Death and Taxes

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Kattis' grumpy old aunt Mittens in Taxmania has recently died at a tender age of 109 cat years. Among her many papers are her stock records. As it turns out, Mittens traded a lot in the stock of her namesake mitten-producing company Mittens Conglomerated.

Mittens. Picture by JamieDepledge1 via Pixabay, cco

In Taxmania dead cats are prohibited from owning stock, so when Mittens died, all her shares (units) of stock in Mittens Conglomerated were sold, with 30% of the capital gains paid as taxes. Your task is to compute how much money the final sale of Mittens' shares yields, after paying taxes on the profits. There are no tax effects from selling at a loss.

Mittens stock records indicate the history of her *purchases* and *sales* of shares, and at what costs they were made. In addition, they indicate when the company performed *splits* and *merges* of its stock. When the company *splits* its stock, every share is replaced by x new shares, and the value divided evenly between them. When the company *merges* its stock, every x shares are replaced by a single stock. If Mittens can not merge all her shares (due to her number of shares not being divisible by x), she is forced to sell any remainder stock (at a price equal to the current average cost of her shares).

For example, consider the following sequence of events (corresponding to Sample Input 2):

1. Mittens *buys* 10 shares for 10 crowns per share.
2. Mittens *buys* 30 shares for 5 crowns per share. The average cost of her 40 shares is now $\frac{10 \cdot 10 + 30 \cdot 5}{10 + 30} = 6.25$ crowns.
3. Mittens *sells* 31 shares for 8 crowns per share. The profit is $8 - 6.25 = 1.75$ crowns per share (which is subject to capital gains tax but that is irrelevant). The sale does not change the average cost of Mittens' shares.
4. The company performs a *split* with $x = 2$. Mittens' shares split into $2 \cdot 9 = 18$ shares, of average cost $6.25/2 = 3.125$.
5. The company performs a *merge* with $x = 8$. Mittens merges 16 of her 18 shares into 2 new shares of average cost $8 \cdot 3.125 = 25$. The last two remaining old shares can not be merged and Mittens is forced to sell them.

6. Mittens *dies* and her 2 shares are sold for 42 crowns per share. The profit is $42 - 25 = 17$ crowns per share, which is subject to the 30% tax. The total amount obtained from the final sale after taxes is thus $2 \cdot (42 - 17 \cdot 0.3) = 73.8$ crowns.

Input

The input contains a sequence of at most $10\,000$ events in chronological order. Each event is in one of the following forms:

- "`buy` x y": Mittens bought x shares of stock at y crowns per share.
- "`sell` x y": Mittens sold x shares of stock at y crowns per share (and used the money for purposes unknown). The value of x is no greater than the number of shares owned before the event.
- "`split` x": The stock split with x new shares for each share.
- "`merge` x": The stock merged with one new share for every x shares.
- "`die` y": The remaining shares were sold off at the death of Mittens for y crowns per share. This event happens exactly once and is guaranteed to be the last event in the input.

In all events, x and y are integers satisfying $1 \leq x \leq 1\,000$ and $1 \leq y \leq 1\,000$. You may assume that at any point in time in the event history, the total number of shares of stock owned by Mittens was at most 10^6.

Output

Output a single line containing the number of crowns obtained (after paying taxes) in the final sale of Mittens' stock after her death. The answer should be accurate to within an absolute error of at most 0.01.

Sample Input 1

```
buy 1 15
split 3
sell 1 5
die 4
```

Sample Output 1

```
8.00000000
```

Sample Input 2

Sample Output 2

```
buy 10 10
buy 30 5
sell 31 8
split 2
merge 8
die 42
```

```
73.8
```

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