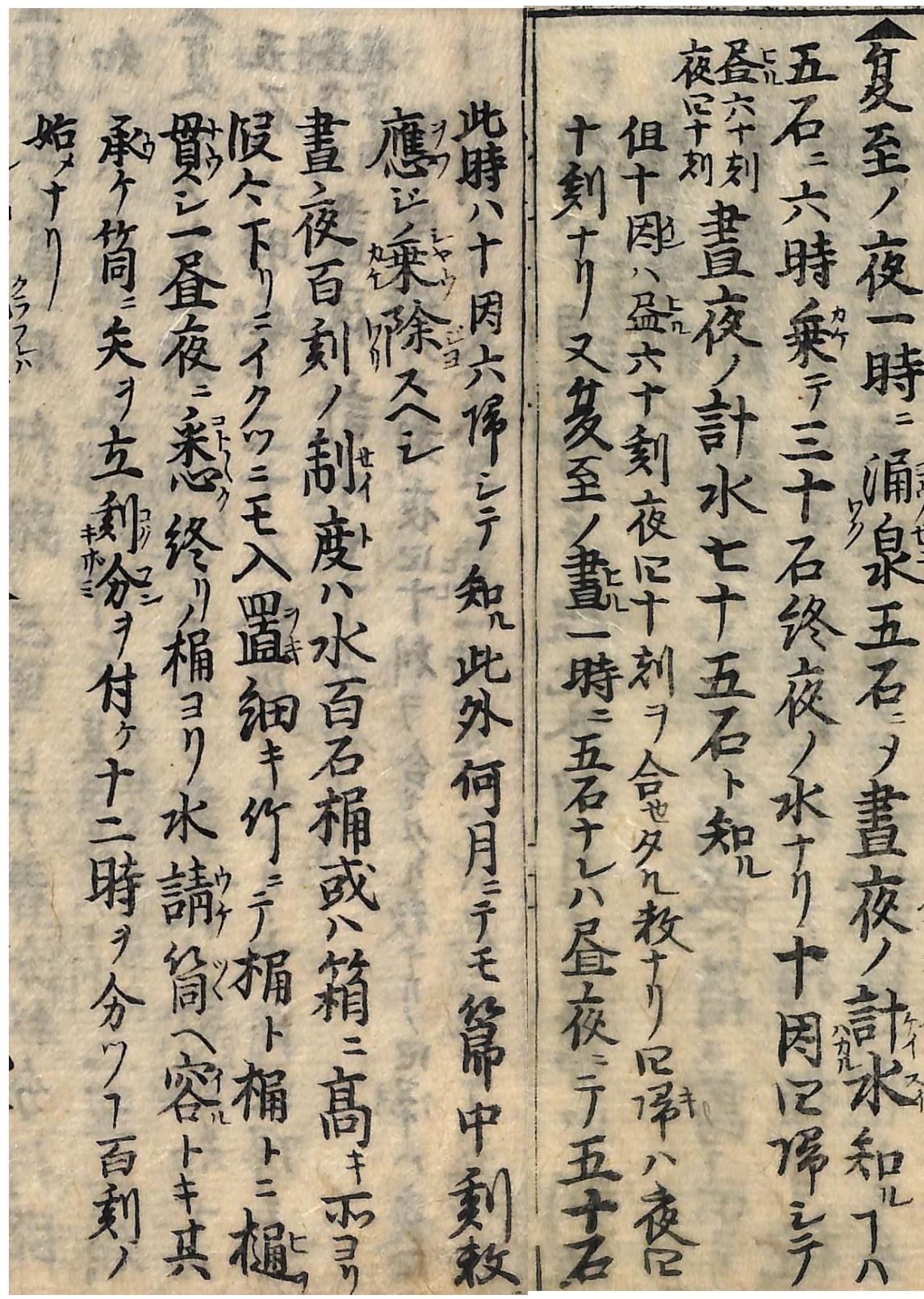


原文
the
original



キーワード
↳ 水・時間・
昼夜百刻の制度

Keyword
↳ Water, Time,
Chuya-Hyakkoku-no-Seido

現代語訳 living language reason

夏至の夜一時に湧泉 5 石がある。昼夜の水の量を知るには、5 石に 6 をかけて、一晩で 3 0 石の水となる。十因(かけ算)四帰(わり算)して昼 6 0 刻で夜 4 0 刻、昼夜の合計 7 5 石と分かる。
ただし、十因は昼 6 0 刻と夜 4 0 刻を合わせた数だ。四帰は夜 4 0 刻だ。また、夏至の昼一時に 5 石なら、昼夜にて 5 0 石。この時は十因六帰と分かる。このほか何月にてもその月の刻数に応じて乗除するべし。昼夜百刻の制度は水百石を、桶あるいは箱を高いところから高低の差をつけ水が段々下っていくようにいくつもおいて、細い竹で桶と桶とをつなぐ。一番下に水請け筒を置き、そのなかに十二等分の目印を付けた矢を置く。一晩で水請け筒に入った水の量を計る。これが百刻のはじめとなる。

係：金井・板

英語訳 English translation

There are 5(石)^{koku} at 1 in the summer solstice.
We want to know the amount of water that can be measured day and night.
Multiplying 5(石)^{koku} by 6(時)^{toki}, it will be 30(石)^{koku}. It is the answer.
We multiply it by 10 and divide it by 4.
We define a day has 60(刻)^{koku}, a night has 40(刻)^{koku}.
We can know that the amount of water that can be measured day and night is 75(石)^{koku}.
However multiplying 10 means the sum of 60 (刻)^{koku} and 40 (刻)^{koku}.
Dividing 4 means that a night has 40(刻)^{koku}.
Also, if there are 5(石)^{koku} at 1 in the summer solstice, the answer is 50(石)^{koku}.
At this time, we find out that 10 is multiplied and it's divided by 6.
You can know the answer any other month if you make multiplication and division according as the number of the month.
We explain the system of 100(刻)^{koku} day and night.
A thin bamboo is passed through the bucket or the box.
We connect it with it as steps.
We stand an arrow in the tube when all water enter.
We mark it gradations, and we divide a day and night by 12(時)^{toki}.
So, the day has 60(刻)^{koku}, the night has 40(刻)^{koku} in the summer solstice.
It is the beginning of "system of 100(刻)^{koku} day and night".

係：板・木内

まとめ・今後の課題・感想
summary, future problem, impression

まとめ

江戸時代には、時計がなかったため水の量を使って時間をはかることが分かった。
I saw that there were not clock in Edo period so they used water to time.

今後の課題

本文の現代語訳を自力でもっと正確にできるようにになりたい。
I want to be able to translate the original into modern language by ourselves.

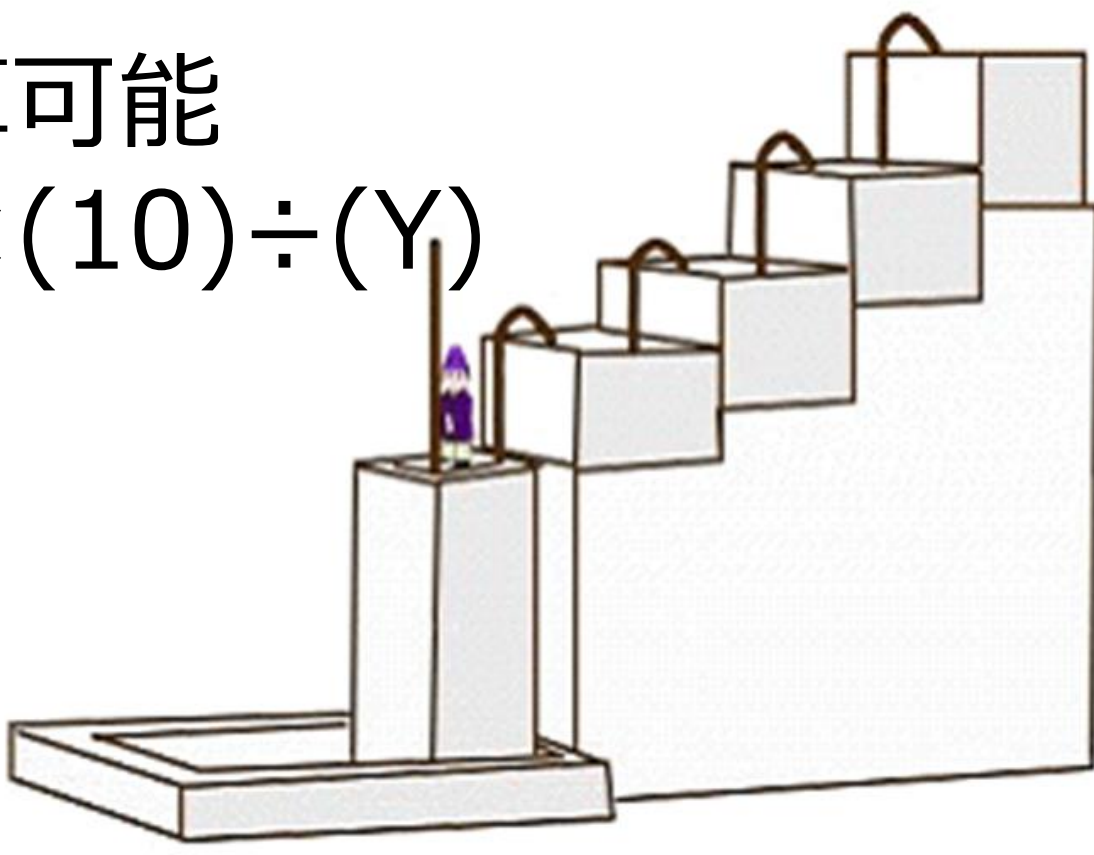
感想

初めて体験することばかりで苦労しましたが、良い経験になったと思います。
この体験で学んだことをこれからさまざまな場面で活用していきたいです。
We had difficulty a lot of the fast experience, but we think that this experience get well.
We want to use what learned from this experienced for variety of situations.

班長：菊地

数学的内容 mathematical contents

公式 すべての月に対して計算可能
昼夜の水量 = (湧水の量) × (X) × (10) ÷ (Y)
X = 水量を求めたい月
Y = 季節による昼夜の長さ



例 1

夏至の夜1時に湧泉 5石 夜1時より、10因(いん)4帰(き)をする
 $5 \times 6 \times 10 \div 4 = 75$ 答え 75石

10因は1日の時間100刻 因は掛け算 帰は割り算
季節の昼夜の分け方

| | | |
|----|------|------|
| 春分 | 昼50刻 | 夜50刻 |
| 夏至 | 昼60刻 | 夜40刻 |
| 秋分 | 昼50刻 | 夜50刻 |
| 冬至 | 昼40刻 | 夜60刻 |

夜の場合→昼の時間の長さ
昼の場合→夜の時間の長さ で計算する

例 2

春分の昼1時に湧水 9石 昼1時から、10因5帰する
 $9 \times 3 \times 10 \div 5 = 54$ 答え 54石

係：栗山

英語訳 English translation

FORMULA it can use all months

The volume all day and night equal spring water times X times 10 division Y
X equal we want to know the volume of the month
Y equal the length of day and night caused by season

Illustration 1

At A.M. 1^{toki} in the summer solstice, there are spring water.
It gush out 5^{koku}.
From at A.M. 1^{toki} in the summer solstice, you do 10inn4ki.
5 times 6 times 10 division 4 equals 75. The answer is 75^{koku}.

10inn is 100^{koku} (100^{koku} is a day and night). Inn is multiplication. Ki is division.

The following are the length of day and night caused by season.

The spring equinox

The length of day is 50^{koku}. The length of night is 50^{koku}.

The summer solstice

The length of day is 60^{koku}. The length of night is 40^{koku}.

The autumn equinox

The length of day is 50^{koku}. The length of night is 50^{koku}.

The winter solstice

The length of day is 40^{koku}. The length of night is 60^{koku}.

In the case night, the length of day.

In the case day, the length of night, and it substitute for Y.

Illustration 2

At P.M. 1^{toki} in the spring equinox, there are spring water.
It gush out 9^{koku}.
From at P.M. 1^{toki} in the spring equinox, you do 10inn5ki.
9times 3 times 10 division 5 equals 54. The answer is 54^{koku}.

係：栗山

引用

見立算法規矩分等集 Mitate Sanpou Kiku Buntousyu
享保 7 年 A.D.1730
著者：万尾 時春 Author : MASHIO, Tokiharu

