Management Accounting
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Lecture 41
Labor Variances- V

Welcome students. So after working out these four variances labor cost, LRPB, LEB and the labor idle time variance now we have to calculate the two remaining variances in this case- labor mix variance and the labor yield variance. So as I told you that we have to check in case of the labor mix variance that whether the standard time and the actual time are same or not.

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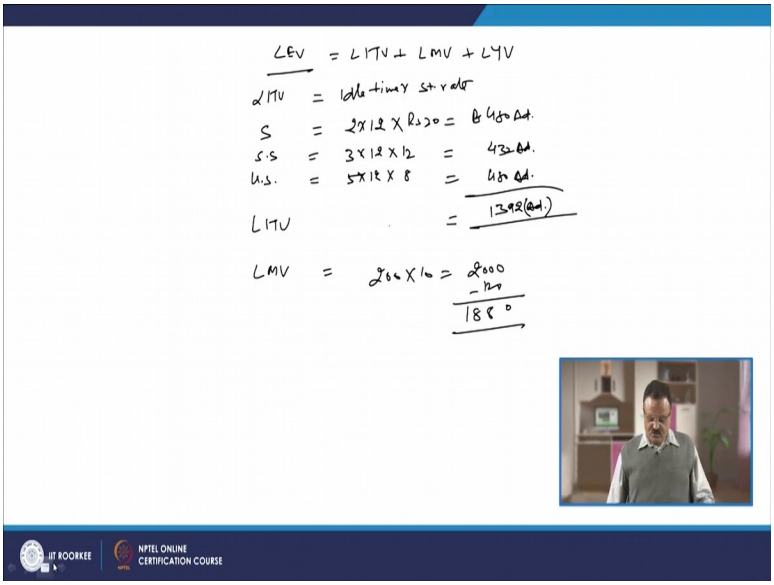

So we know that means the total number of hours for which actually the labor has worked means the total number of hours that is the 2000 hours minus the idle time so the remaining time left was 1880. So in that case but we will have to find out the standard time and then the actual time but we have to means work out the standard time by taking this total time as 1880 and then proportionately said say distributing it among the skilled, semi-skilled and the unskilled workers, so if you do this so for calculating this so this is total is 2,000 hours minus 120 hours for which the work could not be done so we are left with the 1880 hours.

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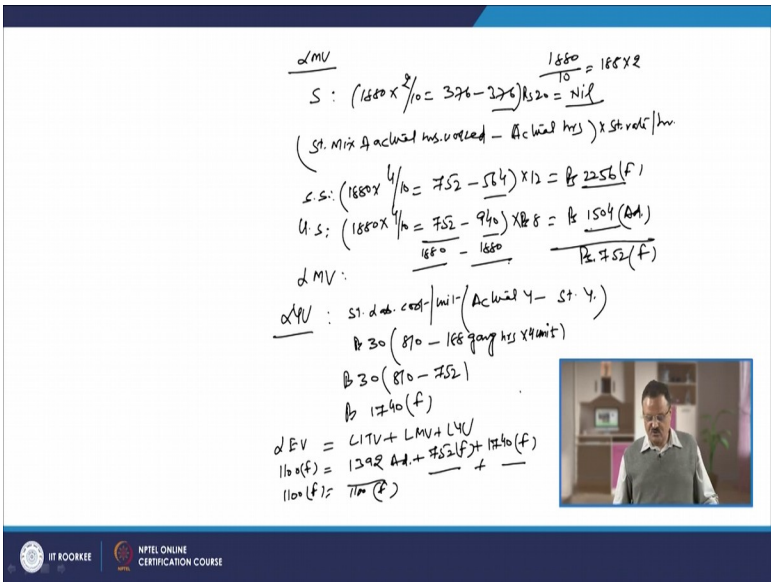

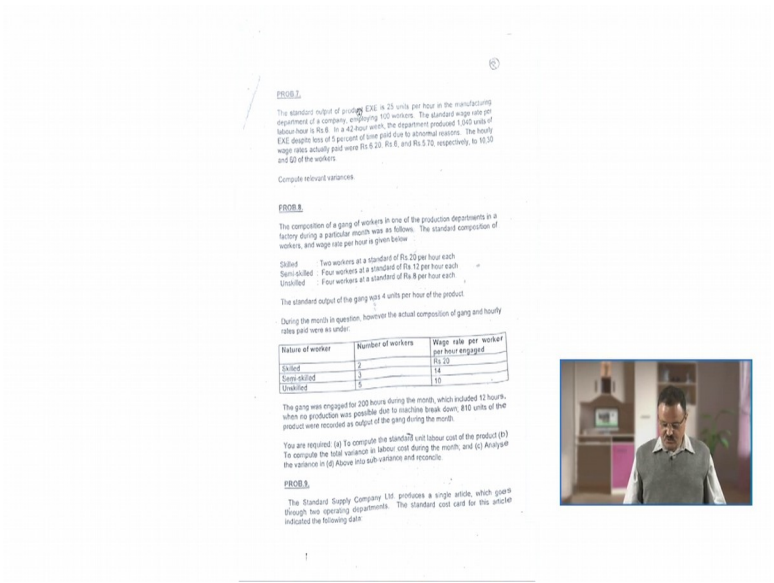

So now for calculating the labor mix variance, labor mix variance or the gang composition variance what we are going to do here is that , we are going to calculate it for the three different categories of the workers, first workers are skilled workers and in case of the skilled workers labor mix variance is going to be how much? you have to know we have the total number of workers that is 244 in case of the skilled, semi-skilled and unskilled and total time we have worked is that is 1880 hours that is 2,000 minus 120. So now we have to divide that 1880 in the

proportion of or in the ratio of 2: 2; 4: 4 and then we see that this is the standard time in case of the skilled category.

This is the actual time in case of the skilled category so is there any difference in the time or not, So we will have to see the category wise also and we will have to see now the total time also so if we see the total time because the formula requires total actual time divided by that total standard time. So total actual time if it comes out 1880 in case of standard and the say actual also so it means there is no difference and you can use the formula number two simply by revising the standards.

So in this case skilled category what is a total amount? 1880 right! So now we have to convert that into the proportion of two by ten how many are the standard skilled workers two by ten and this amount comes up as how much 376 hours; 376 hours and what is the actual time actual timer again two workers and two workers if they have worked for and one worker has worked for how much? If this is the 1880 so what is in this case if you look at this total number of workers again they are also 10.

So 10 divided by 1880 divided by 10 it means if you put it here 1880 divided by 10, so this works out as actually this works out as 188 hours and how many are the actual skilled workers we have put on the job? They are two. So if you multiply by two this works out as how much again 376. So it means if you take this variance and you have to multiply it with something like the say the rate labor mix variance and what is the rate? The rate here is standard rate is rupees how much is the standard? rupees 20. So this variance will become what is this variance? this variance is basically nil.

So how I am using this formula? What is the second formula? that the standard time minus means total standard time minus total actual time so you can rewrite this formula in a way this way also that for example your formula could be standard mix; standard mix of actual hours worked, actual hours worked standard mix of actual hours worked minus actual hours, minus actual hours and multiplied by standard rate per hour, multiplied by standard rate per hour.

So standard mix of actual hours worked so basically it is the say a total standard cost of the standard mix minus total cost of the actual mix, so standard cost of the standard mix is, we have

converted that standard mix of the actual hours worked so it is a standard mix of actual hours worked and multiplying it by the standard rate per hour will become the standard cost of standard mix minus standard cost of the actual mix.

So if you use this formula what I have used here is standard mix of the actual hours worked. Actual hours worked are logged are 1880 and standard mix of that is two by ten in the ratio of 2:4:4, so this works out as 376 minus 376 is the actual that is two actual workers and per worker this is number of hours are 188. So it means total number of hours put in by the skilled category of the worker are 376 multiplying it by rupees 20 so it means you can say that this variance is 376 minus 376 into 20 is nil that is in case of the skilled category of the workers.

Now we calculate the semi-skilled category of workers and in case of the semi-skilled category of the workers again you have to convert the standard mix of the actual hours worked, so 1880 into 4 by 10. This will come up as how much 752 right and how much is the actual workers and how many actual workers worth 3 means the semi-skilled actual workers we have put on the job at 3 and one man hour per worker has put in how many hours 188 so 188 into 3 this works out is how much 564 and if you multiply this by how much?

You multiplied by rupees 12 because the standard price was rupees 10 actual was 14 but the standard price was 10 so in this case if you look at this part this various comes up as rupees how much? 752 minus 564 into 12. This variance becomes rupees 2256 and this is the favorable variance. Because tender time was more actual time used is less so it is the semi-skilled is the favorable variance and now we go for the unskilled.

In case of the unskilled category again same you are converting the standard mix of the actual hours worked again multiplying it by 4 by 10 this again comes up as how much? This will be the same that is 752 minus then we have the actual hours worked out how many 5 workers and 188 into 5 becomes how much? This is 940 this is 972 minus 940 and multiplying by how much? Rupees 8, this is the standard rate so this works out as how much 1504 and this 1504 is adverse,1504 is adverse so this is the total labor mix variance if you calculate this labor mix variance her total for all the 3 category of the workers this will come up as how much? this will be 0 in first case this is the one, this is the second and this is the third.

One is the favorable and other is the unfavorable so the net result comes out as that is 752 rupees 752 but it is favorable this variance is favorable because semi-skilled is favorable, unskilled is unfavorable so it means finally this variance is 752 which is favorable. Now the last variance in this category we will calculate is the LYV labor yield variance and in case of the labor yield variance the formula is actual yield minus standard yield.

If you calculate is the standard labor cost per unit. The formula is standard labor cost, standard labor cost per unit into actual yield minus standard yield, actual yield minus standard yield, so we are given here standard unit labor cost we have already calculated. What is the standard labor cost per unit and we have already calculated that is standard labor cost per unit we have calculated the first question which my answer was rupees 30, right and what is the actual yield here in this case if you look at the actual yield actual yield is already given to us that is 810 and What is now the standard yield? Standard yield expected was how much?

Because we work for how many? That is we worked for total number of gang hours are how many? 188 gang hours and in this case if you have to find out 188 gang hours and multiplied by total number of hours we have put in by the gang are 188 right 200 minus 12 is 188 and what is the output per hour that is 4 units, 4 units so this will become how much?

Rupees 30 into 810 minus this is 188 into 4 is 750 this is 752 units, right so if you calculate this this will come up as rupees finally the variance will work out as rupees how much? This will be you can call it as 1740 but favorable. 1740 is going to be the favorable variance so it means the total standard labor cost per unit was how much? standard labor cost is total labor cost was 120 and then a say the total output in one hour was 4 units so the standard labor cost per unit works out as 30. Which was the first question we answered while solving this problem and then we have inside the bracket is the actual yield minus standard yield.

Actual yield is how much? 810 units which are given to us and the standard were for 188 hours. The total numbers of the workers have bought and per hour the gang output per hour is 4 units. So 188 gang hours into 4 that works out as 752. So if you calculate this Labor yield variance this will be means we have found out here is that is 1740 this is favorable. Now let us apply the check here that whether it is all these three variances are equal to the labor efficiency variance or not, so it should be equal to LITV plus LMV plus LYV right.

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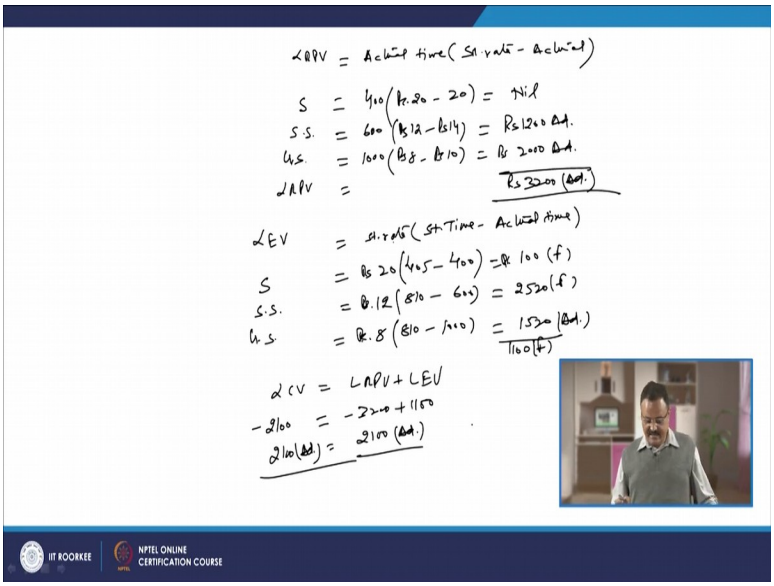

So labor efficiency variance was how much was the labor efficiency variance? we had to calculate the labor efficiency variance and if you look at the labor efficiency variance this was 1,100 favorable this variance is 1,100 favorable so this is 1,100 favorable labor idle time variance is how much if you look at the labor idle time variance in this case was 13.

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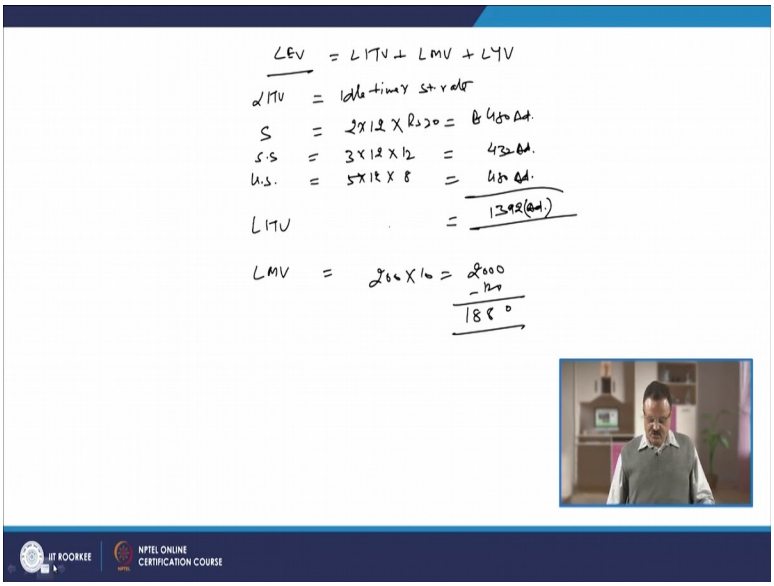

Let us go back and check it yeah labor idle time variance 1392 it is adverse right plus labor mix variance is how much 752 favorable this is favorable plus 1740 this is again favorable.

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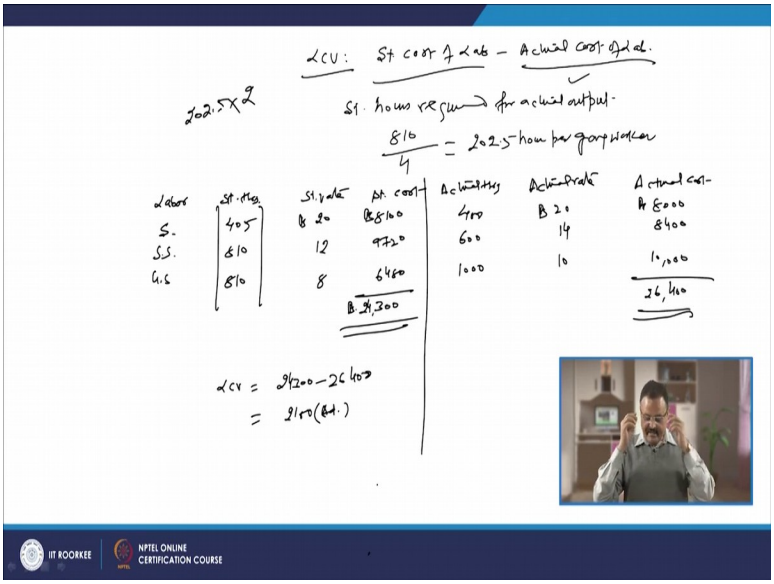

If you total these up this is again favorable so this works out as how much this is 2492 these two this plus this comes up as 2492 and minus 1392 so this will come up as finally 1100 favorable is equal to 1100 favorable both are favorable both the variances we have worked out here are favorable. So it means they are favorable so we are able to find out here by applying the check that this variance is favorable this variance is favorable.

So it means when we calculated all these variances in this composite case which where we had to address so many problems so first was to find out the standard labor cost per unit which was 30 rupees we found out and then we had to go for finding out the labor cost variance we found out after adjusting the standards, of scaling the standards, revising the standards we found out that the labor cost variance is still negative that is by 2100 then we further dissected it.

So, we found out that labor rate has caused the main labor cost variance being negative whereas the labor efficiency is still positive and then we further say dissected, so we found out that if you take into consideration the labor idle time of the 12 hours of the total gang means which works out as ten workers into 12 is 120 hours out of 2,000 hours total.

So the labor has worked actually for the 1880 hours and then on the basis of that when we calculated the labor mix variance and the labor yield variance we found out that labor efficiency variance is 1,100 favorable; 1,100 favorable and there everything has contributed we have segregated the idle time also because it was abnormal, uncontrollable so it's not the reflection on the efficiency of the labour has not contributed to that idle time, they were available but the machine breakdown was there.

You talk about the mixed variance we have to again check it up we applied the second formula for the mixed variance and why I applied the second formula for the mix variance we checked up the (total) total you can call it as the number of hours so total standard hours for how many if you total up these three that is the 376 plus 752 plus 752 this works out is how much? 1880 and what is the actual? Actual if you take these three this is the one this is another this is another this is also say you can call it is 1880.

So it means 1880 is equal to 1800 after say readjusting the standards and working out the proportions in the ratio of 2:4:4 so we could find out that both the times both the hours that is 1880 is equal to the means standard time is equal to the actual time so we applied the second formula because there is no difference in the actual time at standard time.

So we worked out this labor mix variance which further came up as favorable and then we calculated the labor efficiency variance sorry labor yield variance and when you calculated the yield variance means the actual yield was higher very high 810 units and if you go by these standards that total number of hours for which actually the labor worked was 188 hours and bearable output was how many four units so means standard expected production was 752 units but actual output has gone up 810 units.

So it all has become possible because of the efficiency of the labor so Labor's efforts are appreciable but only one negative part here is in this whole exercise is the labor rate. We have been able to control the rate of the skilled laborer but in case of the unskilled labor and in case of the semi-skilled labor the rate paid was higher and maybe some time it is beyond the control of anybody within the organization because labor comes from the outside.

So if the labor rates change because of the changes in the dynamics of the labor market nobody can help it out you have to hire the workers, you have to run the plant, you have to go for the production and you have to pay the higher payment. So largely it looks like that labor cost variance is negative that is by 2100 but it's still within the control so further analysis in this kind of situation I do not think it is required because it is within the permissible limit and when we further dissected it we found out that largely the reason is uncontrollable.

Allied TV labor idle time was also because of the machine breakdown so nobody has contributed to that machine breakdown it was out of the situation and the second reason for this negative variance of 2100 was labor cost variance negative 2100 was the labor rate. So labor rate is not in the control not in the hands of anybody so here the management may finally decide that whatever has been decided as a standard or what was the standardized labor cost and with regard to that the total output everything has been within the control only two factors have contributed and these two factors are means beyond the control uncontrollable factors whether it is a machine breakdown or whether it is the labor rate it is not in the control of anybody and the difference is expected to be there.

So if finally again before closing down the discussion on the labor variances I would recreate that if there is any kind of the variance because of the uncontrollable factors nobody should be held responsible but yes if the variance is because of the controllable factors and those factors are not controlled and that has contributed to the excess payment to the labor or the increased overall labor cost in that case we have to be very careful, we have to analyze those reasons and we have to find out the causes for those reasons and we have to means eliminate those reasons so that finally the standard and the actual labor cost is within the control it is same and we are able to finally control the overall cost of the production.

So till now you might have seen that how we calculate the material variances, how we calculate the labor variances and these two components of the total cost of the product they somehow means a constitute about 80 to 85 percent of the cost of the product, 80 to 85 percent cost of the product. So even if you are able to control these two broader components and even the third component that is the other overheads if they are even ignored then it is not going to make any difference means that largely means for example if 85 percent is the cost of the product because

of for example 10 rupees is the total cost of the product if you talk about if this pen is there and this pen is costing us 100 rupees say this pen is costing us 100 rupees it means 85 rupees of this pens cost is because of the two elements of the material and labor.

So if you want to reduce the cost of the pen of this pen if you want to further reduce maybe because of any reason you want to increase your own profits in the other form or there is a stiff competition in the market because others have lower down the price from the 100 to 98 or 96 something like that so if we want to control the cost we have to first focus upon the material and the labor component and since we know it in this case that total contribution of the material and labor is 85 rupees even you are able to reduce this cost by 10 percent just, which is not a unachievable target 10 percent reduction in the cost is not an unachievable target.

You can look for the labor from the markets where it is available at the lesser price we can bring the labor on the long term basis and we can pay them the lesser price, if it is possible, we can look for the avenues of the material from the markets or the sources of the material from the markets where it is available at the lesser price - good quality materials so if you are able to reduce the cost of material and labor even by a small amount of or a say in significant amount of the 10 percent then the total cost of this product will be coming down by how much 8 rupees 50 paisa, 8 rupees 50 paisa.

It means in that case now the cost of the pen will come down from the 100 rupees to 91 rupees and 50 paisa so it means this is the serious reduction in the cost. So actually we were selling the pen for 100 rupee or maybe 105 rupees because it was costing us 100 rupees and now if you are able to reduce it by say 10 percent and now the cost has come down to 91.5 rupees.

It means without any pressure in the market in terms of the price the firm's profit will increase, the firms profit will increase by that 8 rupees and 50 paisa because the cost has come down, selling price is same that is 105 in the market for example so that will add in to 5 rupees the existing profit plus the saving on this material and the labor cost by 8.50 paisa so now the firm's in profit will become 13 rupees and 50 paisa per unit of the product which is a very very significant amount.

And this all has been possible or would be possible if you control the material cost and the labor cost right! and controlling the material cost and the labor cost one technique we discuss here is that is the standard costing because if you have a pre worked everything it remains communicated to all and means people in the production, in the purchase, in the usage of the material departments, processing departments they remain very careful that this is the standard of the material and this should be the standard cost of the material.

Similarly in case of the labor also we have to be very careful in terms of the efficiency of the labor in terms of the price of the labor and finally the actual cost can be within the control or can be means within a limit which is decided or pre decided as a standard so finally this technique of the costing is very helpful in the day-to-day management decision-making and keeping the cost of the product under control.

Now third variance is the overhead variances. Third contribution of the cost of the production is direct cost of the production I am talking about, not the indirect cost. Direct cost of the production is the material cost, labor cost and other overheads cost. Other overheads cost now will be the third thing we will be going to discuss but I will not discuss this overhead variances in detail.

First we will have a broad idea about what are the overheads? how we will calculate these overhead variances? there are so many overhead variances which can be calculated. Number one is basically the overheads can be divided into two broad categories. Fixed overheads and the Variable overheads, Fixed overheads and Variable overheads. Fixed overhead are those overheads which remain fixed whether you go for production of 1 million units, 1 lakh units 1 unit or 10 units, they are not going to change.

To some extent you can call that overhead cost as a Sun cost. You go for the production, you do not go from the production, you have to pay for the fixed overheads. Variable overheads only take place when we go for the production. If you produce 1 lakh units your variable overheads will be like that in proportion to that production, if you produce one unit your variable overheads will be in that proportion and if you use go for the production of 10,000 units your variable overheads will be like that.

So number one while learning about the overhead variances? We will learn about the fixed and the variable overheads I explained to you what are the fixed overheads and what are the variable overheads? For example the salaries of employees who are hired on the permanent basis or the depreciation of the plant is a sort of you can call it as a permanent cost whether you use the plant, you do not use the plant your plant is getting depreciated.

Then can be variable cost for example the power will be the variable because if you go for the production you will use the power but if you do not go for the production you will not use the power. So we will have to know means after understanding the meaning of fixed and variable overheads, we will learn that how to calculate the overhead variances.

For calculating the overhead variances now the important question which you have to means answer with yourself or I am going to tell you, you should be clear with that when you calculate the overhead variances we calculate these overhead variances in relation to of either material or labor. We do not calculate them in isolation as we calculated in case of material or we calculated in case of labor. We assume here that overheads are counted in the total cost of the production in relation to or as a proportion of material or labor.

We interpret it like this. Say the material cost of per unit of this pan is you can call it as 50 rupees or 55 rupees. Labor cost will be 25 rupees or 20 rupees and overheads will be, total overheads will be 10 percent of the material or 10 percent of the labor. It can be either way. We have to decide the best possible common denominator for calculating the overhead cost and we do not directly count it that what will be the overhead variance, fixed overhead variance or the variable overhead variance.

First we will say that overhead expected to be spent for manufacturing the one unit of the product will be 10 percent of the material or 10 percent of the labor. So we have to calculate the overhead variances in relation to either material or in relation to either or in say proportion or in relation to labor. In relation to material or in relation to the labor and after that means both the formulas should be with us both the formula should be with us.

If you want to calculate as a proportion of material which formula we will use? If you want to calculate as the proportion of labor which formula we will use? And there are so many overhead

variances which can be calculated say for example first we will calculate the total overhead variance right! Total overhead cost variance then we will segregate or dissect that into two sub variances, fixed overhead cost variance and the variable overhead cost variance, and further we have so many subdivisions of this fixed overhead variance and that variable overhead variance but I will not go up to that detail because the reason is that this cost is not very very significant only10-15 percent maximum.

So if you know the broader concept of the overhead variances that they are calculated in relation to the material labor and overheads are basically of the fixed or the variable type and we can calculate the three larger variances, total overhead cost variance and the variable overhead variance and then the fixed overhead variance that will serve our purpose if you go want to learn further more in detail about the overhead variances they are given in the books you can refer to the books I have given in the course plan and for this particular topic standard costing you should refer to the book that is the management accounting by Kahn and Jen.

It is McGraw Hill publication and it is a very good book for understanding this topic that is the standard costing as a tool of management decision-making or as a tool of controlling the cost of production. Most of the problems which I discussed here means whatever the three, four, five problems we discussed with to material or labor I have also referred to the same book that is the management accounting by Khan and Jay.

So if you want to learn in detail about the overhead variances I will stop here by calculating three variances. Total overhead variance, total overhead cost variance and then the other two that is the fixed overhead variance and the variable overhead variance. There are the further dissections of the fixed overhead variance. Fixed overhead variances like say for further are fixed overhead expenditure variance then fixed overhead you say your calendar variance, capacity variance so different variances are there.

In case of the fixed overheads and in case of the variable overheads also we have the variable overhead expenditure variance and the variable overhead efficiency variance but I think that much of analysis is not required because of the shortage of the time here in 30 hours we have to means learn some important techniques so in summarized form I will discuss with you the overhead variances and only three variance we will calculate.

Here one important point to be borne in mind is that when you talk about the overhead cost as I told you overheads can be fixed or can be variable so the behavior of the fixed overhead and the variable overheads per unit is different, see, per unit the fixed overhead cost is the relationship is inverse larger the production fixed overhead cost per unit comes down less of the production fixed over at a cost per unit goes up.

So it's the inverse relationship right! Because fixed cost remains the same. For example fixed causes hundred rupees and you produce 100 units so fixed cost is 1 rupee, but if you only manufactured 50 units so fixed costs will go up to 2 rupees right! and if you manufacture 200 units fixed cost, overhead cost will come down to 50 paisa per unit because fixed remaining fixed, fixed cost, fixed overhead remaining fixed, production is changing so large the production per unit cost will come down and lesser the production per unit cost will go up.

But this behavior is direct or you can call it as proportionate with regard to the variable overheads. Higher the amount of production higher the amount of variable overheads, lesser the amount of production lesser the amount of the variable overheads. So the relationship as far as the per unit cost is concerned it is direct with regard to the variable overheads and it is inverse with regard to the fixed overheads.

So after this basic introduction and some say throwing some light on the overhead variances and explaining the importance of the overhead variances and explaining it to you that how we will calculate the overhead variances, whether in relation to or in proportion to material or in proportion to labor then now we will start learning about how to calculate the overhead variances and then means three variances we will calculate.

So these overhead variances first we will learn the formulas and then we will solve one or two problems and after that I will close the discussion on the standard costing part and next technique we will start learning about is the marginal costing. So overhead variances I will discuss with you in the next class thank you very much!