameter.
- 7 A man sells 5000 barrels of apples at \$2 per barrel, paying a commission of 2%, and invests the proceeds in N. Y. C. & H. R. R. R. stock at 108, brokerage $\frac{1}{8}\%$; how many shares does he purchase and how much cash remains uninvested?

8 The depth, width and length of an excavation are to each other as $1:5:8$; there are exactly 2560 cubic yards of earth removed. Find in feet the dimensions of the excavation.

9 A school district has a valuation of \$225,046. The budget for the year calls for an expenditure of \$432 for the teacher's salary, \$25 for janitor service and \$75 for fuel and incidentals. The district receives \$125 public money from the state. Find the school tax on a man's property which is valued at \$5500.

10 The chimes in the tower of a college library are struck each quarter of an hour as follows: one bell for the first quarter, two for the second, three for the third and four for the fourth. In addition the number of each hour is struck on the clock bell. How many strokes are there during 24 hours?