**OBSERVATION OF LESSON PRESENTATION:**

Teacher already has the board work for the lesson ready for learners. Begins the lesson my reminding learners of what they did last time. All you have to do is find the missing number, what that means is you have to look at x and see what is x is being added or subtracted to. Once you have done that you will be able to see if the right number has been chosen as an answer. Teacher is talking about process of elimination and not solving equations algebraically.

So, for the first one as an example, what you need to do is, you can solve it algebraically if you know how that is the minus 6 on both sides which is then equal to 6. Or what you can do is just try the process of elimination. Try different numbers, see what they do see what happens. Same as before let us just try 2. 2+6 is 8, it is not 12. So, the x is not 2. If we try maybe 4, 4+6= 10 not 12. So, the x is not 4. If we try 6, we know that 6+6 will give us 12.

Teacher does both the process of elimination and the algebraic version; if we have positive six and we want x alone we need to use the opposite which is minus 6. What you do to one side, you have to do to the other. 6-6 will cancel out we just have x and 12-6 is 6. X=6. Teacher points out that the two answers are the same. Teacher leaves 4 more sums for the learners to do and then continues with the new work.

Teacher draws the learner’s attention to pre-drawn fruit sums on the board and explains that he will do the sums in two different ways, the purple way and the green way. The purple way is keeping the fruit, we are still using the fruit. Then once I am done with that, we will do the green way which is how you would solve the sum algebraically. algebraically means when there are variables present.

To start off, we see that there are 3 apples equal to 30. If I give you one apple at a time, one in register period, one at break and one at the end of the day when you write your cycle test. AT the end of the day, you will then have three apples.

If that is the case, we can shorten the line by rewriting it in a simplified way, instead of writing apple plus apple plus apple we can write three apples (because that is how many there are in total), and this will make it easier for us to see that we need to divide that 3 away. 3 apples = 30, we don’t want the value of three apples just one. So, we what we do here is the opposite of 3 times, divide by 3. If we do this, the threes will cancel out and we are left with just one apple, which is what we are looking for, we then solve the other side of the equal sign. 30 divided by 3 will then give you 10.

We can then use this value of the apple to find out what the bananas are going to be and then what the grapes are going to be (gestures to next sums on board). It is all a process. Once you have found the apple, take a little breather, maybe collect all your thoughts and information. And then you can start with line b) which is the next line of sums of our fruits.

This line can be written as a more simplified version, the same we took all the single apples and made them into a group of three, we can take these two bananas and do the same thing. So instead of banana plus banana, we are then going to introduce two bananas (because 1+1 is obviously 2). This sum is still equal to 18. But now since we know the value of 10, we can replace the apple with the value of 10. Now the two is closest to the bananas so it is going to be harder to pull apart, with your 10+ 2 bananas, it has more space between it, it is going to be easier to pull apart. Think of multiplication, it is going to be difficult to pull apart, if they are joined closely together. So rather go the easier route and take the ten away first.

We know the opposite of plus ten is minus ten, what we do to one side, you do to the other side of the equals. 18-10 is 8 and 10-10 will cancel out and give you 0. What you are then left with on the left-hand-side is two bananas which we can easily see needs to be divided by 2. Keep in mind we are not looking for the value of two, we are just look for the value of one, so we have to take the two away. To do that we divide by 2, the 2s cancel out we are then left with just one banana, is what we are looking for is then equal to 4., because 8 divided by 2 is 4.

Now to do the final step, firstly take a breather because it is quite a long process and you don’t want to get lost. Make sure you know what you are looking for, here we have apples, here we have bananas so we are looking for grapes now.

If we turn line c into its own little shortened version, can we shorten any of the fruits like we did the same way with the apples and bananas. No, we can’t because there is only 1 of each, but this is good news. This is going to make it a whole lot easier to work out. If it is bananas minus grapes, and we have the bananas as 4, we can simply just take 4 to the other side. But now we need to take special care when we do this. As before, we going to get rid of the 4 by subtracting 4 on both sides because that is the opposite of plus 4. These fours will cancel out and 2-4 will give you -2. What are we now going to have left on the left-hand-side of our sum?

When the learners respond with “grapes” teacher warns them to be “careful. What do you see next to the grapes?” Learners respond with “negative” Teacher explains that it does not fall away, it does not disappear. If it does, we are going to have a negative answer for that and that is not going to be correct in this sense.

So, you need to make sure that if there is a negative there, that is stays there because this is going to help your two become positive. How can we turn a negative number into a positive number? Learners respond with multiply by 1. Teacher further asks what is a negative multiplied with a negative. Positive. Se here we have one negative. What do we need to make it positive? Another negative. Teacher informs learners we can either divide by -1 or multiply by -1.

The reason we are using 1 is when we multiply anything by 1 itself, if we divide anything by 1 it is still itself. If we add a negative in there is becomes a positive. The negative and the negative will become positive so we have positive grapes, and a negative by a negative gives us again a positive and 2 divided by 1 is then 2.

Still one more thing to do, grapes + apple + bananas, to do the last line we take the values that we have just found and we put them in where we see the relevant fruit. Don’t make it 10+4+2. We have to put it in the correct order. The apples are10, the grapes are 2 and the bananas are 4. Simple enough addition sum, 2+10+4=16.

Teacher provides opportunity for learners to ask questions. Teacher then demonstrates how to solve the sum algebraically with x’s and y’s. In the test situation, we will not give you fruit, we are going to give you algebraic expressions instead which include variables. Whenever you see apples you replace them with x, where never you see bananas, you replace them with y and whenever you see grapes. You replace them with z. You don’t have to xyz, you can use your entire alphabet you could have used abc. But remember, if there is more than one variable you have to list it in alphabetical order.

Teacher rewrites sums out in terms of xyz in green next to the fruit sum in purple.

Learner immediately asked where does the x come from. Teacher indicates that instead of apples, we have replaced the apple with an x. So, if you look 3 apples is equal to 30, is the same way as 3x is equal to 30. Same with the y is your bananas and the z is your grapes.

Gives learners another 2 examples to do on their own. Teacher has both the fruit sum and the algebraic sum on the board and states that he will leave them both there in case they want to try out the algebraic one instead of the fruits.

Gives 3 – 4 minutes to finish up and instructs learners to reference the first one he did if they get lost. Instructs learners to begin with the four sums from the beginning of the lesson.

Teacher walks around and checks learners work and provides individual attention to learners. Makes learners aware that they can make apples an x and can also make an x an apple – doing it the other way around to indicate like terms. So, the x ties them together, keeps them in the same family.

b) ; get rid of the minus 3 by adding three. What you do to one side, you do the other side, we then get 10. These threes cancel out and we have 2 x. We can easily see that we must divide by 2 in order to get that x alone. Refers to previous example to remind learners. 3 apples = 30, we needed fruit = number, same here we need variable = number. These twos cancel out and 10 divided by 10, x = 5. Teacher encourages learners to test their answer as a means to grantee their marks. 2 times x which we worked out is 5, 2 times 5 is 10, 10-3 will give you 7. So, x is correct.

c) ; same thing. Minus three, minus three. We then get 15, on the left-hand-side we are left with 3x. We then divide both sides by 3. Therefore, x will be once again 5. Teacher double checks: 3 times 5 is 15 plus 3 is 18. So, x is correct.

d) ; secret technique. What we have just come to learn with our fruits, is that if have the same fruit we can group them together. Same thing is true with your variables. So, rather than thinking of it as 4x + 2x, think of it as 4 apples plus 2 apples. The x’s are the same so the fruit are the same. If I give you four apples and then I give two the next day, in total I have given you 6 apples. The same is true when you have variables, instead of trying to take them over separately, since they have the same variable (x), which we call a like term, we can add them together. 4+2 is 6 and the x will remain the same; 6x which is still however equal to 18. Now we see a variable with a number. The opposite of times 6 is divide by 6. What you do to one side, you do to the other. The 6’s will cancel each other out and 18 divided by 6 is 3.

e) ; teacher informs learner that was a tough one. First slip it to become, , then we add to get we then change this mixed fraction to an improper fraction, , then , when dividing by a fraction, we can flip the fraction to the reciprocal which changes the division sign to a multiplication. . But we also use the process of elimination and sub in numbers until you get the correct one but make sure to sub in the same number for both x values.

Teacher instructs learners that there are five minutes left of the period that they must finish the next two fruit examples.

Teacher allows learners to continue working while he addresses misconceptions with previous sum c). Teacher redoes the sum. We know that we need to get on its own because that is our missing value. 3x, they are closer together than the plus 3, so the plus 3 we can rip it off easily, we can take it out of there. To do this we have to use our opposite. The opposite of plus 3 is minus 3. 3-3 is zero, that will get rid of those 3s. What you do to one side of the equal side, you have to do to the other side. 18 – 3 is 15. So, you have 3x = 15. How do you get rid of the 3; division by 3. These 3s cancel each other out which leaves x and then 15 divided by 3 is 5. Once the teacher has reexplained it, he asks learner if it makes more sense now “do you get it?”

“Please don’t be afraid to ask any questions.” Leaves learners to work on their own while he walks around.

**INTERVIEW OF LESSON PRESENTATION:**

QUESTION:

What were the planned lesson outcomes?

ANSWER:

By the end of the lesson, the learners must be able to identify like terms and how to describe what a like term is.

QUESTION:

Do you think that the lesson outcomes were achieved?

ANSWER:

From what I saw, from the individual questions when they were trying the example, some of them did understand that once when you take an x and add it to another x that it is addable. But I had to kind of give them the comparison between the apple and the x for them to realise that.

I would say that maybe 90% of the learners met the lesson outcomes for this lesson. Maybe one or two learners just didn’t get it.

QUESTION:

Do you think that the formative assessment that you applied was adequate?

ANSWER:

No in the sense that I can’t really get immediate feedback from it, it is a bit delayed for a bit. If they do get it wrong, they will get it wrong for a day or so, until I am able to correct them. What I would have liked to have done is just to put more emphasis on questions like 3 and 4, given them another example to get them to understand.

QUESTION:

Do you promote discussion and sharing of ideas while learners are working individually?

ANSWER:

Yes, it comes from extra maths. Some learners are extra maths learners where if I can’t accommodate them while I am helping someone else, I will ask them to ask their friend. I feel like their friends can explain it in their own language, with the slang they use or whatever.

QUESTION:

Once you have received this information about whether or not learners understand like terms, to improve your future teaching?

ANSWER:

I have a file of notes where I plan the curriculum according to CAPS and if I find something does not work or if something works extra, I just make a note on those notes just to be included for the next topic or for the next year.

QUESTION:

Do you think that learners are aware of mark allocation?

ANSWER:

Not 100% sure but I have informed them of the importance.

QUESTION:

How do you plan your board work?

ANSWER:

As I do the examples, I make sure that I write it in such a way that I can erase it without having to erase the question itself. The notes I plan beforehand on paper, and the examples I take out a textbook or get off the internet and just write them as they are.