PAPER XXX.

291. A lump of gold 22 carats fine contains 36 ounces of alloy. How many ounces of alloy in a lump of the same weight only 16 carats fine?

292. Find the smallest multiplier that will make 3428 a perfect square.

293. Show without division that 36432 contains 8, 9, and 11 as factors.

294. How many days elapsed between the annular eclipse of May 15, 1836, and that of March 15, 1858?

295. By selling goods at 60 cents a pound 8% is lost. What advance must be made in the price in order to gain 15%?

296. Divide $54.25 among three persons, giving the second $10 less than the first and twice as much as the third.

297. A substance is weighed from both arms of a false balance, and its apparent weights are 18 pounds and 8 pounds. Find its true weight.

298. When the sum of the interest and true discount is subtracted from the sum of the true present worth and amount, the remainder is $2460. What is the present worth?

299. A merchant buys goods at a discount of 40% and 20% from the list prices, and sells at a discount of 10% and 5%. What is his gain per cent, allowing 10% of his sales for bad debts?

300. X, Y, and Z formed a partnership to carry on a milling business. X owned the site, valued at $1500; Y put up the building, worth $2400; and Z put in the machinery, costing $3000. They ran the mill for one year on this basis, and then agreed to take equal shares in it; but meantime the value of the land had increased 20%, the value of the building had decreased 10%, and the worth of the machinery had depreciated 25%. Who should pay the other, and how much?