Decompose Numbers Less Than 10 (Kindergarten)

TEACHER: Mathematicians, do you remember on Friday how we were working with playing cards. We were decomposing 7, 8, and 9. Remember that?

And I put up some of the work that we finished up with at the very end of math workshop from last time. I put up Monsaiz's work over here. And Enrique's work over here. And we were ending math workshop last time with a really interesting observation.

We had noticed that the way that Monsaiz decomposed 7, we were like, wait a second. Monsaiz, where's your group of 3 Do you remember? Can you come and show us where the group of 3 is please? Come on up.

Yeah I'm hearing some words. Let's see if Monsaiz remembers. Where's your group of 3 Come on over.

You want to double check? Come on over. All the way.

ALL: 1, 2, 3.

TEACHER: So we noticed that your group of 3 was over there. Is that what you were saying Daniel?

STUDENT: Yes.

TEACHER: And then when we were looking at Enrique's work, where was Enrique's group of 3 Do you see it, Monsaiz?

STUDENT: Yes.

TEACHER: You can say, it's right here.

STUDENT: It's right here.

TEACHER: Will you count and make sure, to prove it to us?

ALL: 1, 2, 3

TEACHER: I remember that too. So I remember that we-- thanks, would you go back to your spot please-- we were definitely taking a look at these two different decompositions. And we were thinking to ourselves, whoa, the groups are in different places, but the numbers are the same. How can that be? And I told you that we were going to start off math workshop today by talking about that exact same thing.

So mathematicians, today we're going to be working on decomposing 10. I want you to take a look up here, just with your eyes right now, and think in your smart brain, what do you notice about these compositions? How are they the same or similar? And how are they different?

So think again in your brain. What do you notice? How are they the same? And how are they different? I'm going to give you about 10 seconds to do some thinking, OK?

So Monsaiz has her eyes up here. She's doing some thinking. Madden is also doing some thinking. He's noticing what's the same or similar and what's different. [INAUDIBLE]

And in a moment, I'm going to invite you to share what you're noticing with a friend sitting next to you. You're going to tell them, "I notice" or "something that's similar" or "something that's the same is" or "something that's different is". Please turn and tell something you're noticing to a person sitting next to you.

STUDENTS: [interposing voices]

TEACHER: Can you turn to the person right here?

STUDENTS: [interposing voices]

TEACHER: Can you finish up your conversation, please, and turn back this way? Thanks. Finish up your conversations and turn back this way.

So even though the equations-- even though the groups are in different places, they have the same equation? Is that what I'm hearing you say? That's crazy. Daniel has the last word on this. He's got a quiet hand on his heart for something he really wants to say.

STUDENT: Why is it in the wrong way?

TEACHER: Oh, we'll talk about that in a moment. We'll talk about that in a moment, OK? I think I'm hearing what Daniel saying. He's confused about why I break up the ten on this side. Monsaiz can you go back to your seat?

All right, mathematicians, you've given me a lot of ideas and you've given your friends a lot of ideas about things to be thinking about. As you go back and try to decompose 10 today, I want to show you-- Kali --two resources that you can use to help you find as many different decompositions of 10 as possible today. And then I want to send you off for work time, OK?

So first off, this chart here just gives you reminders about what you're doing today, OK? So the instructions for today are, when you go back to your tables, you will decompose 10 into two groups. Abigail, will you help me read that please?

TEACHER: You will

STUDENT: You will

TEACHER: decompose

STUDENT: decompose 10

TEACHER: into

STUDENT: into

TEACHER: two

STUDENT: two groups.

TEACHER: So I actually put up some of Monsaiz's work from last week. Monsaiz had decomposed this 8 card into three groups, a group of 3 and a group of 2 and a group of 3. Derek, I'm going to repeat this so you can hear. A group of 3, a group of 3, and a group of 3. Mathematically, totally correct, but that's not what we're doing today.

We're decomposing into two groups, which means you should have two groups circled just the way that Mr. Torney had two groups circled. The next instruction says, find as many different ways as you can. |n moment you're going to go to your table and you're going to be trying to decompose 10, into two groups, in as many different ways that you can.

The other piece that I want to tell you about is the talk piece. Can you go ahead and turn towards the easel please? Now during your time today, Mr. Torney is going to be walking around. And Ms. Nicole is going to be walking around too. And we're going to be talking to groups of mathematicians.

If you need help or if you want somebody to help you with your thinking or to check your work, who are the people that you can talk to? Who are the people that you can talk to? Eveline, who are the friends you can talk to?

STUDENT: To the people-- the friends that are on the table.

TEACHER: Yeah, we should absolutely talk to friends at our tables because those mathematicians are the experts in our classroom. They can help you figure out what's going on with your decomposition. So for instance, Isabelle, if Mr. Torney was finished with this decomposition and he sitting at my table, I might walk up to you and be like, hey Isabelle, I have decomposed 8 or 10 into two and 8s. And then you can say, I agree or I disagree.

STUDENT: I agree because I can-

TEACHER: Oh

STUDENT: Because I can see them right here and right here.

TEACHER: Oh Isabel said, "I agree because I can see them right here and right here." And then I might say to Isabel, "Can you prove it? Can you prove that this is two and 8?"

STUDENT: This is two and 8 because I can see two and there are two right here and 8 and 8.

TEACHER: And how can you prove that that's 8?

STUDENT: 1, 2, 3, 4, 5, 6, 7, 8.

TEACHER: So she could count to prove it. Or I would say, "how do you know?" Or if Isabel thought that Mr. Torney was wrong or made a mistake, she could say, "I disagree". And I would again ask her, "Can you prove it? Or how do you know?" So if you need help, you should absolutely walk up to a friend at a table to get some help from those friends.

TEACHER: What are you noticing?

STUDENT: I noticed that there are 4.

TEACHER: Are you sure that's 4?

STUDENT: 1, 2, 3, 4, 5. 5.

TEACHER: Can you change your idea?

STUDENT: Yes.

TEACHER: Yeah what are you noticing?

TEACHER: That there are 5 and 5.

TEACHER: You're noticing that there's 5 and 5.

STUDENT: I have the same.

TEACHER: Oh, what are you hearing your friend Eveline saying?

STUDENT: She has the same.

TEACHER: She has the same. How do you know this was the same?

STUDENT: Because I see 5 and 5.

TEACHER: You see 5 and 5? Hey friends. One more thing. Can you touch your shoulders? Can you touch the air? Can you touch your shoulders? Can touch your nose?

Mr. Torney is really surprised. You all are being super, super shy. Do you have important things to be saying to your friends right now?

STUDENTS: Yeah.

TEACHER: Yeah, it's totally OK for you to be talking. Melton, to work. Oh Monsaiz has a different way. Wait so what did you hear Eveline say?

STUDENT: Can you repeat it?

They are the same because they're 5.

TEACHER: What's your way that you found to decompose? It's a group of 5 and a group of

STUDENT: 5. Eveline said that there are a group of 10 and another group of 10.

TEACHER: Is that he said? That's not what I heard. Tell her what you said. Did you write your equation?

STUDENT: I said, they're the same because there's 5 and 5.

TEACHER: I know. I'm sorry. Did write your equation?

STUDENT: They're the same because there are 5 and 5.

TEACHER: Yeah, you got a 6? Nice strategy to find out how to write 6. Yep, you got it. Write it down.

STUDENT: You didn't notice this table was 6?

TEACHER: This table's also the number 6. Numbers are everywhere. You got a group of 5 and what's your other group?

So let's keep writing our numbers down at 6 plus 4. You know how to write 4. You did it. What's your next step?

STUDENT: Get another one.

TEACHER: OK, and then when you come back, I really want to-- oh I'll wait for you to come back. Is the same as? Can you write the mathematical symbol that shows "is the same as"? Hold up. Sabrina has the same way too?

STUDENT: Yeah.

TEACHER: That way's been really popular so far. Hold on, Daniella. What? What was Eveline saying to you?

STUDENT: That there are 5 and 5.

TEACHER: There's a group of 5 and a group of 5. And together that makes--

STUDENT: 10.

TEACHER: OK, is that what you were saying Eveline? Yeah, is the same as how many is that the same as? Go ahead and write that down please.

STUDENT: I did it.

TEACHER: You did it? Well, you better record it with a number sentence. And then you can ask your friend to help you check your thinking.

What's that? Yeah it's just like on the cards. That number tells you how many hearts there are. All right, so read your number sentence please.

6. plus. Is the same as. How many all together? I want you to double check how many are in that group.

1, 2, 3, 4, 5, 6, 7, 8, 9. 6 plus 4 is the same as 10. Nice. Do you have another way? Look, Maria has a 6 plus four is the as then, but it doesn't look the same as yours.

STUDENT: We're the same?

TEACHER: You decomposed it. Hold on, Isabel, we're going to need your help in a second.

STUDENT: First I took the 2, then I did the 8. And then I circled them.

TEACHER: And then you circled them. All right, so I'm seeing-- what are you seeing here Isabel?

STUDENT: I'm seeing 2.

TEACHER: Yep, and what's in the other group? Will you count and help us find out, please? Oh, you'll do it for us? Great.

STUDENT: 1, 2, 3, 4, 5, 6, 7, 8.

TEACHER: Whoa, hold on. If we try to count accurately, let's have a counting count in mind as we're counting.

STUDENT: 1, 2, 3, 4, 5, 6, 7, 8.

TEACHER: Do you agree there are 8? See, I agree there's 8. Now, Isabel, here's the area that-- And, Alexa, we would love your help with this too. I'm taking a look at Kali's number sentence--

Alexa, can you just pause for one second? I'm taking a look at her number sentence. Can I read it to you?

STUDENT: Yes.

TEACHER: OK, or maybe one of you can read it. 10

STUDENT: 10

TEACHER: Plus

STUDENT: Plus 2

TEACHER: Is the same as

STUDENT: Is the same as

TEACHER: What number's that? 8. OK, 10 plus 2 is the same as 8. Is that what this picture-- hold on, just pause for one second. Let's put it down for One second.

Is that what this picture is showing? A group of 10, plus a group of 2, is the same as 8? It is? Why do you think that? Where's the group Of 10?

STUDENT: The 10 is all of them.

TEACHER: The 10 is all of them. Wait, so it's not 10 plus 2 more? No, it's not. right? Is this a group of 10 and 2 more?

STUDENT: No.

TEACHER: No, it's a group of-- you just counted. How many are in this group? Do you remember how many did Isabel say there were in this group? Oh, she's double-checking.

STUDENT: 1, 2, 3, 4, 5, 6, 7, 8.

TEACHER: OK, write it down. So there's a group of 8--

STUDENT: 8.

TEACHER: Hold on, let's rewrite the entire equation just so we don't get it confused. OK, that's fine. There's a group of 8 and a group of--

STUDENT: 2.

TEACHER: 2. And together that makes a group of--

STUDENT: 10.

TEACHER: 10. OK, so let's make sure that 10 is on the right side. We want to make sure that the symbols are accurate, right? 8 plus 2 is the same as 10. Does that make sense? 8 plus 2 is the same as 10?

STUDENT: Yes.

TEACHER: A group of 8 plus a group of 2 is the same as a group of 10 altogether? Does that make sense?

STUDENT: Yes.

TEACHER: Yeah, what do you think? All right, are you ready for your next try? And I'm interested in how you know that that's true.

Tell me about the different groups you have here. There's a group of--

STUDENT: 2

TEACHER: And a group of--

STUDENT: 2

TEACHER: And a group of--

STUDENT: 3

TEACHER: And a group of

STUDENT: 3.

TEACHER: Now I agree that this is a great way to decompose 10, but can you go ahead and take a look at the chart for Mr. Torrey's first rule for today? I said, decompose 10 into two groups. What's that say? Decompose-- 10 into two groups. Great.

So this one has two groups, I agree. And this one has two groups. Does this have two groups or more than 2 groups? It has more, right? No big deal.

How many groups are there? 1, 2, 3, 4-- no big deal. I wonder if there's another way to decompose them into 2 groups?

Let's save this one. This one's really interesting. And we're going to talk about this type of decomposition later this week. Do you want to save this one? OK, can you go get a different way and see if you can find another way? You said it looks like what?

STUDENT: It looks like popcorn.

TEACHER: It looks like popcorn. I wonder if the numbers in that one are going to be different. Check out the way that Isabel, or Alexa just found. 3 plus 7 is the same as 10. Have either of you found that way yet?

STUDENT: No.

STUDENT: That's Enrique's paper.

TEACHER: Enrique found this way? Really?

STUDENT: Yeah.

TEACHER: Oh I better wish I went with him. I just heard that Enrique found the same way. I wonder if he might be interested in seeing it. Do you want to go show him this way that you found and see if he really has the same way? Yeah? No?

It looks like Alexa wants to keep working on what she's doing right now. It doesn't look the same as Enrique's, but it has the same numbers. I'm very interested to see his way.

STUDENT: It looks the same, but it doesn't have the same numbers--

TEACHER: It looks the same, but it-- wait, it looks the same but it doesn't have the same numbers?

STUDENT: I don't agree with Kali.

TEACHER: You don't agree with Kali? Well, you'll have to talk about it. I'm going to go check in with some other friends.

How's it going, Emily? Oh my gosh. I have not seen that way yet. Can you tell me about your thinking? Hold on. Santos, check this out.

STUDENT: It's 0--

TEACHER: A group of 0--

STUDENT: Because here it's a group.

TEACHER: Plus a group of?

STUDENT: 0.

TEACHER: What's in this group right here?

STUDENT: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

TEACHER: OK, a group of 0 plus a group of 10. I'm with you. Let's go ahead and write that a group of 0 plus a group of 10-- is the same as-- what is it the same as?

Wait, Santos. Yeah, go ahead and write it down. Check this out. I'm really curious to see what you think about this. Emily, will you explain the way you just found to your friend Santos?

STUDENT: It's 0 because there's a 0.

TEACHER: So there's a group of 0, and a group of--

STUDENT: 10.

TEACHER: And together that makes?

STUDENT: 10.

TEACHER: What do you think about that? Do you agree that that's the way it decompose 10?

STUDENT: I agree that Emily-- Emily writing

TEACHER: Derrick, that's the second reminder. We're not starting this again. We're not touching the microphone.

STUDENT: There's 0 plus 10.

TEACHER: Where's the group of 0? Where is it?

STUDENT: Right here.

TEACHER: Yeah, but where in the picture is the group of 0? I see the group of 10. Yeah, where'e the group of 0? Oh, it's like here because there's nothing in it? OK. And there's a group of 10. And together that makes--

STUDENT: 10.

TEACHER: Really? 0 plus 10 is the same as 10? What? What? 10 plus 0 makes-- Really? 10 plus 0, is the same as a group of 10? Do you have this way yet? No.

I want to take a look at this way that you just made, right here. I'm curious about it. Let's see this was reminding me Mr. Torney way that I did at the beginning.

You're saying you have a group of 8 and a group of 2. Can you show Emily where your group of 8 is? Where is your group of 8 on this way? Can you count your group of 8 for us, please?

STUDENT: 1, 2, 3, 4, 5, 6, 7, 8.

TEACHER: What are you hearing Santos say? This group of 8 is-- His group of 8. Where is his group of 8? Right here. And where is Santos's group of 2? Is that right? Yeah? OK, so we're on the same page. This is a group of 8 and a group of 2, and together it makes?

ALL: 10.

TEACHER: I wonder if there's a different way that you can find. What do you think?

STUDENT: Yes

TEACHER: Yeah? All right, go for it. They both have 4 and they both

STUDENT: 6. They're in the same equation.

TEACHER: They're in the same equation. Oh my gosh. Mathematicians, freeze. Can you pile up your papers into a pile just like Sabrina's just done? Cap your markers and transition safely to the carpet?

We have to talk about what we just learned. Melt. Put your papers on the floor, please. 1, put your papers on the floor please. 0. Okie doke.

So in one second, you and your partner are going to share your math thinking with the person sitting next to you. So for instance, Daniella, if you were my partner can we show your friends what this turn and talk is going to look like? Isabel, please put your papers on the floor. So can I go first or can you go first?

STUDENT: You can go first.

TEACHER: Oh thanks. And I would be showing her. This is a shoulder to shoulder turn and talk so we can see each other's work. I have a group of 2 and a group of 8. A group of 2 plus a group of 8 is the same as 10. Do you agree?

STUDENT: Yes

TEACHER: Because--

STUDENT: Because there are 10.

TEACHER: How do you know?

STUDENT: I see 1, 2, 3, 8, 9, 10.

TEACHER: Thanks, your turn.

STUDENT: I know--

TEACHER: Let's turn toward our friends.

STUDENT: That there are 5 right there and 5 right here.

TEACHER: And they make?

STUDENT: They make 10.

TEACHER: I agree. I see a group of five-- 1, 2, 3, 4, 5 --and a group of five-- 1, 2, 3, 4, 5. And together, 5 plus 5 makes 5, 6, 7, 8, 9, 10. Nice. And then it would be my turn again.

Please turn and share your work with the person sitting next to you. It looks like Israel has that same way. Turn and talk.

Who's going to go first? No, that's great. Keep going. Together makes-- do you want to ask him, what do you think about that? What do you think about that, Steve?

Wait a second. Can I steal this way and this way really fast? Is that OK? Yeah? Keep talking.

Can you finish up your conversations, please and turn back this way? Can you finish up your ways-- conversations-- and turn back this way, please? Thanks. Just waiting for a few more friends to finish up their conversations and turn back.

Please put your papers down so they won't be distracting to you. Thanks. Mathematicians, just the same way that we opened up our mini lesson today, I want you to take a look at the Abigail way to decompose 10, and the Daniel way to decompose 10. I want you to ask yourself that same math question we started off our day with. What do you notice about these ways? What's the same about these ways? And what's different about these ways to decompose 10? Monsaiz, let's have our eyes up on the chart please. Derrick. I'm going to give you about 10 seconds of quiet thinking time, so Kali, and all friends, put your eyes up on the chart at Abigail's way and Daniel's way. And think in your smart brain, what's the same? What's different? And what do you notice and guess what? This is really reminding me of something that Enrique said earlier. Few more seconds to think. When you're done thinking you can of course show me with a quiet hand at your heart. Yes, Maria, please put your Band-Aid on and leave it on. Daniella, you had a quiet hand at your heart right away. Would you please come on up and tell your friends what you're noticing?

STUDENT: I noticed that of Abigail's and Daniel's, there are 4 and 4.

TEACHER: Hold on. We want you to explain more in a second. Santos, can you repeat what Daniella just said?

STUDENT: [INAUDIBLE]

TEACHER: Can you say that again one more time?

STUDENT: Daniel's and Abigail's, there are 4 and 4.

STUDENT: [INAUDIBLE]

TEACHER: In the pictures, there's-- Is that what you said?

STUDENT: No.

TEACHER: OK, one more time. Pretty close.

STUDENT: Abigail's and Daniel's are 4 if Abigail's and Daniel's 4.

TEACHER: Sorry, can you say that one more time? Derek was talking to his friend Santos about the carpet. We want to be talking about math right now.

STUDENT: Abigail's and Daniel's are 4 and 4.

TEACHER: Are 4 and 4.

STUDENT: Abby and Daniel have 4 and 4.

TEACHER: And ask her, "is that what you said?"

STUDENT: That's what you said?

STUDENT: Yes.

TEACHER: Yes, OK, so you notice that that's one thing that's the same. When I look at those 4 and 4s, though, they don't look the same to me. Do those 4s look the same to you, Madden?

STUDENT: Yes.

TEACHER: They do?

STUDENT: Yes.

TEACHER: Because--

STUDENT: Because there's 4 and 4.

TEACHER: I think I heard Daniella saying that, right? OK, but Mr. Torney-- I just want to be really clear about what I'm talking about. This looks different to me. One of the 4s is right here. 1, 2, 3, 4-- and one of the 4s is up here-- it's up and down-- 1, 2, 3, 4-- Madden, what are you hearing Mr. Torney say?

STUDENT: Mr. Torney said there's 4, there's down.

TEACHER: Do you want to come up and show your friends what Mr. Torney's saying?

STUDENT: Mr. Torney's saying that there's one group here and the four is up ant the 4s are up and down.

TEACHER: The 4s are up and down. Derek, would you repeat what Madden just said please? Madden, say it again please.

STUDENT: Mr. Torney is saying that the 4s over here and 4s are up and down.

STUDENT: Both of them is up and down.

TEACHER: Is that what you said?

STUDENT: Yes

TEACHER: Hang on. I actually don't think that's what you said and I know it's not what you said because it's not exactly my idea either. Hold on. Stay right here.

Derrick and Madden, this is an important mathematical idea. And we're going to get it. You can do it. Look at this 4 right here. 1, 2, 3, 4-- do you agree it's 4? Do you agree It's 4?

STUDENT: Yes

TEACHER: OK. How do you know it's 4? Mr. Torney just counted. Would you count with me to double check and make sure it's 4? Let's go.

ALL: 1, 2, 3, 4-- 4?

TEACHER: OK. This 4 is at the bottom of the card. Look at the 4 over here. 1, 2, 3, 4-- would you count that with me please?

ALL: 1, 2, 3, 4--

TEACHER: It's still 4, right? I'm saying this one's up and down like this. And this one's down. What is Mr. Torney saying?

STUDENT: Up and down.

TEACHER: This one is--

STUDENT: Up and that one is down.

TEACHER: OK this one's up and that one's down or they're in different places. But they're still 4. What do we think about that? Turn and tell your partner.

How can this still be 6 plus 4 equals 10? Or how can these both be 4 if they're in different places? Turn and talk. They're both 4.

STUDENT: They are both 4 because

TEACHER: They're both 4.

STUDENTS: [interposing voices]

TEACHER: How do you know they're both 4?

STUDENTS: [interposing voices]

TEACHER: Yeah, but they're not in the same spot.

STUDENTS: [interposing voices]

TEACHER: Go get a Kleenex. What do you think about that?

STUDENT: They are not the same. [interposing voices]

TEACHER: They're not in the same spot, but they're still both-- Interesting. Turn back this way please. Turn back this way please. Thank for finishing up your conversations.

We're going to take a few last closing comments. And then next time we have a math workshop, we're going to keep working with this conundrum. How can numbers be the same, when they are in different places?

Oh, Eveline. Is Eveline not here? Oh you're right here. Right in front of me.

What do you think about that? Look you have one too that's pretty similar. 6 plus 4. What's the same about the 4s?

STUDENT: Um, they're different

TEACHER: Oh, or what's different?

STUDENT: They're different because they're-- 5 and-- TEACHER: Oh hang on. I'm looking at you 4 right here. Do you agree that that's 4? Do you agree that this is 4? Do you agree that this is 4? So they're all 4, but something's different about them. What's different about them?

STUDENT: Because they're different because I have 6 and 4 and I have 10.

TEACHER: Right, 6 and 4 made 10. And on this one 6 and 4 made 10. And on this one 6 and 4 made 10. I was hearing my friend Daniel talk about this in his turn and talk. Will you share your comment with us? This is last word.

STUDENT: They're both--

TEACHER: They're all--

STUDENT: They're all 4s, but they're not in the same spot. And sometimes they're not in the spot because people draw them different ways.

TEACHER: But they're all still--

STUDENT: They're all still the same.

TEACHER: Mathematicians, that's crazy. I just heard Daniel saying-- Maria I need your eyes -- that they all have 4, but they're in different places because people decomposed 10 in different ways. But they still make groups of four. We're going to talk more about that at math workshop tomorrow and figure out what is going on with that.

Right now Mr. Torney is going to go ahead and collect your papers. And then I'm going to invite you to calmly get in line for outside time.