

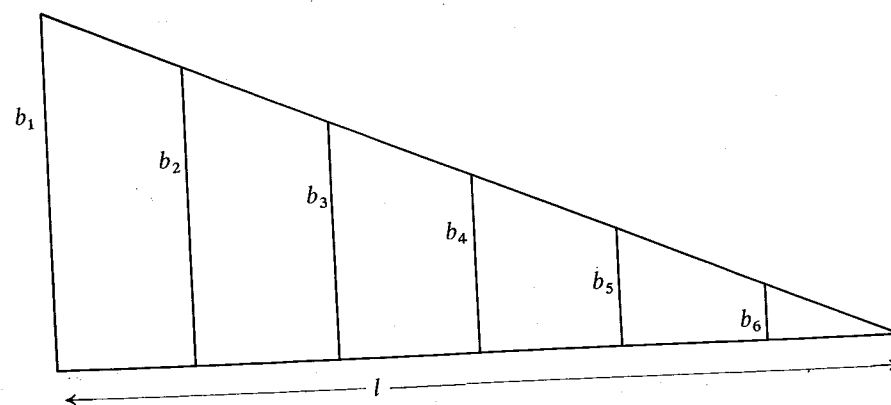
- ¹⁵how much he exceeded I did not know.
¹⁶How much did one brother exceed the other?
¹⁷When you perform (the operations), multiply the area by two, (and the result is) 22, 45, 0.
¹⁸⁻¹⁹The reciprocal of 6, 30 is not obtainable. What should I put to 6, 30 which will give me 22, 45, 0? Put 3, 30, (which is)
²⁰the upper width. Take the reciprocal of 6, the brothers, (and) [multiply] the (resulting) 0; 10 by 6, 30, and (the resulting)
²¹1, 5 (is) the length which each too[k]
²²35 GAR is the breadth. 35 [from 3, 30]
²³35 from 2, 5[5]
²⁴35 from 2, 2[0]
²⁵35 from 1, 4[5]
²⁶subtr[act] 35 from 1, 10 [.....]
²⁷subtract 35, and the width (?) [.....]

Commentary

We have here one of the 'inheritance' problems which require the partition of property to be distributed among a given number of brothers. The field in question is of triangular shape with length l and area A :

$$l = 6, 30 \quad A = 11, 22, 30.$$

This area is divided among 6 brothers by equidistant lines parallel to the base of the triangle. The question asked by the text concerns the difference between the allotments of the brothers.



(d) YBC 6967

- ¹[The *igibūm* exceeded the *igūm* by 7.
²What are [the *igūm* and] the *igibūm*?

- ³⁻⁵As for you—halve 7, by which the *igibūm* exceeded the *igūm*, and (the result is) 3; 30.
⁶⁻⁷Multiply together 3; 30 with 3; 30, and (the result is) 12; 15.
⁸To 12; 15, which resulted for you,
⁹add [1, 0, the produ]ct, and (the result is) 1, 12; 15.
¹⁰What is [the square root of 1], 12; 15? (Answer:) 8; 30.
¹¹Lay down [8; 30 and] 8; 30, its equal, and then
 (Reverse)
¹⁻²subtract 3; 30, the *takīltum*, from the one,
³add (it) to the other.
⁴One is 12, the other 5.
⁵12 is the *igibūm*, 5 the *igūm*.

Commentary

The problem treated here belongs to a well-known class of quadratic equations characterized by the terms *igi* and *igi-bi* (in Akkadian, *igūm* and *igibūm*, respectively). These terms refer to a pair of numbers which stand in the relation to one another of a number and its reciprocal, to be understood in the most general sense as numbers whose product is a power of 60. We must here assume the product

$$(1) \quad xy = 1, 0$$

as the first condition to which the unknowns x and y are subject. The second condition is explicitly given as

$$(2) \quad x - y = 7.$$

From these two equations it follows that x and y can be found from

$$\begin{Bmatrix} x \\ y \end{Bmatrix} = \sqrt{\left(\frac{7}{2}\right)^2 + 1, 0} \pm \frac{7}{2},$$

a formula which is followed exactly by the text, leading to

$$\begin{Bmatrix} x \\ y \end{Bmatrix} = \sqrt{1, 12; 15} \pm 3; 30 = 8; 30 \pm 3; 30 = \begin{Bmatrix} 12 \\ 5 \end{Bmatrix}$$

(e) YBC 4662

- 21 ²⁴A ki-lá. $7\frac{1}{2}$ SAR is the area, 45 SAR the volume; one-seventh
²⁵of that by which the length exceeded the width is its depth. What are the length, the width, and its depth?
²⁶When you perform (the operations), take the reciprocal of $7\frac{1}{2}$ SAR, the area, [multiply by] 45, [the volume, (and)]
²⁷you will get its depth. Halve the one-seventh which has been assumed, (and)
²⁸you will get 3; 30. Take the reciprocal of its depth, (and) you will get 0; 10;
²⁹multiply 0; 10 by 45 (SAR), the volume, (and) you will get 7; 30.
³⁰⁻³¹Halve 3; 30, (and) you will get 1; 45; multiply together 1; 45 times 1; 45, (and) you will get 3; 3, 45; add 7; 30 to 3; 3, 45, (and)