透簾細草 - A Translation

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12 Questions From the 永樂大典

Question 1

一, 今有客持銀一千七百二十八兩, 出關稅之, 九而取一, 今稅了銀二百兩, 除貼與客錢一十貫文, 今將錢七十二貫五百文, 問買銀多少?

答曰: 五十八兩。

法曰: 置都銀在地, 以九約之, 得一百九十二兩, 即為合稅之銀, 以反減稅了銀二百兩外, 有八兩以乘, 今將錢數, 得五百八十貫為實, 以一十貫為法而一, 得五十八兩, 合問.

草曰: 銀八兩, 除貼得錢一十貫, 得每兩價錢一貫二百五十為法, 除今將錢, 合問。

1) Let us say there is a merchant who possesses 1728 兩 *liang* of silver. This amount is taxed at export at a rate of 1 in every 9 ounces. Now let us say that this merchant has been taxed for 200 兩 *liang*, but given compensation for part of his wares to the value of 10 貫 *guan* of 文 *wen*[1]. If we have money to the quantity of 72 貫 *guan* 500 文 *wen*, how much silver can we buy with it?

[1] ie part of the merchant's wares have been taken above the amount eligible for tax, for which he has been compensated at the market rate

Answer: 58 兩 *liang*

The 法 *Fa*: Set up the total amount of silver on the ground, and subtract a 9th portion, obtaining 192 兩 *liang*. Now we get the amount of silver required to meet the tax, and subtract this amount from the 200 兩 *liang* of silver taken in tax, leaving 8 as a multiplier, which we then use for the amount of money which we possess, giving 580 貫 *guan* as a result. The 10 貫 *guan* is used as a divisor, obtaining 58 兩 *liang*. Thus it is concluded.

$$\frac{1728\text{兩}}{9} = 192\text{兩}$$
$$200\text{兩} - 192\text{兩} = 8\text{兩}$$
$$8\text{兩} \cdot 72.5\text{貫} = 580\text{貫兩}$$
$$\frac{580\text{貫兩}}{10\text{貫}} = 58\text{兩}$$

The 草 *Cao*: 8 兩 *liang* of silver divides the 10 貫 *guan*, to obtain a price per 兩 *liang* of 1 貫 *guan* 250 文 *wen* as a divisor. Use it to divide our amount of money and we have our result.

$$\frac{10\text{貫}}{8\text{兩}} = \frac{1.25\text{貫}}{\text{兩}}$$
$$\frac{72.5\text{貫}}{\frac{1.25\text{貫}}{\text{兩}}} = 58\text{兩}$$

Question 2

二, 元雇車一兩, 議行道一千里, 載重一千二百斤, 與鈔七十五兩, 今添重三百六十斤, 行一千三百里, 問與鈔幾何?

答曰: 一百二十六兩七錢五分。

草曰: 元與錢七千五百, 乘今行道一千三百里, 得九百七十五萬, 又以今載重一千五百六十乘之, 得一百五十二億一千萬為實, 元行道一千里, 乘元載重一千二百斤得一百二十萬為法, 除之, 得今與脚錢, 合問。

2) Let us say one hires a cart to travel 1000 里 *li* carrying a weight of 1200

斤 *jin* costing 75 兩 *liang* in cash. Now let us add 360 斤 *jin* and travel 1300 里 *li*. How much will the new journey cost?

Answer: 126 兩 *liang*, 7 錢 *qian*, 5 分 *fen*.

The 草 *Cao*: Take the original 7500 錢 *qian* and multiply it by 1300 里 *li*, giving 9,750,000, now multiply again by the carried weight of 1560, giving a result of 15,210,000,000. Now multiply the original distance of 1000 里 *li* by the original load of 1200 斤 *jin* obtaining the divisor which we then use to divide our result. Thus we derive our delivery fee and so the question is answered.

$$\begin{aligned} 7500\text{錢} \cdot 1300\text{里} &= 9750000\text{錢里} \\ 9750000\text{錢里} \cdot 1560\text{斤} &= 15210000000\text{錢里斤} \\ 1000\text{里} \cdot 1200\text{斤} &= 1200000\text{里斤} \\ \frac{15210000000\text{錢里斤}}{1200000\text{里斤}} &= 12675\text{錢} \end{aligned}$$

Question 3

三, 元雇車一兩, 議行道一千里, 載重一千二百斤, 與鈔七十五兩. 今增重四百九十二斤, 與鈔六十七兩大錢八分, 行道幾何?

答曰: 六百四十里。

草日: 元行道一千 (里), 乘今與錢六千七百六十八文, 得六百七十六萬八千, 以元載重一千二百乘之, 得八十一億二千一百六十萬為實, 今載重一千六百九十二乘元與錢七千五百 (文), 得一千二百六十九萬, 為法除之, 合問.

3) Supposing one hires a cart for a journey of 1000 里 *li* carrying a weight of 1200 斤 *jin*, costing 75 兩 *liang*. Now let us add 492 斤 *jin* to the weight and change the fee to 67 兩 *liang* 6 錢 *qian* and 8 分 *fen*. How far is the journey?

Answer: 640 里 *li*

The 草 *Cao*: Take the original journey of 1000 里 *li* and multiply it by the

new amount of 6768 文 *wen*, giving 6,768,000, then multiply by the original load of 1200, obtaining 8,021,600,000 as the result. Now the load of 1692 is multiplied by the original price of 7500, giving 12,690,000, which is then used as the divisor for the result. Thus it is concluded.

$$1000\text{里} \cdot 6768\text{文} \cdot 1200\text{斤} = 8121600000\text{里文斤}$$
$$1692\text{斤} \cdot 7500\text{文} = 12690000\text{斤文}$$
$$\frac{8121600000\text{里文斤}}{12690000\text{文斤}} = 640\text{里}$$

Question 4

四, 元雇車一兩, 議行道一千里, 載重一千二百斤, 與鈔七十五兩, 今與鈔七十六兩五錢, 行一千七百里, 問載重幾何?

答曰: 七百二十斤。

草曰: 元載重乘元行道, 得一百二十萬, 以今與錢七千六百五十乘之, 得九十一億八千萬為實, 今行道一千七百乘元與錢七千五百, 得一千二百七十五萬為法除之, 合問.

4) Supposing one hires a cart for a journey of 1000 里 *li* carrying a weight of 1200 斤 *jin*, costing 75 兩 *liang* in paper money. Now if we pay 76 兩 *liang* 5 錢 *qian* to travel 1700 里 *li* how much is the weight?

Answer: 720 斤 *jin*.

The Cao 草: Take the original weight and multiply by the original distance, giving 1200000, now multiply it by the new price of 7650, giving a result of 9,180,000,000. Now take the distance of 1700 里 *li* and multiply it by the fee of 7500, giving 12,750,000 to use as a divisor for the result. Thus we obtain our answer.

$$1000\text{里} \cdot 1200\text{斤} \cdot 7650\text{文} = 9180000000\text{里斤文}$$
$$1700\text{里} \cdot 7500\text{文} = 12750000\text{里文}$$
$$\frac{9180000000\text{里斤文}}{12750000\text{里文}} = 720\text{斤}$$

Question 5

五, 今有七人八日淘金一十七錄, 今有二十一人一月淘金, 合得多少?

答曰: 七兩二十三銖二絫五黍.

法曰: 置元淘金一十七錄, 以今二十一人乘之, 又以三十日乘之, 得一萬七百一十錄為實, 以元七人乘八日得五十六為法, 除實得一百九十一銖二五黍, 以二十四約之為兩, 得七兩二十三銖二五黍, 合問,

草曰: 是五十六人一日得金一十七銖, 用人數除金, 得一人一日得金三絫二十八分絫之一, 却通分內子得八十五銖, 又三十日乘二十一人, 得六百三十頭位相乘, 得五萬三千五百五十, 却用分母二十八除之, 得合問,

5) Now let us say that 7 people spend 8 days panning for gold, and obtain 17 銖 *zhu*. If 21 people pan for gold for 1 month, how much gold do they obtain?

Answer: 7 兩 *liang* 23 銖 *zhu* 2 絫 *lei* 5 黍 *shu*.

The 法 *Fa*: Take the original amount of 17 銖 *zhu* and multiply it by the new number of 21 people, then multiply the result by 30 days, obtaining a result of 10710 銖 *zhu*. By multiplying the previous 7 people and 8 days we get 56 as a divisor. Dividing the result by the divisor, we get 191 銖 *zhu* 2 絫 *lei* 5 黍 *shu*. Arrange this result 24 to the 兩 *liang*, giving 7 兩 *liang* 23

銖 *zhu* 2 絫 *lei* 5 黍 *shu*. Thus we get our answer.

$$17\text{銖} \cdot 21\text{人} \cdot 30\text{天} = 10710\text{銖人天}$$
$$7\text{人} \cdot 8\text{天} = 56\text{人天}$$
$$\frac{10710\text{銖人天}}{56\text{人天}} = 191.25\text{銖}$$
$$\frac{191.25\text{銖}}{24} = 7.96875\text{兩}$$
$$7.96875\text{兩} - 7\text{兩} = .96875\text{兩}$$
$$.96875\text{兩} \cdot 24 = 23.23\text{銖}$$

The 草 *Cao*: If 56 people pan for gold for 1 day, obtaining 17 銖 *zhu*, use the number of people to divide the result, giving the amount obtained by one person's day of work as $3\ \frac{1}{28}$ 絫 *lei*. By multiplying by the denominator of the fraction we get 85 銖 *zhu*. By multiplying 30 days by 21 people, we obtain 630 to use as a multiplier[2], giving 53550, for which we now use 28 as a denominator[3]. Thus we have our answer.

$$\frac{17\text{銖}}{56\text{天}} = \frac{\text{銖}(3 + \frac{1}{28})}{10\text{天}}$$
$$28\text{銖}(3 + \frac{1}{28}) = 85\text{銖}$$
$$30\text{天} \cdot 21\text{人} = 630\text{人天}$$
$$630\text{人天} \cdot 85\text{銖} = 53550\text{人天銖}$$
$$\frac{53550\text{人天銖}}{28} = 1912.5$$
$$1912.5 - (7 \cdot 240) = 232.5$$

Question 6

六, 今有九人, 九日淘金一十八銖, 今三十人共淘金一斤, 問合用幾日?

答曰: 五十七日五分日之三,

[2]頭位相乘 - here is one of our hints that the reader is expected to be simultaneously doing the calculation using counting rods, the 頭位 (head position) indicating the result being operated upon

[3]Here 分母 *fen mu* is used to mean denominator, as opposed to 法 *fa* elsewhere

法曰: 置今淘金三百八十四銖, 以九人乘之, 又九日乘之, 得三萬一千一百四銖為實, 以元淘金一十八銖, 乘今三十人, 得五百四十為法, 以除其實, 得五十七日, 餘與法各以一百八約之, 得五分日之三, 合問,

6) Let us say that 9 people pan for gold for 9 days, obtaining 18 銖 *zhu*. Now 30 people together pan for gold and obtain 1 斤 *jin*. How many days did they pan for? Answer: 57 and $\frac{3}{5}$ days. The 法 *Fa*: Set up the amount of 384 銖 *zhu*[4] and multiply by 9 people, and then by 9 days, giving a result of 31140 銖 *zhu*. Take the original 18 銖 *zhu* and multiply by 30 people, giving 540 as a divisor[5]. Apply the divisor, giving a result of 57 days with a remainder, which when distributed into parts of 100 gives us 3 in 5. Thus we have our answer.

$$384\text{銖} \cdot 9\text{人} \cdot 9\text{天} = 31140\text{銖人天}$$
$$18\text{銖} \cdot 30\text{人} = 540\text{銖人}$$
$$\frac{31140\text{銖人天}}{540\text{銖人}} = \text{天}(57 + \frac{3}{5})$$

Question 7

七, 今有九人九日得金一十八銖, 今淘得金來五十七日五分日之

三, 得一斤, 問用人多少?

答曰: 三十人。

法曰: 置今淘金三百八十四銖, 以元用九人乘之, 又以九日乘之, 以分母五因之, 得一十五萬五千五百二十為實, 又置五十七日, 以分母五因, 內子三, 得二百八十八, 以元淘金一十八銖乘之, 得五千一百八十四為法, 除實得三十人, 合問,

7) Let us say 9 people over 9 days obtain 18 銖 *zhu*. Now the amount obtained over 57 and $\frac{3}{5}$ days is 1 斤 *jin*. How many people are panning for gold? Answer: 30 people. The 法 *Fa*: Set up the amount of panned gold

[4] 1 斤 *jin* = 16 兩 *liang* = 24 銖 *zhu*

[5] 法

at 384 銖 *zhu*, now multiply it by the original 9 people, then again multiply it by the 9 days, and then multiply it by the denominator of 5, to obtain 155520 as your result. Then again set up the 57 days and multiply that by the denominator of 5 and insert the 3 parts (the $\frac{3}{5}$ remainder), obtaining 288. Multiply by the original number of 18 銖 *zhu*, to obtain 5184 as the divisor, then divide the result to obtain 30 as the answer for the number of people. Thus we get our answer.

$$384\text{銖} \cdot 9\text{人} \cdot 9\text{天} \cdot 5 = 155520\text{銖人天}$$
$$18\text{銖}((57\text{天} \cdot 5) + 3) = 5184\text{銖天}$$
$$\frac{155520\text{銖人天}}{5184\text{銖天}} = 30\text{人}$$

Question 8

八) 今有拏手六十九人, 每五人四日破盤三箇, 今教閱來一月, 問用鏨多少?

答曰: 三百一十箇半。

法曰: 以三十日乘六十九人, 又以三箇乘之, 得六千二百一十為實, 以五人乘四日, 得二十為法, 實如法而一, 合問.

草曰: 是一人一日破鏨一分半也, 又六十九人乘三十日, 得二萬七百, 以一分半乘之, 合問。

8) Now let us say we have 69 craftsmen, for every 5 craftsmen working 4 days, 3 stones are carved. Now after a month of this, how many pieces have been crafted?

Answer:310 and $\frac{1}{2}$.

The Fa 法: Multiply the 69 people by the 30 days, then again multiply the result by the 3 produced pieces to obtain 6210 as the result. Multiply the 5 people by the 4 days to obtain 20 as a denominator. The answer is the result divided by this denominator, with a remainder of 1 (310). Thus we

have our answer.

$$69\text{人} \cdot 30\text{天} \cdot 3\text{盤} = 6210\text{人天盤}$$
$$5\text{人} \cdot 4\text{天} = 20\text{人天}$$
$$\frac{6210\text{人天盤}}{20\text{人天}} = (310 + \frac{1}{2})\text{盤}$$

The 草 *Cao*: It is one person-day to make a 分 *fen* and a half (0.15). Multiply the 69 people by 30 days to obtain 207002. Multiply this by a 分 *fen* and a half to obtain the answer.

$$\frac{3\text{盤}}{4\text{人} \cdot 5\text{天}} = 0.15\frac{\text{盤}}{\text{人天}}$$
$$69\text{人} \cdot 30\text{天} = 207002\text{人天}$$
$$207002\text{人天} \cdot 0.15\frac{\text{盤}}{\text{人天}} = \text{盤}(310 + \frac{1}{2})$$

Question 9

九, 今有省錢二百三十一貫文, 問得七十五陌錢多少?

答曰: 二百三十七貫一百六十文。

法曰: 置省錢以七十七乘之, 見足錢, 却以七十五除之, 合前問。

9) Now we have official money[6] to the value of 231 貫 *guan* of 文 *wen*. If 75 陌 *mo* are obtained how much money will we have?[7]

The answer: 237 貫 *guan* 160 文 *wen*. The 法 *Fa*: Set up the (amount held in) official money and multiply it by 77. See the sufficient amount of

[6]Here the term is 省陌 *sheng mo* which refers to the money being kept in the form of 陌 *mo* consisting of 77 文 *wen* each

[7]This is a question about unit conversion. If the 文 *wen* kept in 貫 *guan* of 77 陌 *mo* are converted to 貫 *guan* of 75 陌 *mo* then what amount will we have? Essentially it is asking the reader to convert from base 77 to base 75

money[8], and divide by 75, it is thus solved as above.

$$231 \cdot 77 = 17787$$
$$\frac{17787}{75} = 237.16$$

Question 10

十, 今有官庫帳管省錢與七十二陌錢, 共二百七十三貫七百五十文, 為年深索子爛斷, 共穿排得足陌錢二百六貫四百七十文, 問元本二色錢各多少?

答曰: 省錢一百八十七貫四百文, 七十二陌錢八十六貫三百五十文。

法曰: 置共管錢數, 以七十七乘之, 一百約之, 得二百一十貫七百八十七文五分, 內減了共排得錢餘有四貫三百一十七文五分為實, 又以七十二減七十七, 餘五文為法, 除之為百, 得八十六貫三百五十文, 為七十二陌錢, 以反減元管錢數, 其餘即省錢, 合問。

10) Now we have an official of stores who has both government 陌 *mo* and '72 陌 *mo*', with a combined total value of 273 貫 *guan* 750 文 *wen*. For the end of the year the string holding the money has rotted through. When the total amount is re-threaded as 'sufficient 陌 *mo*'[9], we end up with 206 貫 *guan* and 470 文 *wen*. The question is, how much did we have of each of the original kind of money?

Answer: The official money was 187 貫 *guan* 400 文 *wen*. The amount of the '72 陌 *mo*' was 86 貫 *guan* 350 文 *wen*.

The 法 *Fa*: Set up the total amount of the official's money, then multiply it by 77. Arrange it by 100s[10] obtaining 210 貫 *guan*, 787 文 *wen* and 5 分 *fen*. From this amount subtract the total amount we ended up with on the string[11], obtaining a remaining amount of 4 貫 *guan* 317 文 *wen* and five 分 *fen*. Then again use 72 to subtract from 77, giving a remainder of 5 文 *wen*

[8] That is, the money in the form of perfect 陌 *mo* consisting of 100s, and 貫 *guan* consisting of 1000s of 文 *wen*

[9] ie 陌 *mo* consisting of 100 文 *wen*

[10] ie arrange it into 'sufficient 陌 *mo*'

[11] lit - take it away from the inside

to use as a divisor for 100[12]. Obtain 86 貫 *guan* 350 文 *wen*. To make '72 陌 *mo*, subtract this amount from the original administered money. What is left is the 'government money'.

$$273 \cdot 77 + 750 = 210787.5$$
$$210787.5 - 206470 = 4317.5$$
$$77 - 72 = 5$$
$$\frac{4317.5 \cdot 100}{5} = 86350$$
$$206470 - ((86 \cdot 720) + 350) = 144200$$
$$\frac{144200}{770} = 187.\overline{27}$$

Question 11

十一, 今有麻麥共三十八石七斗二升, 總糶鈔五十九兩二錢四分九釐七毫, 麻每斗價鈔一錢八分五釐, 麥每斗價一錢三分六釐, 問麻麥之各數, 並該鈔幾何?

答曰: 麥二十五石二斗七升, 該鈔三十四兩三錢六分七釐二毫, 麻一十三石四斗五升, 該鈔二十四兩八錢八分二釐五毫,

法曰: 置麻麥共數, 以麻斗價乘之得七十一兩六錢三分二釐, 於數內減訖總糶鈔, 餘一十二兩三錢八分二釐三毫, 別置麻斗價, 於內減訖麥斗價, 餘四分九釐為法, 以法除餘鈔一十二兩三錢八分二釐三毫, 得麥數於共數內, 減訖麥數, 餘為麻數, 却以麥斗價乘麥數, 得麥總價, 麻總價做此.

11) Now we have hemp and wheat totaling 38 石 *dan*, 7 斗 *dou*, 2 升 *sheng*. It is exported together for money of a total of 59 兩 *liang*, 2 錢 *qian*, 4 分 *fen*, 9 釐 *li*, 7 毫 *hao*. Every 斗 *dou* of flax is sold for paper money worth 1 錢 *qian* 8 分 *fen*, 5 釐 *li*, every 斗 *dou* of wheat is sold for a total of 1 錢 *qian*, 3 分 *fen*, 6 li 釐 *li*. The question is, flax and wheat are named in what numbers, and how much money is spent on each?

[12]The explanation seems to skip a step here but the result of 4.3175 was supposed to have been multiplied by 100

Answer: 25 石 *dan*, 2 斗 *dou*, 7 升 *sheng* of wheat, the price of which is 34 兩 *liang*, 3 錢 *qian*, 6 分 *fen*, 7 里 *li*, 2 毫 *hao*. 13 石 *dan*, 4 斗 *dou*, 5 升 *sheng* of flax, the price of which is 24 兩 *liang*, 8 錢 *qian*, 8 分 *fen*, 2 釐 *li* 5 毫 *hao*.

The 法 *Fa*: Set up the full amount of both flax and wheat. Multiply it by the price of 1 斗 *dou* of flax to obtain 71 兩 *liang*, 6 錢 *qian*, 3 分 *fen*, 2 釐 *li*. Inside this number subtract the final amount which the grain is sold for leaving 123823 as a remainder. Separately set up the price of a 斗 *dou* of flax, and subtract the final price of a 斗 *dou* of wheat. The remainder is 4 分 *fen*, 9 釐 *li*, which we now use as a divisor. Use the divisor to reduce the remainder 123823, obtain the number for wheat from inside the combined number, and then subtract the number for wheat. The remainder is the number for flax. Multiply the number for wheat by the 斗 *dou* price of wheat to obtain the total money obtained for wheat. Multiply the remainder by the 斗 *dou* price of flax to get the total money obtained for flax.

$$3872 \cdot 185 = 716320$$
$$716320 - 592497 = 123823$$
$$185 - 136 = 49$$
$$\frac{123823}{49} = 2527$$
$$3872 - 2527 = 1345$$
$$2527 \cdot 136 = 343672$$
$$1345 \cdot 185 = 248825$$

Question 12

十二, 今有錢五百一十四貫七十六文, 糴到粟麥共八百一十一石五斗, 麥每斗七十二文, 粟每斗五十六文, 問粟麥各多少?

答曰: 麥三百七十三石四斗二升五合。粟四百三十七石八斗七升五合。

法曰: 下粟麥共數在地, 以麥斗價七十二文乘之, 得五百八十四貫一百三十六

文, 內減了粟錢數, 餘有七十貫六十文為實, 以粟麥斗價以少減多, 餘有一十六文為法, 除實, 得四百三十七石八斗七升五合為粟數, 反減其數, 餘者為麥數也, 乃合前問。

12) Now we have money to the total of 514 貫 *guan* 76 文 *wen*. We spend it on millet and wheat of a total 811 石 *dan* 5 斗 *dou*. Every 斗 *dou* of wheat is 72 文 *wen*, every 斗 *dou* of millet is 56 文 *wen*. How much are there of millet and wheat respectively?

Answer: 373 石 *dan*, 4 斗 *dou*, 2 升 *sheng*, 5 合 *he* of wheat. 437 石 *dan* 8 斗 *dou* 7 升 *sheng* 5 合 *he* of millet.

The Fa: Set out the total numbers of wheat and millet on the ground. Multiply it by the price per 斗 *dou* of millet (72 文 *wen*) to obtain 584 貫 *guan* 136 文 *wen*, then subtract the amount of money for millet, leaving 70 貫 *guan* 60 文 *wen* as a result. Take the per 斗 *dou* price of wheat and millet and subtract the smaller from the larger. The remaining 16 文 *wen* acts as the divisor. Reduce the result, obtaining 437 石 *dan*, 8 斗 *dou*, 7 升 *sheng*, 5 合 *he* as the amount of millet, if on the other hand this amount is taken off the result, the remainder is the amount of wheat. Thus the former question is answered.

$$\begin{aligned} 8115 \cdot 72 &= 584136 \\ 584136 - 514076 &= 70060 \\ 72 - 56 &= 16 \\ \frac{70060}{16} &= 4378.75 \\ 8115 - 4378.75 &= 3734.25 \end{aligned}$$

Glossary

兩 ***liang*** a unit of measurement for weights and coins, 16 of which make up a 斤 *jin* or catty. 1–5, 7, 11, 12, 14

分 ***fen*** $\frac{1}{10}$ of a 錢 *qian*, or in some cases a generic term for $\frac{1}{10}$. 3, 9–12, 14

升 ***sheng*** A measure of volume, used for grains, $\frac{1}{10}$ of a 斗 *dou*, or $\frac{1}{100}$ of a 石 *dan*. 11–13

合 ***he*** Measure of volume, $\frac{1}{10}$ of a 斗 *dou*. 13

文 ***wen*** A unit of coinage. 1, 2, 4, 9–11, 13, 14

斗 ***dou*** A measure of volume, $\frac{1}{10}$ of a 石 *dan*. 11–14

斤 ***jin*** A unit of mass which varied over time, equivalent to 596.8g in the *Yuan* period. 3, 4, 7, 13

毫 ***hao*** A measure of volume, used for grains, $\frac{1}{10}$ of a 釐 *li*. 11, 12

石 ***dan*** A measure of volume used for grains. 11–14

絫 ***lei*** Measure of weight equivalent to $\frac{1}{10}$ of a 銖 *zhu*. 5, 6, 15

貫 ***guan*** In theory a string of cash worth 1000 文 *wen* coins. In practice the actual amount could vary, as seen in questions 9 and 10. For example a 貫 *guan* made up of 10 陌 *mo* could come to 770 文 *wen* if the 陌 *mo* were 'government *mo*' worth 77 文 *wen*. 1, 2, 9–11, 13, 14

里 ***li*** A unit of distance, in this era equivalent to 442.5 meters. 2–4, 12

釐 ***li*** A measure of volume, used for grains, $\frac{1}{10}$ of a 分 *fen*. 11, 12, 14

銖 ***zhu*** Measure of weight equivalent to $\frac{1}{24}$ of a 兩 *liang*. 5–8, 14

錢 ***qian*** $\frac{1}{10}$ of a 兩 *liang*. 3, 4, 11–13

陌 ***mo*** A unit of coined money fixed to a string. The character derived originally from the character for 100, but the composition of a 陌 *mo* varied depending on the context. A 'Government 陌 *mo*' referred to a unit of 77 文 *wen*, but the coins could be reattached to new strings in different configurations, so that a 75 文 *wen* configuration was also possible. 9–11, 14

黍 ***shu*** Equivalent to $\frac{1}{10}$ of a 絫 *lei* in the context of a weight but also occurs in some problems in the literal meaning of the character as a type of millet. 5, 6