

474 Heads / Tails Probability

The probability of n heads in a row tossing a fair coin is 2^{-n} . Calculate the probability for any positive integer n ($1 \leq n \leq 1000000$).

Input

A list of valid values of n (one per line).

Output

Print a table of n and 2^{-n} in the following for the given values of n , using the following format:

$$2^{-n} = z.xxxx\text{e-}y$$

where z is a nonzero decimal digit, each x is a decimal digit and each y is a decimal integer with no leading zeros or spaces.

Sample Input

```
1
100
10000
1000000
```

Sample Output

```
2-1 = 5.000e-1
2-100 = 7.889e-31
2-10000 = 5.012e-3011
2-1000000 = 1.010e-301030
```