11.11优惠可以被预测吗?

用组合数给你「加鸡腿」

李永乐老师

看视频

Machine translation for your reference (unverified)

Hello everyone	各位同学大家好	**各位** (gè wèi) everybody; all (guests, colleagues etc); all of you.
I am Teacher Li Yongle	我是李永乐老师	**永乐** (yǒng lè) Yongle Emperor, reign name of third Ming emperor Zhu Di 朱棣 (zhū dì) (1360-1424), reigned 1403-1424, Temple name 明成祖 (míng chéng zǔ).
Double 11 this year comes earlier than previous years	今年的双11来得比往年更早一些	**双11** (shuāng shí yī) see 光棍节 (guāng gùn jié). **来得** (lái de) to emerge (from a comparison); to come out as; to be competent or equal to. **往年** (wǎng nián) in former years; in previous years.
Many students still play stable	很多同学发挥依然稳定	**发挥** (fā huī) to display; to exhibit; to bring out implicit or innate qualities; to express (a thought or moral); to develop (an idea); to elaborate (on a theme). **依然** (yī rán) still; as before. **稳定** (wěn dìng) steady; stable; stability; to stabilize; to pacify.
The final payment is very hot	尾款付得十分火热	**尾款** (wěi kuǎn) balance (money remaining due). **付** (fù) to pay; to hand over to; classifier for pairs or sets of things. **火热** (huǒ rè) fiery; burning; fervent; ardent; passionate.
Facing merchants with various offers	面对商家五花八门的优惠	**面对** (miàn duì) to confront; to face. **商家** (shāng jiā) merchant; business; enterprise. **五花八门** (wǔ huā bā mén) myriad; all kinds of; all sorts of. **优惠** (yōu huì) privilege; favorable (terms); preferential (treatment); discount (price).
Many students studied in advance	很多同学提前研究了起来	
Tell me if a kid	有一个小朋友就跟我说	**小朋友** (xiǎo péng yǒu) child.

He found a chicken drumstick activity for China Merchants Bank credit card	他发现了一个招商银行信用卡的加鸡腿活动	**招商** (zhāo shāng) to seek investment or funding; investment promotion. **鸡腿** (jī tuǐ) chicken leg; drumstick.
This event is quite interesting	这个活动还挺有意思的	
As long as you bind the China Merchants Bank credit card	就是只要你绑定了招商银行信用卡	**绑定** (bǎng dìng) binding (loanword); to bind (e.g. an account to a mobile phone number).
Whether using WeChat or Alipay	无论是用微信 支付宝	**支付宝** (zhī fù bǎo) Alipay, online payment platform.
Whether it's shopping or dining out	无论是购物还是出行用餐	**出行** (chū xíng) to set out on a long journey; to travel afar. **用餐** (yòng cān) to eat a meal.
(Single Pen) You can draw red envelopes and chicken legs if you brush over 18 yuan	(单笔)刷满18元就能抽红包加鸡腿	**刷** (shuā) to brush; to paint; to daub; to paste up; to skip class (of students); to fire from a job. **红包** (hóng bāo) money wrapped in red as a gift; bonus payment; kickback; bribe.
You can draw up to 100 times	最多可以抽100次	**最多** (zuì duō) at most; maximum; greatest (amount); maximal.
And there is a super prize of 11111 yuan	而且还有超级大奖11111元	**超级** (chāo jí) super-; ultra-; hyper-. **大奖** (dà jiǎng) prize; award.
This kid told me he didn't expect the super prize	这位小朋友就跟我说超级大奖他也不指望了	**这位** (zhè wèi) this (person). **指望** (zhǐ wàng) to hope for sth; to count on; hope.
Just want to ask under normal circumstances	就想问正常情况下	
How big is the chicken drumstick?	最大有可能会抽到多大的鸡腿呢	**有可能** (yǒu kě néng) possible; probable; possibly; probably; may; might. **多大** (duō dà) how big; how much; how old etc.
In order to study this problem	为了研究这个问题	
I did a test two days ago	前两天我还做了个测试	**测试** (cè shì) to test (machinery etc); to test (students); test; quiz; exam; beta (software).
I got 0.8 yuan, 1 yuan and 2 yuan chicken drumsticks.	分别抽到了0.8元 1元和2元的鸡腿	**分别** (fēn bié) to part or leave each other; to distinguish; difference; in different ways; differently; separately or individually.
Can we use these chicken drumsticks	我们能不能根据我抽到的这些鸡腿	
To estimate the maximum value of chicken legs	来估计鸡腿的最大值有多少呢	
The derivation of this problem is a bit complicated in mathematics	这个问题的推导在数学上有一点复杂	**推导** (tuī dǎo) derivation; to deduce. **有一点** (yǒu yī diǎn) a little; somewhat.

But the conclusion is very simple	但是结论非常简单	**结论** (jié lùn) conclusion; verdict; to conclude; to reach a verdict.
After mastering this method	掌握了这种方法之后	**掌握** (zhǎng wò) to grasp (often fig.); to control; to seize (initiative, opportunity, destiny); to master; to know well; to understand sth well and know how to use it; fluency.
Everyone can use this method to estimate the size of chicken legs	每一个人都可以用这种方法来估计鸡腿的大小	**大小** (dà xiǎo) dimension; magnitude; size; measurement; large and small; at any rate; adults and children; consideration of seniority.
Let's first talk about the historical source of this problem	我们首先来说一下这个问题的历史来源	**来源** (lái yuán) source (of information etc); origin.
We call this problem the German tank problem	这个问题我们叫它德国坦克问题	**德国** (dé guó) Germany; German. **坦克** (tǎn kè) tank (military vehicle) (loanword).
German tank problem	德国坦克问题	
This question is an example of real application in history	这个问题是在历史上真实应用过的一个例子	**历史上** (lì shǐ shàng) historical; in history. **真实** (zhēn shí) true; real. **应用** (yìng yòng) to use; to apply; application; applicable. **例子** (lì zi) case; (for) instance; example.
When talking about World War II	说二战的时候	**二战** (èr zhàn) World War II.
The Allies need to estimate how many tanks Germany can produce each month	盟军要估计德国每个月可以产多少辆坦克	**盟军** (méng jūn) allied forces. **产** (chǎn) to give birth; to reproduce; to produce; product; resource; estate; property.
Because at that time the tank was the overlord of the land, right?	因为那个时候坦克是陆上霸主对吧	**陆上** (lù shàng) land-based; on land. **霸主** (bà zhǔ) a powerful chief of the princes of the Spring and Autumn Period (770-476 BC); overlord; hegemon.
You can't beat you with more tanks	你坦克多打不过你	**打不过** (dǎ bu guò) unable to defeat; to be no match for sb.
That has to be estimated. How to estimate	那得估计 怎么估计呢	
It has two methods	它有两种方法	
The first method is intelligence	第一种方法就是情报	**情报** (qíng bào) information; intelligence.
He can send a lot of intelligence personnel	他可以派很多的情报人员	**派** (pài) clique; school; group; faction; to dispatch; to send; to assign; to appoint; pi (Greek letter Ππ); the circular ratio pi = 3.1415926; (loanword) pie. **人员** (rén yuán) staff; crew; personnel.

What British MI6	什么英国的军情六处	**英国** (yīng guó) United Kingdom 联合王国 (lián hé wáng guó); United Kingdom of Great Britain and Northern Ireland; abbr. for England 英格兰 (yīng gé lán). **军情六处** (jūn qíng liù chù) MI6 (British military intelligence agency).
American CIA penetrated into German occupation area to study	美国的CIA渗透到德国的占领区 去研究	**渗透** (shèn tòu) to permeate; to infiltrate; to pervade; osmosis. **占领** (zhàn lǐng) to occupy (a territory); to hold.
The intelligence department was placed inside the arsenal to see	情报部门安插到兵工厂里面去看	**部门** (bù mén) department; branch; section; division. **安插** (ān chā) to place in a certain position; to assign to a job; to plant; resettlement (old). **兵工厂** (bīng gōng chǎng) munitions factory.
How many tanks are left in each month	每个月剩下多少辆坦克	**剩下** (shèng xià) to remain; left over.
But except for the intelligence department	但除了情报部门以外	**以外** (yǐ wài) apart from; other than; except for; external; outside of; on the other side of; beyond.
There is another solution	还有一种方案	**方案** (fāng àn) plan; program (for action etc); proposal; proposed bill.
That is relying on mathematicians	那就是依靠数学家	**依靠** (yī kào) to rely on sth (for support etc); to depend on. **数学家** (shù xué jiā) mathematician.
In the course of combat	在作战的过程中	**作战** (zuò zhàn) combat; to fight.
The Allies will capture some German tanks	盟军会俘获一些德军的坦克	**俘获** (fú huò) to capture (enemy property or personnel); capture (physics: absorption of subatomic particle by an atom or nucleus). **德** (dé) virtue; goodness; morality; ethics; kindness; favor; character; kind. **军** (jūn) army; military; arms.
Or destroy some German tanks	或者摧毁一些德军坦克	**摧毁** (cuī huǐ) to destroy; to wreck.
And these tanks are numbered	而这些坦克它是有编号的	**编号** (biān hào) to number; numbering; serial number.
Some are numbers on the chassis	有一些是底盘上的编号	**有一些** (yǒu yī xiē) somewhat; rather; some. **底盘** (dǐ pán) chassis.
Gearbox number	变速箱的编号	**变速箱** (biàn sù xiāng) gearbox; transmission.
What number on the track	什么履带上的编号	**履带** (lǚ dài) caterpillar track (propulsion system used on bulldozers etc); (literary) shoes and belt.
We consider these numbers to be continuous	这些编号我们认为它是连续的	**连续** (lián xù) continuous; in a row; serial; consecutive.
1 2 3 4 up to the maximum	1 2 3 4 一直到最大值	
Then you pass the numbers of the captured tanks	那么你通过俘获的这些坦克的编号	

Can it be estimated	能不能估计出来	
What is the maximum number of this tank?	说这个坦克的最大编号是多少呢	
Mathematicians also have methods to estimate	数学家们也有方法去估计	
And the estimated results of these two methods are very different	而且这两种方法估计的结果差别很大	**差别** (chā bié) difference; distinction; disparity.
Intelligence agency estimates	情报部门估计	
How many tanks are produced in Germany on average every month?	德国每个月平均来讲有多少辆坦克生产呢	**平均** (píng jūn) average; on average; evenly; in equal proportions. **来讲** (lái jiǎng) as to; considering; for. **生产** (shēng chǎn) to produce; to manufacture; to give birth to a child.
About 1400	大约有1400辆	
This is estimated by the intelligence department	这是情报部门估计的	
And how many mathematicians estimate there are	而数学家们估计有多少辆呢	
Estimated to be 246	估计有246辆	
Very big difference	差别非常大	
Is from 1940 to 1942	是从1940年到1942年这一段时间里边	**里边** (lǐ bian) inside.
It is estimated that an average of 246 vehicles per month	估计平均每个月是246辆	
Finally decrypted after the war	最后战后终于解密了	**战后** (zhàn hòu) after the war; postwar. **解密** (jiě mì) to declassify; (computing) to decrypt; to decipher.
What is the actual situation?	那实际的情况又是如何呢	**如何** (rú hé) how; what way; what.
During this time, 245 German production tanks per month	在这段时间内德国生产坦克每个月245辆	
So you will find the results estimated by mathematicians	所以你会发现数学家们用数学估计出来的结果	
More useful than the top spy, right?	比最顶尖的间谍还要有用 对吧	**顶尖** (dǐng jiān) peak; apex; world best; number one; finest (competitors); top (figures in a certain field). **间谍** (jiàn dié) spy. **有用** (yǒu yòng) useful.
How do mathematicians do this	那数学家们是怎么做到这一点呢	**做到** (zuò dào) to accomplish; to achieve.

How can I pass the captured tanks	怎么能够通过俘获的几辆坦克	
You can estimate the total number of tanks	就可以估计出总共的坦克数量呢	**总共** (zǒng gòng) altogether; in sum; in all; in total.
This is the question we are going to study today	这就是我们今天要研究的问题	
So to study this	那么为了研究这件事	
We must first understand a little bit of mathematics	我们首先还得去了解一点数学知识	
This is when we were in high school	这就是我们在上高中的时候	**上高** (shàng gāo) Shanggao county in Yichun 宜春, Jiangxi.
A mathematical knowledge learned is called combinatorial number	学过的一个数学知识叫做组合数	**叫做** (jiào zuò) to be called; to be known as. **组合** (zǔ hé) to assemble; to combine; to compose; combination; association; set; compilation; (math.) combinatorial.
Then we have to review this number of combinations first	那我们要先把这个组合数再复习一下	
What is the number of combinations?	什么叫组合数呢	
There are n elements	就是有n个元素	**元素** (yuán sù) element; element of a set; chemical element.
Has n elements	有n个元素	
We take out m of them	我们取出其中的m个	**取出** (qǔ chū) to take out; to extract; to draw out.
How many methods does it have	它有多少种方法	
We call this method c(n,m)	这个方法数我们就叫它c(n,m)	
This is called the number of combinations	这就叫组合数	**这就** (zhè jiù) immediately; at once.
So how to calculate the number of combinations	那么组合数怎么计算呢	**计算** (jì suàn) to count; to calculate; to compute.
Let's give an example	我们举个例子	
For example, we have 1 2 3 4 5	比如说我们有1 2 3 4 5	
These 5 people	这5个人	**个人** (gè rén) individual; personal; oneself.
1 2 3 4 Let's talk about 4 people first	1 2 3 4吧 先说4个人	

We want to find 2 of these 4 people to participate in the singing competition	这4个人中我们想找2个人参加歌唱比赛去	**歌唱** (gē chàng) to sing.
How many ways do we have?	我们有多少种方法 对吧	
Then this is called c(4,2)	那这就叫c(4,2)	
Choose 2 of these 4 people	在这4个人中选2个	**中选** (zhòng xuǎn) to win an election; to get a position by passing the imperial exam.
Then you can choose 1,2 1,3 1,4 2,3 2,4 3,4	那你可以选1,2 1,3 1,4 2,3 2,4 3,4	
Is there a total of 6 methods?	是不是一共6种方法 对吧	
So c(4,2) is 6	所以c(4,2)就是6	
This is called m elements out of n elements	这就叫n个元素中取m个元素	
Give another example	再举个例子	
For example, there are 5 people	比如说有5个人	
We choose 3 people to participate in the composition contest	我们选3个人参加作文比赛	**作文** (zuò wén) to write an essay; composition (student essay).
How many ways	有多少种方法	
You are c(5,3)	你这就是c(5,3)	
For c(5,3), you can think	c(5,3)的话你可以想	
You choose 3 people to participate in the competition	你选3个人参加比赛	
Then he won't go with these two people, right?	那剩下这2个人他就不去 对不对	**对不对** (duì bù duì) right or wrong?; Is it right?; OK, yes? (colloquial).
So how many ways are there for 2 people left	所以有多少种剩下2个人的方法	
There are so many ways to select 3 people, right?	就有多少种选出3个人的方法 对不对	**选出** (xuǎn chū) to pick out; to select; to elect.
So we just choose two	那所以我们干脆就选两个	**干脆** (gān cuì) straightforward; clear-cut; blunt (e.g. statement); you might as well; simply.
Ok choose two leftovers	好的 选两个剩的	
The remaining two people can be 1,2 1,3 1,4 1,5	剩这两个人可以是1,2 1,3 1,4 1,5	
2,3 2,4 2,5 3,4 3,5 4,5	2,3 2,4 2,5 3,4 3,5 4,5	

So there are 10 ways to leave two people

所以剩下两个人的方法有10种

There are also 10 ways to select 3 people

选出3个人的方法也有10种

c(5,3) is equal to 10

c(5,3)等于10

等于 (děng yú) to equal; to be tantamount to.

This is the so-called number of combinations

这就是所谓的组合数

所谓 (suǒ wèi) so-called; what is called.

It's not difficult to understand

其实并不难理解

The number of combinations has some properties

组合数有一些性质

性质 (xìng zhì) nature; characteristic.

Let's give an example

我们举个例子

What is the property of the first combination number c(n,0) equal to

第一个组合数的性质c(n,0)等于多少

There are several ways to choose 0 people from n people

从n个人中选0个人有几种方法

That's not just one kind, no one chooses, right

那不就一种 谁也不选 对不对

How many ways are c(n,n)

c(n,n)有多少种方法

Choose n from n people

从n个人选n个

There is also a way, just select all

那不是也有一种方法 就全选

So both numbers are 1.

所以这两个数都是1

个数 (gè shù) number of items or individuals.

This is the first property

这是第一个性质

个性 (gè xìng) individuality; personality.

The second is the specific calculation

第二个就是具体计算

具体 (jù tǐ) concrete; definite; specific.

What is c(n,m) equal to

c(n,m)等于什么

It is equal to n×(n-1)×(n-2) multiplied until n-m+1

它等于n×(n-1)×(n-2）一直乘到n-m+1

That is to multiply the number of m, right?

也就是乘m个数 是吧

也就是 (yě jiù shì) that is; i.e..

Start from n and multiply it by m

从n开始往小了乘 乘m个数

Then the bottom is 1×2×3×

然后底下是1×2×3× 一直乘 也是乘m个数

底下 (dǐ xia) the location below sth; afterwards.

for example

举个例子

c(4,2) is what	c(4,2)就等于什么	
Equal to (4×3)/(1×2)	等于(4×3)/(1×2)	
The final count is 6	最后算完得6	
What is c(5,3) equal to	c(5,3)等于什么	
Equal to (5×4×3)/(1×2×3) equal to 10, right?	等于(5×4×3)/(1×2×3) 等于10 是吧	
This is an algorithm for the number of combinations	这就是组合数的一个算法	**算法** (suàn fǎ) arithmetic; algorithm; method of calculation.
What algorithm is there?	还有什么算法呢	
For example, n times c(n-1,m-1)	比如说n倍的c(n-1,m-1)	
It is equal to m times c(n,m)	它等于m倍的c(n,m)	
This is also a formula	这也是它的一个公式	**公式** (gōng shì) formula.
If you don't believe me, just try these numbers in the next generation, right?	你不信你就把这些数往里代试试 是吧	
We can prove it after the generation is over, we won't prove it	代完了之后就能证出来 咱就不证了	**完了** (wán le) to be finished; to be done for; ruined; gone to the dogs; oh no. **咱** (zán) I or me; we (including both the speaker and the person spoken to).
What else	还有什么呢	
And this is called c(n-1,m-1)+c(n-1,m)=c(n,m)	还有这叫做 c(n-1,m-1)+c(n-1,m)=c(n,m)	
Let's talk a little bit about this formula	这公式咱们可以稍微说道说道	**说道** (shuō dào) to state; to say (the quoted words).
Why is this	这是为啥	**为啥** (wèi shá) dialectal equivalent of 为什么 (wèi shén me).
What do you mean	啥意思呢	**啥** (shá) dialectal equivalent of 什么 (shén me); also pr. (shà).
That means you have many elements, you have n elements	就是说你有好多个元素嘛 你有n个元素	**就是说** (jiù shì shuō) in other words; that is. **好多** (hǎo duō) many; quite a lot; much better. **嘛** (ma) modal particle indicating that sth is obvious; particle indicating a pause for emphasis.
You have n elements	你有n个元素	
I said you get me m	我说你给我取m个	

Then I will ask you first, do you include this number one	那我先问你 你包含不包含这个一号
c(n,m) is m out of n elements, right?	c(n,m)就是n个元素中取m个 对吧
If you don't include this number one	如果你不包含这个一号
You just take m from n-1 elements	你就是从n-1元素中取m个
The number of methods is c(n-1,m)	那方法数就是c(n-1,m)
If you include this number one	如果你包含这个一号
What's the result	那有什么结果
If you include number one	你包含一号的话
You only need to take m-1 from the remaining n-1.	你只需要在剩下的n-1中取m-1就行了
Because there is one you have included	因为有一个你已经包含了
So this method number is c(n-1,m-1)	所以这个方法数就是c(n-1,m-1)
Can you understand?	大家能听明白吗
Is actually asking you	就是实际上就是问你
When taking m elements from n elements	从n个元素中取m个元素的时候
You can divide into two situations	你可以分两种情况
One situation is to include it, one situation is to not include it	一种情况就是包含它 一种情况是不包含它
If it is included, it is the number of the previous method	如果包含它就是前面这个方法数
Do not include it, just the following method number	不包含它就后面这个方法数
The two of them add up to this number, right?	它俩一加就是这个数 是吧

包含 (bāo hán) to contain; to embody; to include. **一号 (yī hào)** first day of the month; toilet; (slang) top (in a homosexual relationship).

实际上 (shí jì shàng) in fact; in reality; as a matter of fact; in practice.

Alright, let's stop here	好了 性质咱们就说到这	**说到** (shuō dào) to talk about; to mention; (preposition) as for.
Let's make a question below	下面咱做个题	
Say we talk about science and still do questions	说咱们讲科普还做题	**科普** (kē pǔ) popular science; popularization of science; abbr. of 科学普及.
Because of it	就是因为吧	
Our next question is related to this topic	我们后面的这个问题它跟这个题目有关	**面的** (miàn dī) abbr. of 面包车的士 (miàn bāo chē dī shì); minivan taxi. **题目** (tí mù) subject; title; topic. **有关** (yǒu guān) to have sth to do with; to relate to; related to; to concern; concerning.
So let's do this question	所以咱们把这个题做一下	
Say there is such a formula called c(k,k)+c(k+1,k)+c(k+2,k)	说有这么一个式子叫c(k,k)+c(k+1,k)+c(k+2,k)	**式子** (shì zi) formula; mathematical expression.
Keep adding, adding, adding, adding to c(N,k)	一直加 加加加 一直加 加到c(N,k)	
Ask you what is after simplification	问你这个东西化简之后是啥	
This is a college entrance examination question many, many years ago	这个是很多很多年前的一个高考题	**年前** (nián qián) before the end of the year; before the new year.
I've talked about this problem before when I talked about math	我以前讲数学的时候还讲过这道题	
Actually this question is not difficult	其实这道题并不难	
Let's take a closer look	咱们仔细看	
c(k,k) is to take k elements out of k elements. Several methods	c(k,k)就是k个元素中取k个 几种方法	
Kind right	一种 对吧	
Then c(k,k) can I write it as	那么c(k,k)我是不是可以把它写成是	
c(k+1,k+1) right	c(k+1,k+1) 对不对	
Because c(k+1,k+1) and c(k,k) are both 1.	因为c(k+1,k+1)和c(k,k)都是1	

Then add the second term c(k+1,k)

然后再加上第二项c(k+1,k)

加上 (jiā shàng) plus; to put in; to add; to add on; to add into; in addition; on top of that. **项** (xiàng) back of neck; item; thing; term (in a mathematical formula); sum (of money); classifier for principles, items, clauses, tasks, research projects etc.

Add the third item c(k+2,k) and keep adding

再加第三项c(k+2,k) 一直再加

三项 (sān xiàng) three items; three events; three terms; tri-; trinomial, ternary (math.); triathlon (abbr. for 三项全能).

The last item added is c(N,k)

加到最后一项是c(N,k)

Then we put the first two together

然后咱们把前两项合起来

Everyone, look at the first two items, the number n is the same.

大家看 前两项它底下这个数n是一样的

And the above number m is a difference of 1.

而上面这个数m它是差1的

上面 (shàng miàn) on top of; above-mentioned; also pr. (shàng mian).

Does it exactly satisfy this formula

是不是正好满足这个公式

满足 (mǎn zú) to satisfy; to meet (the needs of); satisfied; content.

n is the same

n是一样的

m is a difference

m是差一个数的

The final result is that we have to add one bit to this n

最后的结果是我们要把这个n加上一位

And m we take the larger one, right

而m我们取大的那个 是吧

We can use the above formula

我们可以利用上面这个公式

利用 (lì yòng) to exploit; to make use of; to use; to take advantage of; to utilize.

So this thing can be deformed again

所以这个东西又可以变形

变形 (biàn xíng) deformation; to become deformed; to change shape; to morph.

It becomes c(k+2,k+1)

它就变成了c(k+2,k+1)

变成 (biàn chéng) to change into; to turn into; to become.

That's why this bracket becomes the bottom one

就是这个括号变成底下这个了

括号 (kuò hào) parentheses; brackets.

And then continue to remain unchanged

然后后面继续保持不变

保持 (bǎo chí) to keep; to maintain; to hold; to preserve. **不变** (bù biàn) constant; unvarying; (math.) invariant.

Add c(k+2,k)

加c(k+2,k)

Then keep adding to the last c(N,k)

然后一直加 加到最后的c(N,k)

Then you see if you can put these two together again	然后你看是不是又可以把这两个合起来了	
Put these two together	把这两个合起来	
Let's use this formula again	我们再次利用这个公式 这么一顿折腾	**再次** (zài cì) one more time; again; one more; once again. **折腾** (zhē teng) to toss from side to side (e.g. sleeplessly); to repeat sth over and over again; to torment sb; to play crazy; to squander (time, money).
Can you see how many in the end	最后你能看到是多少吗	
It is equal to c(N+1,k+1)	它等于c(N+1,k+1)	
Got such a result, okay	就得出了这么一个结果 好吧	**得出** (dé chū) to obtain (results); to arrive at (a conclusion).
Maybe some classmates said I didn't understand this	也许有同学说这块我没看懂	**看懂** (kàn dǒng) to understand what one is reading or watching.
But it doesn't matter	不过没有关系	**没有关系** (méi yǒu guān xi) see 没关系 (méi guān xi).
Anyway, you know to put this big bunch	反正你就知道把这一大串	**反正** (fǎn zhèng) anyway; in any case; to come over from the enemy's side. **串** (chuàn) to string together; to skewer; to connect wrongly; to gang up; to rove; string; bunch; skewer; classifier for things that are strung together, or in a bunch, or in a row: string of, bunch of, series of; to make a swift or abrupt linear movement (like a bead on an abacus); to move across.
It can be simplified to the following formula, which is OK	它可以化简成底下这个式子就Ok了	
We can go down	我们就可以往下算了	**算了** (suàn le) let it be; let it pass; forget about it.
OK, let's use this number of combinations to study	好 我们就利用这个组合数来研究一下	
After we captured some tanks	我们俘获了一些坦克之后	
How do we use samples to estimate	如何我们用样本来怎么样 来估计	
To estimate the population	来估计总体	**总体** (zǒng tǐ) completely; totally; total; entire; overall; population (statistics).
Estimate the population with a sample	用样本估计总体	**样本** (yàng běn) sample; specimen.
You have to ask what is the distribution of this population first	你得先问问这个总体是什么样的分布	**什么样** (shén me yàng) what kind?; what sort?; what appearance?. **分布** (fēn bù) to scatter; to distribute; to be distributed (over an area etc); (statistical, geographic) distribution.

And our problem, we should say it is evenly distributed	而我们这个问题 我们应该说是均匀分布	**均匀** (jūn yún) even; well-distributed; homogeneous; well-proportioned (figure, body etc).
We think the tank number is 1 2 3 4 all the way to N	我们认为坦克的编号是1 2 3 4 一直到N	
There is only one for each number, right	每一个编号只有一辆 对吧	
When I go to capture German tanks	我再去俘获德国坦克的时候	
I also captured randomly	我也是随机俘获的	**随机** (suí jī) according to the situation; pragmatic; random.
So I just wanted to ask	所以我就想问问	
If this tank is numbered 1 2...	如果这个坦克它的编号分别是 1 2 …	
How much does it go until the N number	一直到多少呢 一直到N号	
Then I, the allied army, I captured a few vehicles casually, right?	然后我这个盟军我随便俘获了几辆 对不对	
Allied forces captured k vehicles	盟军我们俘获了k辆	
There are N German tanks	德国坦克一共有N辆	
I captured k vehicles	我俘获了k辆	
Obviously this k is smaller than N, right?	很显然这个k是比N小的 是不是	**显然** (xiǎn rán) clear; evident; obvious(ly). **小的** (xiǎo de) I (when talking to a superior).
Then its largest number	那么它的最大编号	
What is the largest possible number M	最大编号M可能是多少	
What is the largest possible number M	最大编号M可能是多少	
Let's first study the probability	我们首先来研究一下概率	**概率** (gài lǜ) probability (math.).
What probability? Let's think about it	什么概率呢 我们思考一下	**思考** (sī kǎo) to reflect on; to ponder over.
You captured k cars	就是你俘获了k辆汽车	
The largest number in these k cars is the probability of M, right?	这k辆汽车里边最大编号是M这个概率 是吧	

For example, you captured 10 cars, the maximum number is 50

你比如你俘获了10辆车 最大编号是50

What is the probability of this? This is called P_M

请问这概率有多大 这叫P_M

What is it

等于什么呢

Let's think about this P_M means the k cars you captured

咱们思考这个P_M表示你俘获的k辆

And the biggest change is M

而且最大变化是M的

How many ways do you capture k vehicles?

那你俘获k辆的方法数一共有多少种呢

There are N German tanks

德国坦克一共有N辆

I captured k of these N tanks

这N辆坦克中我俘获k辆

Is it just c(N,k) so many kinds

是不是就是c(N,k)这么多种

多种 (duō zhǒng) many kinds of; multiple; diverse; multi-.

So in so many situations

那么在这么多种情况下

In how many cases are the largest number captured by M?

有多少种情况俘获的最大编号是M呢

For example, this tank

比如说这辆坦克

This tank is the tank numbered M

这辆坦克就是编号为M的坦克

It is the largest number we captured

它就是我们俘获的最大编号

The remaining tanks we captured must be on its left

剩下我们俘获的那些坦克必须在它左边

So the number of methods should be in

所以方法数是不是应该是在

Find k-1 among M-1 tanks

在M-1辆坦克中找k-1辆

So many methods right

这么多种方法 对吗

This M should be equal to

这个M它应该是等于

k k+1 all the way to N, right

k k+1 一直到N 是吧

There are many possibilities for this M

这个M有很多种可能

Good M has so many possibilities

好 M有这么多种可能

Then on average

那么我们平均来讲

What is the largest number of these tanks you captured

你俘获的这些坦克中最大编号是多少

What is this called? This is called mathematical expectation

这个叫做什么呢 这个叫数学期望

期望 (qī wàng) to have expectations; to earnestly hope; expectation; hope.

Means that you may have captured

意思是说你可能俘获的

The maximum number of this tank is like 10

这个坦克最大编号是比如10

It could be 11 or it could be 12

也可能是11 也可能是12

It could be 13 or it could be 14 all the way to N, right?

也可能是13 也可能是14 一直到N 对吧

In each case there is a corresponding probability

每一个情况下都有一个相应的概率

相应 (xiāng yìng) to correspond; answering (one another); to agree (among the part); corresponding; relevant; appropriate; (modify) accordingly.

How to calculate mathematical expectations

数学期望怎么算呢

Is to use the largest number in each case

就是用每一种情况最大的编号

Multiply by its corresponding probability and then take the sum

再乘以它相应的概率 然后取加和

乘以 (chéng yǐ) (math.) multiplied with.

This is called mathematical expectation, right?

这个就叫数学期望是吧

And the value of M is still the same sentence

而且这个M的取值还是那句话

From k to N

从k开始一直取到N

We calculate the mathematical expectation

我们把数学期望给算出来

This is the most likely largest number in the captured tank, right?

这就是俘获坦克中最有可能的最大编号 对吧

Then let's count this number

然后我们来算一下这个数

This number is represented by E

这个数用E来表示

The mathematical expectation of capturing the maximum value of the tank number

俘获坦克编号的最大值的数学期望

It is equal to Σ M from k to N

它等于Σ M从k开始一直到N

Then M×c(M-1,k-1)/c(N,k)

然后 M×c(M-1,k-1)/c(N,k)

Then we can use the formula we just mentioned

然后我们可以用刚才我们说的这个公式

Make a deformation

做一个变形

What can it become

它就可以变成什么呢

Can become Σ M equals k all the way to N

可以变成Σ M等于k一直到N

Then k×c(M,k) and then divide by a c(N,k)

然后k×c(M,k)然后再除以一个c(N,k)

除以 (chú yǐ) (math.) divided by.

This is actually an additive form

这个实际上是一个加和的形式

形式 (xíng shì) outer appearance; form; shape; formality.

Then you can use this formula

然后你可以利用这个公式

Add this and change it, right?

再把这个加和给换一下 是吧

I will not write carefully

我就不仔细写了

Anyway, what is the final result

反正最后的结果它等于什么

Equal to k times c(N+1,k+1) divided by a c(N,k)

等于k倍的c(N+1,k+1)再除以一个c(N,k)

Then we put this formula

然后我们再把这个式子

Use this combination number formula to expand, right?

利用这个组合数公式展开 是吧

展开 (zhǎn kāi) to unfold; to carry out; to be in full swing; to launch.

What is the result of the final expansion?

最后展开完的结果是什么呢

Is k(N+1)/(k+1)

就是k(N+1)/(k+1)

We finally figured it out

我们终于算出来了

In other words, we can capture k tanks

也就是说 我们可以俘获k辆坦克

也就是说 (yě jiù shì shuō) in other words; that is to say; so; thus.

There are many possibilities for the maximum number of the k tanks

这k辆坦克的最大编号有很多种可能

But among the many possible maximum numbers

但是这个很多种可能的最大编号里

On average, the largest number is this value	平均来讲 最大编号是这个值	
It is related to the total number of tanks	它跟坦克的总数量有关	
It also has to do with the number of tanks you captured, right?	还跟你俘获坦克的数量有关 对不对	
Well, let's say that in the actual sample	那好 我们假如说 在实际的样本中	**假如** (jiǎ rú) if.
For example, we captured a lot of tanks	比如说我们就俘获了一大堆坦克	**堆** (duī) to pile up; to heap up; a mass; pile; heap; stack; large amount.
In the actual tank sample, the largest number is m	在实际的坦克样本中 这个最大的编号是m	
Then we think your highest number in the sample	那么我们认为 你在样本中的这个最大编号	
Is the most likely largest number	就是最有可能的最大编号	
What it actually happened is the most likely	它实际发生的这个就是最有可能的	
So I made this value directly equal to	所以我令这个值直接等于	**令** (lìng) to order; to command; an order; warrant; writ; to cause; to make sth happen; virtuous; honorific title; season; government position (old).
k×(N+1)/(k+1)	k×(N+1)/(k+1)	
So we can get	这样我们就可以得到	
Estimated value of the total number of tanks	坦克的总数量的估计值	
It is equal to m+(m-k)/k	它等于m+(m-k)/k	
This is a formula that we got after pushing for a long time	这个就是我们推了半天得出来的一个公式	**半天** (bàn tiān) half of the day; a long time; quite a while; midair.
Let's explain the formula	我们来解释一下这个公式里面的	
Explain the meaning of each letter again	每个字母的含义 再解释一遍	**字母** (zì mǔ) letter (of the alphabet). **含义** (hán yì) meaning (implicit in a phrase); implied meaning; hidden meaning; hint; connotation. **一遍** (yī biàn) one time (all the way through); once through.
This m is the maximum value of the sample	这个m就是样本的最大值 样本的最大值	
You say you captured 10 tanks	你比如说你俘获了10辆坦克	

The largest number is 55, so this m is 55, right	最大编号是55 那这个m就是55 对吧
This k is the number of samples	这个k就是样本的数量
Number of samples You captured 10 tanks	样本的数量 你俘获了10辆坦克
This k is 10	这k就是10
Then you calculate it like this, the final N	然后你把它这么一算 最后算出来的这个N
Is the maximum value of the overall estimate, right?	就是总体的估计的最大值 是吧
Overall maximum	总体的最大值
We estimate that the overall maximum is this N	我们估计总体最大值就是这个N
So we can use the maximum value of the sample	这样我们就可以用样本的最大值
To estimate the maximum value of the population	来估计总体的最大值了
This was verified during World War II, right?	那这个事在二战的时候已经验证过了 对吧
This is a very effective method	这是个非常有效的方法
So if we captured a tank, the number is 50	那么假如说我们俘获了一辆坦克 编号是50
Let's say 50+(50-1)/1=99	我们就说50+(50-1)/1=99
99 is the maximum possible value of the tank	99就是坦克的有可能最大值
If we capture two tanks	我们如果俘获了两辆坦克
If the maximum number is still 50	编号最大值还是50的话
That is 50+(50-2)/2	那就是50+(50-2)/2
The final estimated maximum value is 74, right	最后的估计最大值就是74 对吧
The more tanks you capture	你俘获的坦克数量越多
The more accurately you can estimate the maximum value of the population	你就越能够准确地估计出总体的最大值

验证 (yàn zhèng) to inspect and verify; experimental verification; to validate (a theory); to authenticate.

This method is actually very effective in life	这个方法在生活中其实很有效	
For example, you are in a class	比如说你在一个班级里面	**班级** (bān jí) class (group of students); grade (in school).
Randomly found the student number of a few classmates	随便发现了几位同学的这个学号	**学号** (xué hào) student ID number.
Then you can use the student ID of these people	那你就可以根据这几个人的学号	
To estimate how many people there are in their class, right?	来估计他们班一共有多少个人 对吧	
You tear out a few pages in a book to show others	你在一本书里边随便撕出几页纸给别人看	**撕** (sī) to tear.
Others can use these pages	别人可以根据这几页纸	
To estimate how many pages there are in this book, right?	来估计这本书一共有多少页 对不对	
So this method is actually quite effective	所以这个方法其实还是挺有效的	
We now use this method to estimate	我们现在就用这种方法来估计	
This China Merchants Bank credit card is the size of a chicken leg	这个招商银行信用卡它的这个鸡腿大小	
How big is the chicken drumstick of China Merchants Bank	招行的鸡腿到底有多大	
We know this chicken leg activity of China Merchants Bank	我们知道招商银行的这个鸡腿活动	
You (single pen) can smoke chicken drumsticks once for 18 yuan	你(单笔)刷满18元就可以抽一次鸡腿	
You can draw up to 100 times	最多可以抽100次	
But we don't know how big this biggest drumstick is	但是我们不知道这个最大鸡腿有多大	
We might as well make a bold assumption	我们不妨做一个大胆的假设	**不妨** (bù fáng) there is no harm in; might as well. **大胆** (dà dǎn) brazen; audacious; outrageous; bold; daring; fearless. **假设** (jiǎ shè) to suppose; to presume; to assume; supposing that ...; if; hypothesis; conjecture.

Suppose the chicken leg is drawn from this prize pool	假设抽的这个鸡腿是从这个奖池中	**池** (chí) pond; reservoir; moat.
Randomly selected	随机抽取出来的	**抽取** (chōu qǔ) to extract; to remove; to draw (a sales commission, venom from a snake etc).
The probability of each amount appearing is equal	每一个金额出现的概率都相等	**金额** (jīn é) sum of money; monetary value. **相等** (xiāng děng) equal; equally; equivalent.
Then its distribution is a uniform distribution	那这样一来它的分布就是一种均匀分布	**这样一来** (zhè yàng yī lái) thus; if this happens then.
It's similar to this German tank problem	就类似于这个德国坦克问题了	**类似** (lèi sì) similar; analogous.
So we can use the size of the chicken legs	于是我们就可以通过抽出来的鸡腿大小	
To estimate the maximum value of the overall drumstick	来估计总体鸡腿的最大值	
Let's make a comparison	我们来做一个比较 那大家看	
If we smoked chicken legs	假如说我们抽的鸡腿	
Its number as the first column is k, right	它的次数作为第一列就是k 对吧	**次数** (cì shù) number of times; frequency; order number (in a series); power (math.); degree of a polynomial (math.). **作为** (zuò wéi) one's conduct; deed; activity; accomplishment; achievement; to act as; as (in the capacity of); qua; to view as; to look upon (sth as); to take sth to be.
Then the size of your sample or chicken drumstick	然后你这个样本或者说抽的鸡腿大小	
The size of this chicken leg is the second column	这个鸡腿的大小 样本 我们作为第二列	
Its unit is minutes	它的单位是分	**单位** (dān wèi) unit (of measure); unit (group of people as a whole); work unit (place of employment, esp. in the PRC prior to economic reform).
Because the smallest interval is minutes	因为它最小的这个间隔是分吗	**间隔** (jiàn gé) compartment; gap; interval; to divide.
And its largest sample	然后它的这个最大的样本	
Or the biggest chicken drumstick I pulled out	或者说最大的我抽出来的鸡腿	
Which is the m here just now	也就是刚才我们这里边的m	
This m is the maximum value in the sample, right	这m是样本中的最大值 对吧	

Then what do we estimate by these three numbers	那然后我们通过这三个数来估计什么呢
Let's estimate the maximum value of this population	我们来估计这个总体的最大值
The biggest drumstick in the prize pool The biggest drumstick in the prize pool	奖池里的最大鸡腿 奖池中的最大鸡腿
This is called N	这个就叫N
Is similar to the tank we captured	就类似于我们通过俘获的坦克
To estimate the largest tank	来估计最大坦克一样
This unit is divided	这个单位都是分
We calculate this way	我们按这种方法来算
If I smoke for the first time	假如我抽的第一次的时候
I found out that I got an 80-point chicken leg	我发现我抽中了一个80分的鸡腿
The biggest drumstick is 80 points, right?	那最大的鸡腿就是80分 对不对
Then I bring this k and m into this formula	然后我把这个k和m我带入到这个公式里去
80+(80-1)/1	80+(80-1)/1
The result is 159	结果是159
So I estimate that the biggest chicken leg in the prize pool is 159 points	所以我估计奖池中的最大鸡腿就是159分
I can estimate it just once	就抽一次我就能估计出来
If I smoke twice	那如果我抽了两次
There are two chicken drumsticks when I smoke it twice	抽两次的时候这个鸡腿有两个
One is 80 points and the other is 100 points 1 yuan	一个是80分 还有一个是100分 1块钱的
Then the biggest chicken thigh in these two is 100 points	那么这两个里边最大的鸡腿是100分的
I pass this 100 points and twice I can calculate	我通过这个100分和两次我就可以计算出来

第一次 (dì yī cì) the first time; first; number one.

抽中 (chōu zhòng) to win (a prize in a lottery).

The biggest chicken leg N in the prize pool may be worth it	奖池中最大鸡腿N的可能值了	
Use 100+(100-2)/2	用100+(100-2)/2	
The result is 149 points	结果是149分	
If I smoked chicken thighs three times	如果我抽了三次鸡腿	**三次** (sān cì) third; three times; (math.) degree three, cubic (equation).
These three chicken legs are 80 100 and 200	这三次鸡腿分别是80 100和200	
Smoked a two yuan	抽了一个两元的	
Isn't the biggest drumstick 200 points at this time?	那这个时候最大鸡腿不是200分了嘛	
I then substitute 200+(200-3)/3	我再代入 200+(200-3)/3	**代入** (dài rù) to substitute into.
Finally got 266	最后得到266	
This is the biggest drumstick I estimate	这个就是我估计的最大鸡腿	
If i smoke 4 times	如果我抽了4次	
Draw 4 times, for example, we are 80 100 200	抽了4次比如说我们是80 100 200	
Draw another 100 for the 4th time	第4次又抽了个100	
So in this way, we draw a maximum of 200 points	所以这样一来我们就抽中了最大值是200分	
But we smoked 4 times	但是我们抽了4次	
So one more time than before	所以比刚才多一次	
Let's substitute this formula	我们再代入这个公式	
200+(200-4)/4	200+(200-4)/4	
The final result is 249 points	最后算出来结果249分	
249 points is 2 yuan 4 gross 9	249分就2块4毛9	
If we estimate that we are not far from ten	如果我们这个估计八九不离十的话	**八九不离十** (bā jiǔ bù lí shí) pretty close; very near; about right.
Then you draw 100 times if you are lucky	那么你抽100次如果运气特别好	**运气** (yùn qi) luck (good or bad).
If you draw the biggest drumstick every time	每次都抽中最大鸡腿的话	**每次** (měi cì) every time.

You might get back more than 200 yuan, right?

你没准可以拿回到200多块钱 是不是

Of course, we are just building on a uniformly distributed

当然了我们这只是建立在一个均匀分布的

建立 (jiàn lì) to establish; to set up; to found.

Based on the model

模型基础之上

模型 (mó xíng) model; mold; matrix; pattern. **之上** (zhī shàng) above.

But in fact, a policy given by China Merchants Bank says

但事实上招行给出的一个政策是说

事实上 (shì shí shàng) in fact; in reality; actually; as a matter of fact; de facto; ipso facto. **政策** (zhèng cè) policy.

The smallest chicken drumstick with full 18 yuan is 0.16 yuan

刷满18元最小的鸡腿是0.16元

And the biggest drumstick is 11,111 yuan

而最大的鸡腿是11111元

So we don't actually know what kind of model it is

所以我们其实并不清楚它是一个什么样的模型

不清楚 (bù qīng chu) unclear; not understood; currently unknown.

To distribute this chicken thigh for everyone

去给大家分配这个鸡腿的

分配 (fēn pèi) to distribute; to assign; to allocate; to partition (a hard drive).

But there is always a dream, if it comes true

不过梦想总还是要有的 万一实现了呢

梦想 (mèng xiǎng) (fig.) to dream of; dream. **有的** (yǒu de) (there are) some (who are...); some (exist). **万一** (wàn yī) just in case; if by any chance; contingency. **实现** (shí xiàn) to achieve; to implement; to realize; to bring about.

Some students might say

也有同学可能会说

Double 11 simply can't buy so many things

双11根本买不了这么多东西

根本 (gēn běn) fundamental; basic; root; simply; absolutely (not); (not) at all. **不了** (bù liǎo) unable to; without end.

How can it be done with 100 pens?

怎么可能刷满100笔呢

So this chicken thigh is not sincere enough

所以这个鸡腿给的不够诚恳

不够 (bù gòu) not enough; insufficient; inadequate. **诚恳** (chéng kěn) sincere; honest; cordial.

Let's calculate an account

我们来算一笔账

账 (zhàng) account; bill; debt.

According to some company surveys

根据一些公司的调查

The average monthly consumption of the subjects they surveyed is 4800 yuan

他们调查的对象中平均月消费是4800元

对象 (duì xiàng) target; object; partner; boyfriend; girlfriend. **消费** (xiāo fèi) to consume; to spend.

61% of the 4,800 yuan is paid by third parties

这4800元中有61%都是通过第三方支付

支付 (zhī fù) to pay (money).

Which is carried out by WeChat Alipay	也就是微信支付宝进行的	
Another 23% is done by bank card credit card	还有23%是通过银行卡信用卡进行的	**银行卡** (yín háng kǎ) bank card; ATM card.
Only 14% are transacted through cash	只有14%是通过现金进行交易的	**进行交易** (jìn xíng jiāo yì) to carry out a transaction.
According to statistics from the Ministry of Industry and Information Technology	而根据工信部的统计	**工信部** (gōng xìn bù) Ministry of Industry and Information Technology (abbr). **统计** (tǒng jì) statistics; to count; to add up.
There are about 1 billion mobile payment users in China	中国的移动支付用户大概有10亿人	**移动** (yí dòng) to move; movement; migration; mobile; portable. **用户** (yòng hù) user; consumer; subscriber; customer.
In 2019, a total of 1.22 trillion pens were made	2019年的时候一共刷了1.22万亿笔	
If every person is averaged every month	如果平均到每一个人每一个月的话	
It happened to be 100 strokes	刚好是刷满100笔	**刚好** (gāng hǎo) just; exactly; to happen to be.
Now we buy breakfast and take a taxi in our daily life	现在我们每天的生活中买早餐 打车	**早餐** (zǎo cān) breakfast. **打车** (dǎ chē) to take a taxi (in town); to hitch a lift.
Pay utility bills, pay phone bills	交水电费 交电话费	**水电** (shuǐ diàn) hydroelectric power; plumbing and electricity.
Are you using online payment all the time?	是不是每时每刻都在使用着网络支付呢	**每时每刻** (měi shí měi kè) at all times; at every moment. **网络** (wǎng luò) network (computing, telecommunications, transport etc).
And this activity of adding chicken legs	而这个加鸡腿的活动	
From October 20th to November 30th	是从10月20号到11月30号	
So brushing 100 pens is actually not a problem at all	所以刷满100笔其实根本不是事儿	**事儿** (shì r) one's employment; business; matter that needs to be settled; (northern dialect) (of a person) demanding; trying; troublesome; erhua variant of 事 (shì).
And the meaning of this activity is to say	而且这个活动的意思是说	
As long as you bind a China Merchants Bank credit card for payment	只要你绑定了招商银行信用卡进行支付	
No matter if you used WeChat or Alipay before	那无论前面你是使用了微信 支付宝	

Or whether you are shopping or taking a taxi to eat

或者无论你是购物 还是打车吃饭

As long as (single pen) brush up to 18 yuan, you can get cash back

只要(单笔)刷满18元 你都可以笔笔返现

返 (fǎn) to return (to).

For local tyrants

对于土豪来讲

土豪 (tǔ háo) local tyrant; local strong man; (slang) nouveau riche.

You only need to split a large consumption into several small consumptions

你只要把一个大的消费拆成几个小笔的消费

拆 (chāi) to tear open; to tear down; to tear apart; to open. **几个** (jǐ ge) a few; several; how many.

For ordinary people, lunch costs less than 18 yuan

而对于普通人午餐费用18元都不到的

普通人 (pǔ tōng rén) ordinary person; private citizen; people; the person in the street. **午餐** (wǔ cān) lunch; luncheon. **不到** (bù dào) not to arrive; not reaching; insufficient; less than.

A hard year

辛苦了一年

May wish to add two poached eggs to every meal for yourself this month

不妨在这个月给自己每一餐加两个荷包蛋

餐 (cān) meal; to eat; classifier for meals. **荷包蛋** (hé bāo dàn) poached egg; egg fried on both sides.

Add another chicken leg

再加一个鸡腿

Maybe this chicken drumstick can still be waived

兴许这个鸡腿还是可以免单的

兴许 (xìng xǔ) perhaps.

If you like my video

大家如果喜欢我的视频

视频 (shì pín) video.

You can subscribe to me in the YouTube account Teacher Li Yongle

可以在YouTube帐号李永乐老师里订阅我

帐号 (zhàng hào) account number.

Click on the little bell to get updated information the first time

点击小铃铛可以第一时间获取更新信息

铃铛 (líng dang) little bell. **第一时间** (dì yī shí jiān) in the first moments (of sth happening); immediately (after an event); first thing. **更新** (gēng xīn) to replace the old with new; to renew; to renovate; to upgrade; to update; to regenerate.