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今有穿渠，長二十九里一百四十五步，上廣一丈二尺六寸，下廣八尺，深一丈八尺。秋程人功三百尺。問須功幾何？

Now we have a canal to excavate, of length twenty-nine 里 one hundred and forty-five 步, upper width one 丈 two 尺 six 寸, lower width eight 尺, and depth one 丈 eight 尺. Over the course of autumn, each man outputteth three hundred 尺. We ask: how many mans' output be needed?

穿：excavate; or bore

A has 須 for 須.

B has 功 for 人.

內：interchangeable ~~with~~ for 納入也; admitting; or taking in

零：left-over as in 零頭.

術曰：不盡六十九尺六寸。以三百步乘之，得二萬二千六百四十五丈六寸。半之，以深乘之，得一萬三千五百六十九萬尺。以長乘，得

內零步，六尺。之，得五萬二千八百尺。并上下廣，得二丈六寸。半之，以深乘之，得九百八十五尺四寸。以長乘，得九萬三千五百六十九萬尺。以人功三百尺除之，即得。答曰：三萬二千六百四十五人，

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Answer saith: thirty-two thousand, six hundred and forty-five mens' output, remainder sixty-nine 尺 six 寸.

Method saith: put down the number of 里, multiplying it by three hundred 步, admitting the left-over 步, and setting it, resulteth in fifty-two thousand, eight hundred and twenty-four 尺. Combining the upper and lower widths, resulteth in two 丈 six 寸. Halving it, and multiplying it by the depth, resulteth in one hundred and eighty-five 尺 four 寸. Multiplying by the length, resulteth in nine million, seven hundred and ninety-three thousand, five hundred and sixty-nine 尺 six 寸. Dividing it by each man's output, three hundred 尺, we are done.

$$L = \left(29\text{里} \cdot \frac{300\text{步}}{\text{里}} + 104\text{步}\right) \cdot \frac{6\text{尺}}{\text{步}}$$

$$= 52824\text{尺}.$$

~~a+b = 12.6尺 + 8尺 = 20.6尺~~

$$a+b = 12.6\text{尺} + 8\text{尺} = 20.6\text{尺}$$

$$\frac{a+b}{2} \cdot h = \frac{20.6\text{尺}}{2} \cdot 18\text{尺} = 185.4\text{尺}^2$$ (note: text treats area as length etc.)

$$\frac{a+b}{2} \cdot hL = 185.4\text{尺}^2 \cdot 52824\text{尺}$$

$$= 9793569.6\text{尺}^3$$ (ditto volume)

$$W = \frac{a+b}{2} \cdot hL \div R$$

$$= 9793569.6\text{尺}^3 \div \frac{300\text{尺}^3}{\text{人}}$$

$$= 32645\text{人} + 69.6\text{尺}^3 \div \frac{300\text{尺}^3}{\text{人}}.$$

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