EASY OR DIFFICULT ?

By Albert Frank

Recently someone gave me the following problem:

On the Xth day of the Yth month of the year 1900+Z, a ship is near New York. The ship has T crew members, U propellers and V chimneys. If we add the cubic root of the age of the captain (who is a grandfather) to the product XYZTUV, the result is 698823. What are the values of X, Y, Z, T, U, V, and what is the age of the captain? We also know that only one solution is realistic.

Is this problem difficult or easy? Let's have a look at it:

The **age** of the captain (who is a grandfather) is a perfect cube: It can only be **64** years old.

698823 – 4 = 698819.
Let's make a decomposition of 698819 into prime factors: 698819 = 11 x 17 x 37 x 101.
We have four factors. Six are needed, so the two others are 1 and 1.

11 would be a too big number for propellers or chimneys, so the ship has **1 propeller and 1 chimney.**

The **month** has to be <13, so can only be **11**.

The **day** has to be < 32, so can only be **17.**

The **year (Z)** has to be < 100, so can only be **37**.

The remaining number **101** is the number of **crew members**.

We have it: 17th November 1937, 1 propeller, 1 chimney, 101 crew members, and the captain is 64 years old.

Some will find this problem very easy, others will find it very difficult.