Q4. Volume of Balloon (10 marks):

Charles's Law says that for a given amount of gas at fixed pressure, the volume and temperature are directly proportional. Mathematically, it can be written as $V \propto T$, where V is the volume in m^3 and T is the temperature in Kelvin (K). In an experiment, a hot air balloon has a volume of 2800 m^3 at the temperature of 99 degree Celsius (ºC). Your task is to determine the volumes of the balloon for various temperatures.

Note: The formula to convert a temperature from Celsius to Kelvin is

$$T_{\text{Kelvin}} = T_{\text{Celsius}} + 273.15$$

Write a programme to

Input, in sequence,

A positive integer, n, where $1 \leq n \leq 10$, to indicate the number of data to be read subsequently.

n lines of data; for each line, a temperature in Celsius is given, where $T_{Celsius} \geq -140.23928$.

Output, in sequence, the volumes of the hot air balloon corresponding to the temperatures given in the input. Your answers should be rounded to 7 decimal places.

试题 4. 气球的体积 (10 分):

根据查理定律（Charles's Law）当压力不变时，给定气體的体积和温度成正比。数学上，我们可以写成 $V \propto T$，其中 V 是该气体的体积（单位为 m^3）以及 T 是当时的开氏（Kelvin）温度（单位为 K）。在一项实验中，一个热气球被量测出在摄氏（Celsius）99 ºC 时，其体积为 2800 m^3。你的任务是找出此热气球在不同温度下的体积。

注意： 从摄氏温度转换为开氏温度的公式为

$$开氏温度 = 摄氏温度 + 273.15$$

试写一程式以

依序输入

一个正整数 n，其中 $1 \leq n \leq 10$，表示接着程式将读取 n 行的数据。

n 行的数据，每一数据表示一个摄氏温度，其中摄氏温度 ≥ -140.23928。

依序输出此热气球在上述给定温度下的体积。你的答案必须近似至小数点后七位数。

Example (例子)

Input （输入）	Output （输出）
1 80	2657.0468897
1 -140.23928	1000.0000430
2 -100 -10	1302.7542658 1979.9005777
3 10 20 30	2130.3775359 2205.6160150 2280.8544942
4 -40.567 56.876 -0.87 1	1749.9191186 2483.0654306 2048.5933091 2062.6629047