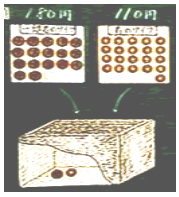
[54 Minute Lesson]

Japan Public Release Lesson 3 Lesson Graph [8th Grade]

Public Class Work: Setting up the Problem- The teacher reads the following problem to his class:

4 Minutes



It has been one month since Ichiro's mother entered the hospital. He has decided to give a prayer with his small brother at a local temple every morning so that she will be well soon. There are 18 ten-yen coins in Ichiro's wallet and just 22 five-yen coins in his smaller brother's wallet. They have decided every time to take one coin from each of them and put them in the offertory box and continue the prayer up until either wallet becomes empty. One day after they were done with their prayer, when they looked into each other's wallet the smaller brother's amount of money was bigger than Ichiro's. How many days has it been since they started the praying? That is the problem.

The teacher says, "I think that there are points hard to understand with just the sentences, so I would like to look at the figure and check it. He goes on to simulate the problem by taking coins from each wallet and putting them in the offertory box, asking how much in each wallet and which brother has more.

Private Class Work: Students work individually on the problem

13 Minutes

Midway through, the teacher says to the whole class, "If you found the answer with one method, try finding another method."

As he circulates around the room, he talks with several students about their solution methods and tells them that he is going to have them present their solution methods later on. He says to one student, "please think beforehand why you formulated an equation like this."

Public Class Work: Students Presenting Solutions to Class

24 Minutes

The teacher asks the students to present their solutions in the following order and place a pre-written title over each solution. He asks after each solution is shared, "How many others solved it in the same way?"

1. Student one (Manipulating actual objects)

Actually take one coin from each wallet and put it in offertory box until Ichiro's wallet contains less money than the brother's wallet. Or crossing out one coin from each wallet until the same condition is met. Answer: 15th day

2. Student two

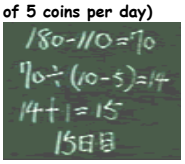
(Solving it by making a table)

Number of days	1	2	3	-----	14	15	16	17
Amount left	170	160	150	-----	40	30	20	10
Number of days	1	2	3	-----	14	15	16	17
Amount left	105	100	95	-----	40	35	30	25

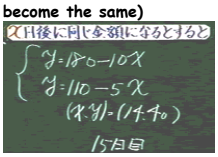
Answer: 15th day

3. Student three

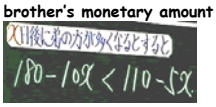
(There is a difference of 5 coins per day)



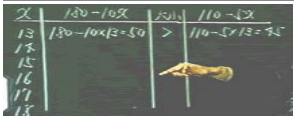
4. Student four (If X is the day when the monetary amounts become the same)



5. Student five (If X is the day when the brother's monetary amount exceeds Ichiro's)



Task: Complete the chart and check if the value of x holds true for this inequality. What is the relationship?

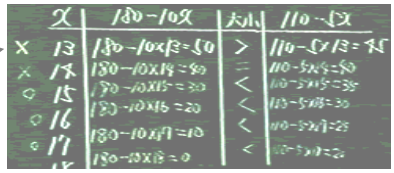


The teacher assigns a task and students work on it individually for six minutes.
The teacher asks a student to write her results on the chalkboard while the other students are still working.

Public Class Work:

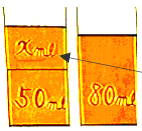
13 Minutes

The teacher asks how many students had the same results as the last student. He notes that x holds true for 15, 16, 17 and 18; the first one was >. The second one was equal (14) which he calls "the standard".



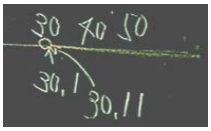
The teacher asks about the 19th day, and a student says Ichiro's wallet becomes empty and at that time they will end it. Students are asked to write the solution on their handouts.

The teacher presents a handout and reads the problem to the class:
The prayer was answered and their mother was able to leave the hospital safely, and that night they gave a toast with juice. At present there are 50 milliliters of juice in Ichiro's cup and 80 milliliters in the smaller brother's cup remaining. When the mother poured juice into Ichiro's cup it made Ichiro's cup reversely become more. How many milliliters had she poured?



The teacher asks the students to form an inequality to solve this problem. A student comes up to the board and says that the amount needed to get up to the 80 ml should be x ml (x represents the increased amount). The teacher asks students to write the situation with the unknown x ml and the symbols (> , <) . He says, "Using symbols like this, try expressing it."

After a minute, the teacher asks for the expression.
Student: 50 + x > 80. The teacher asks, "What values of x hold true for this equation?" Another student: "More than 30."
The teacher suggests using a number line and asks, "How many numbers are there more than 30?"
A student responds "Infinite".



The teacher asks if 30 is included or not included. When the student responds that it's not included, the teacher responds yes, but if it comes over even a little, like 30.1, it becomes more than.