Management Accounting
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Lecture 34: Material Variance - III

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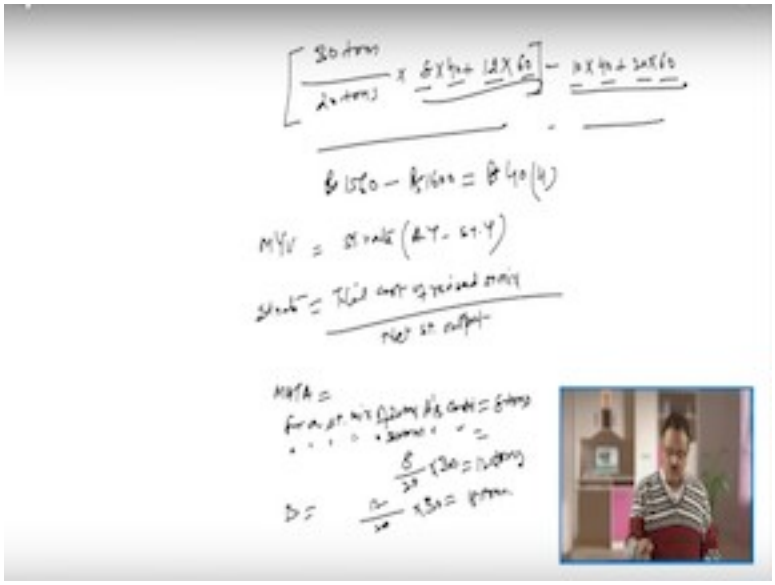

Welcome students, so in the previous class I was doing this third problem and we had calculated four variances material cost variance, material price variance, material usage variance, and material mix variance, and now I will deal with the problem of material yield variance, right. MYV, material yield variance so material yield variance as I told you the formula is standard rate into actual yield minus standard yield.

Actual yield minus standard yield, so what the formula is? standard rate into actual yield minus standard yield. So it means we don't know what is the standard rate, we have to calculate, right because is the standard cost of standard output divided by the net standard output so for this reason we have to calculate this rate, so for calculating the rate we will have to now revise the standard so if you calculate this, so for this calculating the rate standard rate, we will have to do some adjustment, some updations, some upscaling of the standards.

Actual yield it is given to us that is 26.5 and standard yield is you talk about the input, input is how much? Input given to this system is, or this manufacturing process the input given is something like 30 units and the outputs standard expected was 27.

So actual is 26 and the standard is 27, but the standard rate for calculation of the standard rate we will have to do something. So let us learn how to calculate the standard rate? Standard rate, so how we calculate the standard rate the formula here is total cost, total cost of revised standard mix divided by total cost of revised standard mixed divided by net standard output, net standard output, right, so total cost of revised standard mix you will have to calculate the total cost of revised standard mix, to calculate the total cost of revised standard mix, next standard output finally we will have to take, so if you calculate the standard cost of revised standard mix we will calculate for the materials, two materials.

First is the material A, and how much it will be for the material A, you can say how can you calculate now the say standard? That you have to scale the standards so how can you upscale the standard for we are upscaling the standard now for the material A.

So in case of the material A, I will right here like that therefore a standard mix of how many? For standard mix of 20 tons, A's contribution is, contribution is equal to how much, 8 tons. For standard mix of how many tons? For standard mix of I am writing here for standard mix of how many turns? 20 tons. For standard mix of 20 tons A's contribution is 8 then for a standard mix of you can say how much for standard mix of 30 tons. A's contribution is how much? A's contribution is going to be 8 by 20 into is going to be 30, so it is going to be how much, 12 tons, right.

And is the similar case of the B is going to be how much it is going to be 12 divided by 20 into 30, so it is going to be the total amount is 18 tons. We have found out, is the 18 tons.

Now we will find out in this case the standard cost of must we have calculated now the quantity, the revised quantity we have calculated that on the basis of the standard we have the, on the basis of the actual we have upscale the standard and we have re worked out the proportion of the actual and the standard.

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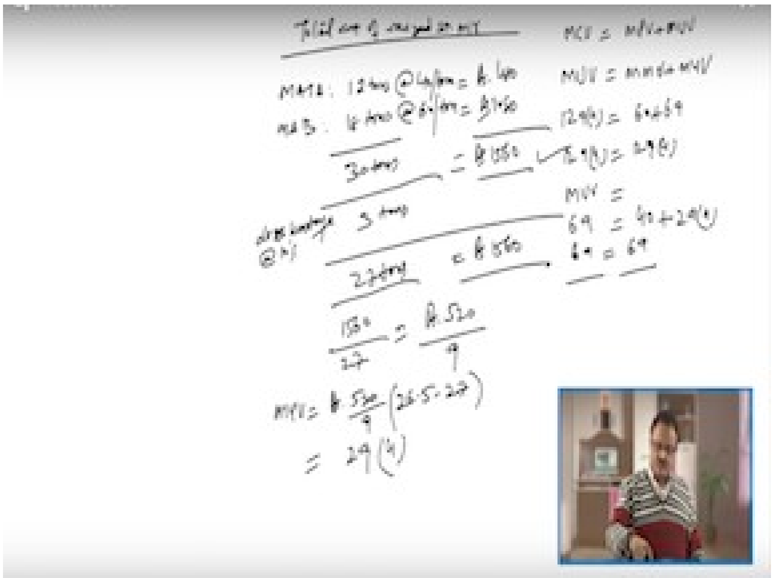
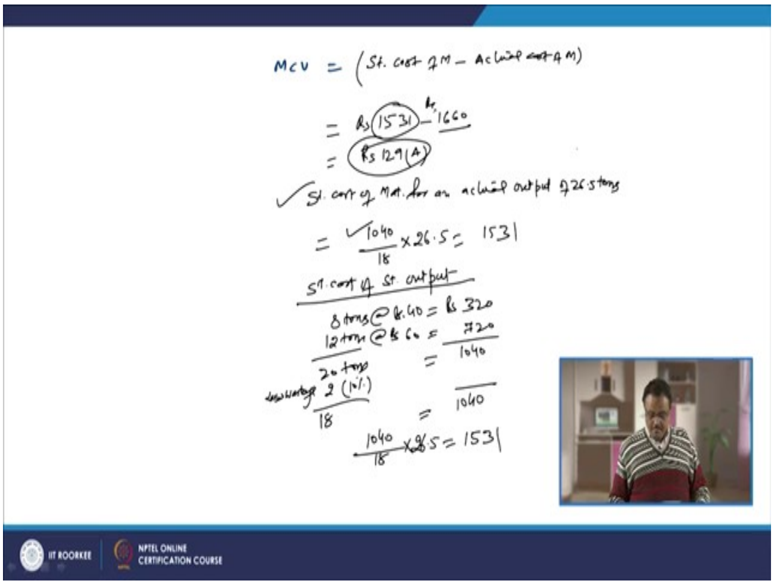

MCV = MPV + MUV
MUV = MMV + MYV
129 (A) = 60 + 69
129 (A) = 129 (A)
MUV =
69 = 40 + 29 (A)
69 = 69
MYV = Rs 520/9 (26.5 – 27)
= 29 (A)


MCV = (St. cost of M – Actual cost of M)
= Rs 1531 – Rs 1660
= Rs 129 (A)
St. cost of Mat. for an actual output of 26.5 tons
= 1040/18 x 26.5 = 1531
St. cost of St. output
8 tons @ Rs 40 = Rs 320
12 tons @ Rs 60 = 720
20 tons = 1040
wastage 2 (10%)
18 = 1040
1040/18 x 26.5 = 1531
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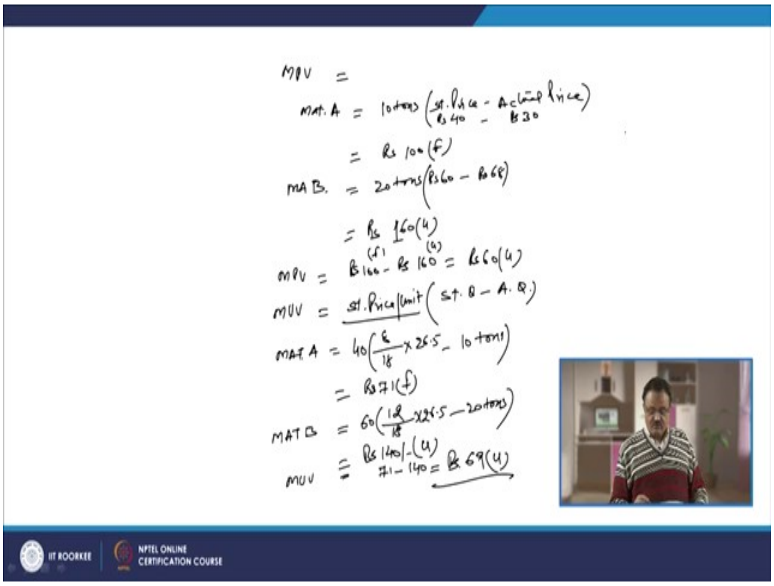
MPV =
MAT. A = 10 tons (St. Price – Actual Price)
Rs 40 – Rs 30
= Rs 100 (F)
MAT B. = 20 tons (Rs 60 – Rs 68)
= Rs 160 (A)
MPV = Rs 100 (F) – Rs 160 (A) = Rs 60 (A)
MUV = St. Price/Unit (St. Q – A. Q.)
MAT A = 40 (6/18 x 26.5 – 10 tons)
= Rs 71 (F)
MAT B = 60 (12/18 x 26.5 – 20 tons)
= Rs 140/- (A)
MUV = 71 – 140 = Rs 69 (A)
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So in this case if you calculate this variance now for calculating the variance total cost of revise the standard mix we have to calculate now this is the total cost of revised standard mix total cost of revised standard mix is going to be how much? Material A is going to be, material A 12 tons. 12 material A is going to be how much 12 tons at the rate of rupees, material A at the rate of rupees 40, per ton is going to be how much is going to be? 40 into 12 is rupees 480. And material B is equal to how much? For the material B it is going to be 18 tons at the rate of rupees what is the cost? Here it is 60 per ton, so it is going to be how much? Rupees 1080, yes.

So it is the standard cost of revised standard mix is going to how much this is for 30 tons what is the cost here it is going to be 1560 rupees. 1560, so this is the standard cost of revised standard mix revised standard mix is 30 tons, revised standard cost is 1560 and now we will have to find out the, so out of this we have to find out the standard rate, so you, what you have do here is less wastage. So wastage is at the rate of how much? 10 percent. So this wastage is at the rate of 10 percent is equal to how much 30 minus 3 tons.

The price is going to, the cost is going to remain the same, so this is going to be how much? It is 27 tons. 3 tons we cannot put the cost here so I will remove the cost, this is not, so it is less wastage so it is finally going to be how much? This is going to be 27 ton and the total cost is 1560, which is the 1560. So now it is a standard cost of revised the standard mix so what is that 1560 divided by net standard output is 27 units and if you solve this it will come out as something like it is not evenly divisible should come out something like 520 divided by 9.

This rate will become as rupees 520 divided by 9, so now you can easily calculate the material yield variance because all the information is available with us this is a standard rate, so the standard at which is we are going to use here is rupees 520 divided by 9 into what is the actual output? 26.5. What was the standard? 27, so if you calculate this it comes off as 29 unfavorable.

This variance works out as 29 unfavorable now lets apply the check here, what was the material cost variance it is equal to material price variance plus material usage variance, right, so and then we have to go for the second thing is material usage

variance is equal to material mix variance plus material yield variance, okay. So what is the cost variance? If you look at the material cost variance.

We have already calculated the material cost variance so how much is the material cost variance, material cost variance here it is something like 129 adverse, 129 adverse it is material cost variance 129 unfavorable. And what was the material price variance? Material price variance was rupees 160 and for the one and one for the this is 100, so this is, what is the variance here, it is calculated 60 unfavorable and what was the material usage variance 69 unfavorable.

So it is 129 and 60 plus 69 both are unfavorable so you can call it as 129 unfavorable is equal to 129 unfavorable this is the check is confirmed so you can say whatever the cost you have calculated, material cost variance is equal to 129 unfavorable and then it that is equal to the sum of material price variance and material usage variance which is 129 unfavorable.

Similarly talk about the material usage variance what is the material usage variance, let's go back, if you look at the material usage variance it is ultimately we have calculated the material usage variance, this is a mix variance that we have calculated and then we, it is the material usage variance, material usage variance for everything was, I think the 100, this was 60, material usage variance if you check it 69 adverse.

This is 69 adverse and what is equal to yield and mix, so what is material mix variance we have calculated the material mix variance already this is 40 favourable and this variance is how much? This is again the yield variance we have calculated is, here mix variance was how much 220 unfavorable and then plus it is 29 again unfavorable, material mix variance is also unfavorable and the material yield variance is also unfavorable so both the variance is being unfavorable you can find out that 69 is equal to 69, so it mean you can confirm that all the five variances we have calculated till now are correct.

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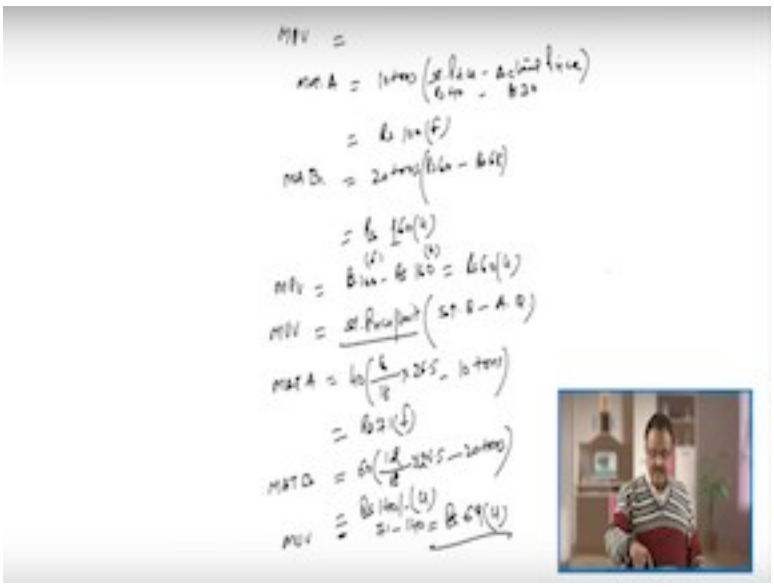

All the five variances we have calculated till now are correct and there is no doubt about that. Now we will have to if we go for analyzing this kind of the situation and this kind of the data if you want to find out you can say think here about, for example we talk about what is a material cost variance? 129 adverse. If you look at the 129 adverse the reason for this negative variance is, that when you talk about the input and output, so we have already decided that our wastage will be 10 percent and if you give any input minus 10 percent should be the output.

But actually we saw that has got affected not very say you can call it significantly but to some extent it has got affected and because of that reason all your variances have become negative mostly most of the variances are negative so in that case we have to find out the reason for that why the output has come down? The expected output was 27 units total input minus 10 percent wastage but actually it has come up not very seriously not very significantly but it has come down by simply half of the unit so it is not 27 but 26.5.

So when you revise the standard everything in the light of 26.5 the actual output standard cost also be changed, then the say your mixed also we have to revise and then we have to similarly we have to go for the yield also so we have to calculate the standard, so once you revise all the standards in the light of the actual output we found out there most of the variances are negative unfavorable and finally material

cost variance is unfavorable then you are finally you can say the price was also not favourable and your usages is certainly, quantity variance is unfavorable.

Mix is again unfavorable and the yield is also unfavorable so most of the variances have a become unfavorable because we have not reduce the quantity of input as per the standard because if the output is coming down so your input should also come down input is we are taking a standard, output is actual, when you compare these two there is a some effect on the production or the output and that affect we have to find out why it has come up negatively? Why the output has not mean as per the standard? After adjusting for the variance wastages and one should check this reason for this we can make sure the next time no wastages will be there and whatever is the standard input and what is a standard expected output after adjusting the wastage that will be available, right.

So this was the case which number one, two-three things we did here; number one we calculate all the five variances. Second problem we did was we address the issue of revising the standards in the light of actual output and third thing we learned in this case was that how to deal with the situation of, say when there is a wastage of the material so and when the standard and actual outputs are not same and there is some variance, some stages or some differences because of the wastages so how to deal with that wastage?

So now the allowed wastage is given to us already, actual may be more than that that is why you are output has got affected negatively so we will have to be careful for that and we will have to check it so that this negative variance never appear next time, right.

So it means all the variance we have become negative because of the output getting negatively affected which was more than the standard value. So we understood how to upscale the standard in the light of actual output and how to adjust the issue of wastage?

Now in the fourth problem there are this one more issue we are going to deal with which is very quiet comprehensive and interesting problem and that issue we are going to deal with here is that is the issue of adjusting the opening and closing stock, issue of adjusting the opening and closing stocks that we have not done till now.

So here what we have to do, that you have to think about that for example and it normally happens also in the business is that when we go for purchasing of the material for the production or output in the given period of time so we will have to find out that say input requirement purchase of the material to have the desired amount of the output.

If we have zero inventory with us, of the raw material then certainly for the beginning of the production we will first purchase the inventory from the market and then we will go for starting the production which is not the case in the current situation. In this situation you are given that some opening stock is available from the previous periods purchases first you have to use the opening stock that is the standard rule of the inventory management and then whatever is the short fall you go for purchasing that material from the market and whatever the purchases you do from the market we are not going to make now the closing inventory zero, some inventory we have to keep for the next period also as in this period we received some Inventory of the raw material from the previous period.

For the next period also we are going to have some inventory from the current period purchases, so we have to deal with the issues of the opening stock and closing stock and then we will have to address the issues of the say some wastage is also means in this case also I expect some wastage are also there some issues with regard to the wastage is also there.

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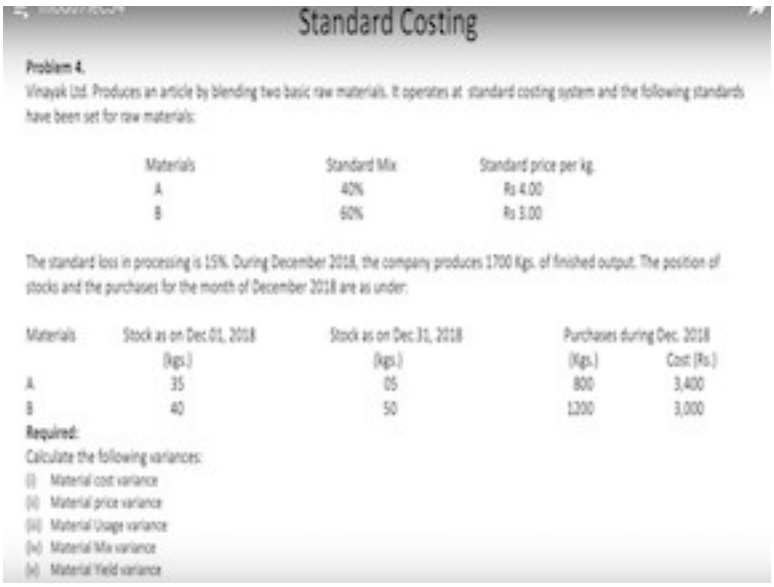

So will have to solve this all and then say try to find out how to calculate this variances what are the important points and what are the relevant issues involved in this case because it's given here if you look at the problem it's given here Vinayaka Limited produces an article by blending two basic raw materials, one it operates a standard costing system and the following standards have been set for the raw materials, right.

So material A and B are given to us these are the two materials which are required as a blend to come up with the standard output or may be the actual output and means the input is 2 and the output is 1 product and we are given the mixes in the ratio that is 40 percent and 60 percent and then standard price we are given that is per kg of the material that is 4 and 3.

Now further information given is the standard loss in processing is 15 percent during April 2002 sorry during December 2002 the company produce 1700 keg's of the finished output the position of the stocks the purchase of the for the month of December 2002 is as under, we can find out that you are given the materials you are given the stocks you are given the opening stock information you are given the closing stock information and you are given the total purchase information and on the basis of that we have to find out these variances.

So you can find out that you are given the information about the month of December and we have to deal with this issue that is the month of December and in this case after adjusting the opening and closing stocks we will have to find out the variance, so it means we will start working out this variance is now and will try to find out how is this variance is can be calculated?

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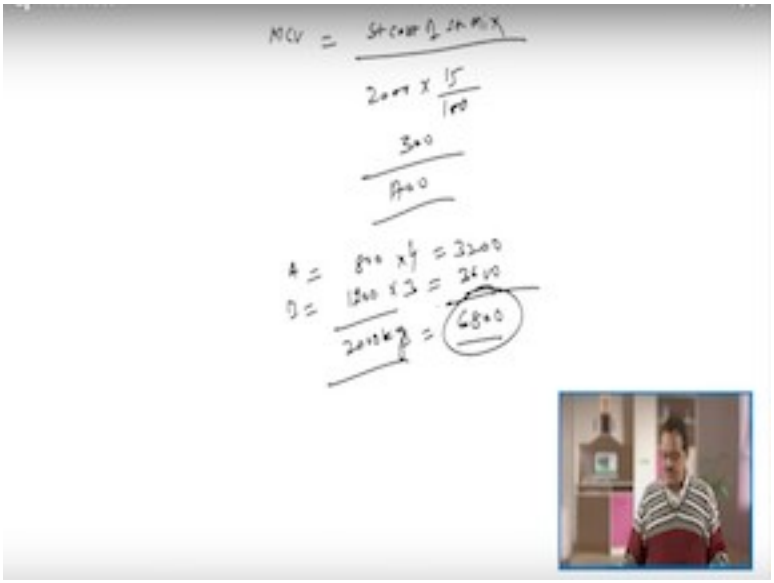

So first in this case also the first variance will be calculating is the material cost variance and for calculating the material cost variance again the standard cost of material minus actual cost of material or in this case it is not material it is mix because we have two type of materials.

So it will be now standard cost of we will have to calculate the standard cost, standard cost of standard mix so will have to calculate that and then we have the actual cost of standard cost of standard mix minus standard cost minus actual cost, so with the simple formula is, if you calculate the cost variance is, it is the standard cost of material minus actual cost of material so we have to calculate the first standard cost it is also not given to us because we have to address the issues of the adjusting the wastages so if you look at this problem given here is we are giving the output, input, that is in the ratio 40 to 60 percent.

So first question here is what is the absolute amount of the investment what is the absolute amount of the input, which is not given to us, we are given only the ratio of

the 40 percent of A and 60 percent of B, so what is the total amount, total amount of that input given total quantity of that input given we have to find out.

You can easily find out from this information given the standard loss in processing is 15 percent and actual output is 1700 units, so you can understand easily how much will it be it will come up as 2000 it will come up as 2000 so it means the standard loss is 15 percent it means output is going to be how much finally? 85 percent. And what is this 1700 is 85 percent of some value and what could be that value you can easily find out that values, that values going to be 2000.

Because 2000 and into how much is the wastage? 15 percent divided by 100, so this works out as how much? this is, this is 15 percent, so which we are taking 15 so will not put the percentage sign here, so it means it comes up as this amount is going to be 2000 into 15 by 100, this works out as how much? It is 300. So this is a wastage, so what is expected now, the output is 1700.

So you can easily find out that is the amount of 2000 units, let us calculate now the standard cost of standard mix, the standard cost of standard mix is going to be for A, this is going to be how much? Standard quantity is 800 units, because the ratio is given to us that is how much 40 percent and what is the price, standard prices is general quantities 800 standard prices 4 so it means 3200, right. And in case of the B it is going to be how much in case of the B? It is going to be 1000 to 100 multiplied by 3. Is going to be how much? It is 3600.

So you can find out what is the standard cost of standard mix? This is going to be 2000 kgs and this is going to be how much? 6800, 2000 kgs and 6800, so you can easily find out that after adjusting for the wastages, standard cost of the standard mix is available with us, that is 2000 kg is the standard input, so standard mix is 2000 kgs and the standard cost 6800, so with the help of this you can easily find out the standard material cost variance. So we have calculated the one component that is 6800.

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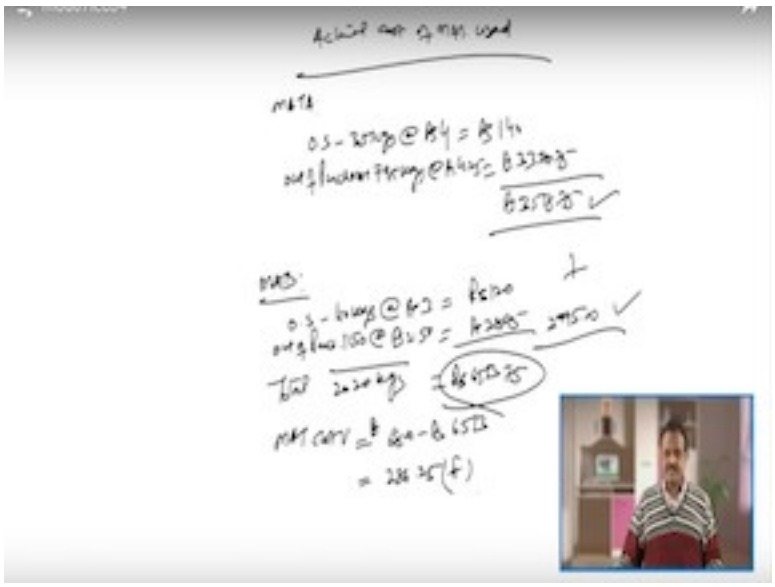

Now we will have to calculate the second component and second component is going to be standard cost of mix minus actual cost of the material used. So now we will calculate the actual cost of the material used, so what is the actual cost of the material used to we will have to calculate now the actual cost of material used is we have to calculate and now in this case is a typical is not very simple so you will have to adjust now the issue of opening and closing stocks and then we will have to find out this cost.

So what is this cost? first let us do it for the material A, if you do it for the material A, so how we have to calculate it, as I told you we have not given the actual input, in the very simpler form we are given in the form of the opening and closing stock plus some purchases we have done, so it means we have to adjust all the three things and the equation is opening stock plus purchasing minus closing stock, right. So first it is how we calculate those purchases and how we have to use it.

So opening stock, opening stock is how much available with us, opening stock available on the first December, it is going to be how much? This is going to be for the material A 35 kgs and the what is the price? opening stock price is not given to us, and in case of the B, the quantity is, opening stock of the B available is 40 and that price information is missing, what is actual price for opening stock that is not given to us.

We are given the purchase price which we can calculate also it is not given but the standard price, actual price of the opening stock is not given to us, actual price per unit of opening stock is not given to us, so here the standard rule is if the actual price purchase price of the opening stock is not given of the opening stock is not given then we assume that the actual price is equal to the standard price, then the actual price is equal to the standard price and then you are given the total information about the purchases.

After exhausting this opening stock as in this case how much is opening stock it is 35 kgs, so after exhausting in case of A, 35 kgs of the stock we will go for the purchasing because actual requirement for this period, this month is very high so remaining will be purchased.

So when you will currently purchase you know how much we purchase and at what price we purchased so we know that similarly in the second case we know that in case of the B how much is the opening stock and how much we purchased? So we have to adjust for those opening stock plus purchases and how much is left out which is not used out of the purchase that with the closing stock.

So we will use the formula like opening stock plus purchases is equal to the opening stock plus purchases minus closing stock is equal to the cost of goods sold. So we will have to calculate now. We are calculating here is cost of the material used. So if you calculate the actual cost of the material used in this case it will come up as material A is how much?

Let us do it material A, how will you do it? First opening stock, I am writing in short is how much, opening stock 35 kgs at the rate of how much rupees 4, right.

This is a standard rate, because no rate is available so we are taking the standard rate, so this works out and how much? This works out as 140 total amount and in this case out of purchases out of purchases, how much we have used this? Now you check that out of purchases how much is used how much purchases we did, purchases during the month of December we did 800 kg and 800 kg and in this case what is the cost we have paid is, that is 3400.

So you can easily find out what is the price available here is that is a 4.25, so if you look at this price, we are given out of purchases how much is used? 795 kgs, because why? we have taken the closing stock given here is 5 kgs, so it means in this case outer purchases 795 kgs at the rate of rupees 4.25 was used at the rate of rupees 4.25 use. So what is the total cost is this, of the purchases that part of the material which is used is 33, this is going to be 3378.75 right.

So these are the two components so it means finally for the material A, what is the total cost of the actual cost of the material used is going to be how much? This is going to be something like 15 sorry 35. Total it up then it is going to be 3518.75 and similarly for the material B, if you calculate for the material B so what we are calculating here is, opening stock how much units we have used? 40 kgs right. At the rate of rupees at the rate of rupees 3.

So this is going to be how much? 40 into 3 is 120, and out of purchases out of purchases, how much we have used? Here is 1150 kgs at the rate of rupees. How much? That rate is given to us and that rate is also, actually we can calculate, this works out as 2.50; So if you look at this, this works out as how much? 1150 into 2.50 is going to be rupees 2875. So this is going to be the, another amount and this amount, how much? It is, 2995.00.

So you can find out what is the total material we have used here, we have used the total material here is, you can call it as total material is total you can say what is material here, if you calculate the material it is 1190 kgs and this works out as how much? 1035 and 795, so it means it is a total amount works out as is 100 and this is 35 and this is 35, 35 and 795. These are the two materials we have used and this is a 40 kgs and 1150 so total if you take it as it works out as 2020 kgs.

Total material we have used is 2020 kg and what is the total cost this plus this. So this will come up as how much? This will come up as rupees 6513.75. So this is called as this is the cost we have calculated is the actual cost of the material used, so standard cost of the material used and the actual cost of the material used if you find it out, you will be able to find out that what is the material cost variance?

If you look at this variance, this will work out as how much if you calculate this variance material cost variance now is the material cost variance this will be how

much? This will be something like say how much is the standard cost? Standard cost we have already calculated and that is the 6800.

So material cost variance is 6800 or rupees 6800, rupees 6800 minus 6513 how much will it come out as? If you calculate this variance, this cost if you take standard cost of mix minus actual cost of the mixt so standard cost is 6800, actual cost is 6513 so if you calculate this variance, this variance acts as it comes out as how much 68000 minus 6513 is 286.25 favorable.

286.25 so it is 6800 was the standard cost actual cost is come down to 6513 so the actual material cost variance has become 286.25 that is favorable and this all has happened because your actual if you look at the material information given in this case, then the 2-3 issues involved here, why, your variance has become favorable because you look at the rate given here.

So it means amount which we have calculated, though the actual standard the quantity was 2000 kgs and we have used actual quantity of 2020 but I think there is a difference in the price and if you calculate the price difference in case of this per unit of the standard if you calculate the standard is given to us that standard prices is 3 rupees and 4 rupees but the actual price I think it has come down in one of the materials if you calculate that price given in this per unit of the material price if you see that actual price was 3 and the in case of the second one the actual price paid is 2.50.

So price is the quantity used is used as increased which is against the standard requirement of the 2000 kg's actually we have used more material that is by 20 kgs but price per unit has come down it may be deficiency of the purchase department that they had been able to find out the material at a price which is much less than the standard price because standard price was 4 and 3 rupees per kg for A and B where is actual price has come up as 3 and 2.5 rupees per kg.

So finally the variance has come up as positive because the quantity has increased price has come down per kg and the net result is positive so if you calculate both these cost, both these standard cost is 6800 and actual cost is come up as much less that is 65, 6513 so in this case 6513.75 you have to do it here, so this is the 286.25 and this variance has become favourable. So the remaining variance also we have to calculate

for this problem that is the material price variance, material usage variance, material mix variance and the material yield variance that I will do. I will do and discuss in the next class. Thank you very much.