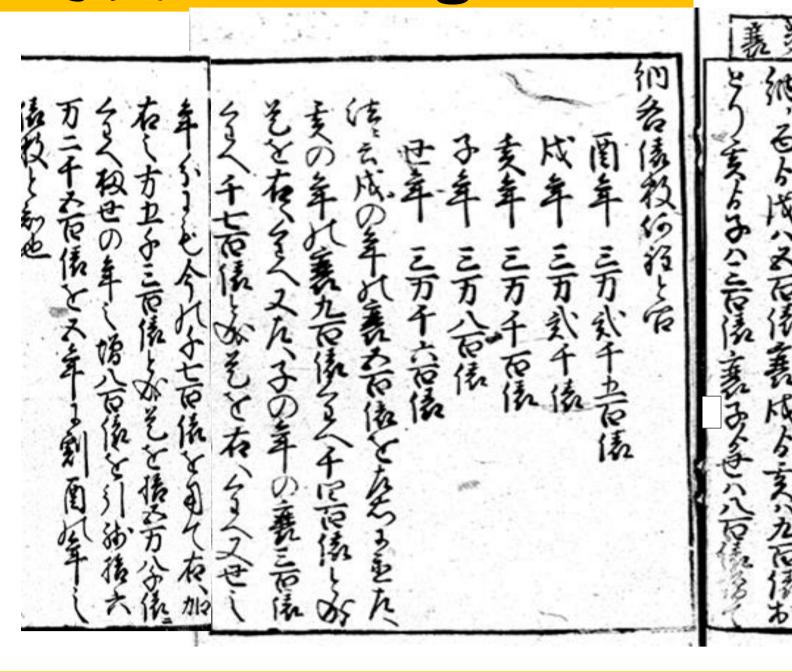# 竜ヶ崎第一高等学校　白幡探究Ⅰ数学領域
加法の方程式の基本〜求める数を文字で置く〜
Basic of plus equation ~Put on character as answer~

71st　1年G組　1班
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◎ISHIYAMA,kazuki ASAMI,yosinobu ISIZAKI,issei ABE,saren UTSUKI,nana

原文　The original

キーワード key word

年貢
　price
干支
　Japanese zodiac

数学的内容　The mathematical contents

酉の年の俵数をxとすると，
戌の年は　　x −500
亥の年は　　x −1400
子の年は　　x −1700
丑の年は　　x −900
これを式にすると，
$x ＋（x −500）＋（x −1400）＋（x −1700）＋（x −900）$
$＝15800$
$5x ＝162500$
$x ＝32500$

よって，酉の年の俵数は32500俵となる。
これを各年に代入すると，
戌の年は　　32000
亥の年は　　31100
子の年は　　30800
丑の年は　　31600　となる。

係　浅見　石崎

現代語訳　Modern translation

酉の年から丑の年にかけて、年貢
を十五万八千納めた。
酉より戌の方が五〇〇少ない
戌より亥の方が九〇〇少ない
亥より子の方が三〇〇少ない
子より丑の方が八〇〇少ない
各年の年貢はいくつか求めよ。

酉の年　三二五〇〇俵
戌の年　三二〇〇〇俵
亥の年　三一一〇〇俵
子の年　三〇八〇〇俵
丑の年　三一六〇〇俵

戌の年の少ない五〇〇を左右に
置き、左〈亥の年の少ない九〇〇
を加え一四〇〇となる。それを
右〈加え、また左に子の年の三〇
〇加えて一七〇〇となる。それを
右へまた丑の年分にも一七〇〇
なる。これを年貢五八〇〇に
加えて丑の年の八〇〇を引く。残
り一六二五〇〇を五年で割る。
これは、酉の年の俵数となる。

係　阿部　宇津木

英語訳　English translations

We will show you how to prove this Edo's math question.
It is a question of the price's year of the Rooster for year of the Ox to pay for contribution the Edo period.
Five years of price are one hundred fifty eight thousand yen.
Year of the Rooster to year of the Dog price is minus five hundred yen.
Year of the Dog to year of the Boar price is minus nine hundred yen.
Year of the Boar to year of the Rat price is minus three hundred yen.
Year of the Rat to year of the Ox price is plus eight hundred yen, each year's price are mysterious.
[Answer]
Rooster = three hundred twenty five hundred.
Dog = thirty-two thousand.
Boar＝three hundred eleven hundred .
Rat=thirty-one thousand and six hundred.
Ox=thirty-one thousand and a hundred.
「Conclusion」
First, you put the year of the Dog minus 500 to right and left, and add the year of the Boar minus 900, so the total is 1400.
Second, you add it to right , also you add the year of the Rat is minus 300 to the left, So the total is 1700.
Third, you add it to right, also you add it to the year of the Ox is to right, as a result, right is 3300.
Finally, you add it to 15800 and the total is decreased the year of the Ox, So the other is 162500.
You divide it five years.
Answer is the year of the Rooster.　　　*A person in charge ; Ishizaki*

英語訳　English translations

The mathematical contents
Year of the Rooster's number of straw bag means X ,
Year of the Dog is X−500.
Year of the Boar is X−1400.
Year of the Mouse is X−1700.
Year of the Ox is X−900.
These Theorems can formulate below.
$X＋(X−500)＋(X−1400)＋(X−1700)＋(X−900)$
$＝15800$
$5X＝162500$
$X＝32500$
From the above, Year of the Rooster 's number of straw bag is 32500.
And substitute the value into the each year,
Year of the Dog is 32000.
Year of the Boar is 31100.
Year of the Mouse is 30800.
Year of the Ox is 31600.

A person in charge ; Utsuki

The culture of the Edo period

RICE OF VALUE
1*go*=150g 　　1*syo*=1.5kg
1*pyo*=60kg 　　1*koku*=2.5kg(150kg)

1*pyo*
Present worth , it is about 18500 yen
price of it is about 15000 yen now

1 koku
Present worth , it is about 50000 yen
Price of it is about 40000 yen
　　　A person in charge ; Asami

江戸文化

お米の価値
一合＝150g 　　一升＝1.5kg
一俵＝60kg 　　一石＝2.5俵(150kg)
一俵の現在の価値　約18500円　　現在の一俵の値段　約15000円
一石の現在の価値　約50000円
現在の一石の値段　約40000円　　係：浅見

引用
算法勿憚改
Snapou Butsu Tankai
延宝元年
A.D.1673
著者：村瀬義益
Auther：Murase Yoshimasu

今後の課題・感想

今後の課題
算額を調べていくとその時代の文化などと算額は密接な関係があることが分かった。今後は算額が作られた背景となる時代についてもより詳しく調べたい。

感想
普段では，学ぶことがないであろう和算について学ぶことが出来てとても貴重な経験になったし，昔の日本についての知識が増えたように思う。昔の人は，そろばんで計算していたが今と考え方は同じだったので，現代に通じるところがあって驚いた。また、授業の一環として和算の研究に取り組んだことで江戸時代の文化についていろいろ知ることができたので、算額以外にも日本の伝統、昔の生活などにも興味を持つきっかけとなった。これからは、学んだ江戸の文化や考え方を日々の生活に活かしていきたい。
　　　　班長：石山

英語訳　English translations

Future's problem
We researched this sangaku , we could know the nearly relationship of sangaku and culture of the Edo period. After this, we want to research something in detail about the background of period which made the sangaku.
A person in charge ; Utsuki

Impressions
We had a precious experience because we can't learn about Japanese mathematics as usual. Also, we think we could have more knowledge about the ancient Japan. We were surprised at the way of thinking was same both ancient people and contemporary people. It is because they made a calculation with *soroban*.
We could know about the culture of the Edo period through tackle a study of Japanese mathematics as part of our class.
So, It is a chance we were interested in about traditional of Japan and life of ancient.
After this, we want to make using of life every day not only the culture of the Edo period but the way.
A person in charge ; Utsuki