Problem F
Coffee Beans
Time Limit: 20 seconds

Having wasted enough time with boring assignments and useless classes, you've decided to drop out of school and follow your true passion, coffee. You're going to open your own coffee shop and roasting company, the Alberta Coffee Makers. With a shop leased and roasting equipment acquired, all that's left is some simple math to prepare for opening day!

You've done some market research and you know that you can sell a cup of coffee for $\$2.50$ and that you will sell N cups each day. One pound of roasted coffee beans makes 16 cups of coffee, so you will need to buy and roast $7 * N/16$ pounds of beans each week.

Your bean supplier has M different kinds of beans for sale. Though he has enough of each kind of bean to fulfill your weekly needs, he'd prefer you buy more than one type so that there's enough for all the other roasters he supplies. For this reason, he will charge you $c_i * w + d_i * w * w$ for w pounds of bean i. He'll let you buy as many different kinds of beans as you like, and you may buy in fractions of a pound as well. He'll even deliver your order for free each week!

You've decided to roast all your beans on Sunday before the work week begins. Each kind of bean needs to be roasted in a separate batch and at a different temperature. For example, lighter coffees take less time and energy to roast than darker coffees. It will cost you $r_i * w$ to roast w pounds of bean i.

Your aim, obviously, is to maximize your weekly profit. How much of each bean should you buy to accomplish that goal?

Input

The input file starts with an integer $T (1 \leq T \leq 1000)$, the number of test cases. Each test case starts with two integers N and M on a line. M lines follow with three floating point numbers each c_i, d_i and r_i (each will have at most two digits after the decimal point).

$0 < N <= 3500$

$0 < M <= 10000$

$0.10 <= c_i, d_i, r_i <= 15.00$

Output

For each test case, output the maximum profit on a separate line, rounded to the nearest whole cent. Make sure you do not 'buy' negative amounts of coffee (although profit itself may be negative).

Sample Input	Sample Output
2 16 2 10.00 0.10 1.00 11.50 0.05 1.25 16 2 10.00 0.10 1.00 11.50 0.05 0.50	198.10 198.37