

Intermediate Math Parts
Classroom

Teacher 2: Thank you.

Teacher 1: Here, I'll do this.

Teacher 2: Okay.

Teacher 1: Student, that needs to be down, sweetie. Okay, all of you have it?

Student: Yeah.

Teacher 1: Great, thank you. Okay, let's see. [Are we 00:00:16] good?

Student: Yeah.

Teacher 1: Everyone had it? Great.

Student: Does everyone have modeling dough?

Teacher 1: Yeah, who is the set-up leader? Who is the set-up? Is there any set-up leader at this table?

Student: No.

Teacher 1: Is anyone a set-up leader? That's kind of the person who sets things up, so Student and Matt, why don't you be that for today, okay? Okay, Student, are you all done?

Student: No, I'm working on this, but I did [crosstalk 00:00:50].

Teacher 1: Oh, okay, Student. That was supposed to be done for today.

Student: I only did this much.

Teacher 1: Okay, where's your Carnival map? Do you have that?

Student: Yeah, my Carnival map is done.

Teacher 1: Awesome, can I have that? Thank you so much, great.

Student: [crosstalk 00:01:05] get it.

Teacher 1: Awesome, love it. This looks awesome, Student. Can you just write your name on this? Thanks, buddy. Awesome, thank you so much.

Teacher 2: [crosstalk 00:01:19] right now, we'll check it tomorrow, okay?

Teacher 1: Great, now can you finish this for tomorrow? Okay, can you get your math notebook out right now, and then label your new page please. Okay, good. You're going to need your square a little bit bigger in this cycle, okay? Thank you, good. Student, is that not done?
[00:02:00] Is that not finished? Okay, Student, can I have your eyes? Can you put it in your homework folder, and then put that away so we have a clear working space? Thank you. Nice. Okay, Student and Student, look at me for a second, okay? I'm just letting you know that it seems like talking may be a problem. You both have an important job because whenever we're talking, you've got to swivel your body towards the front of the room, okay? Does that sound good?

Then I'm letting you know that we're going to be monitoring this seat, seeing if we can do it again, right? If you want to continue sitting together then you have to be using your seat wisely, okay? Can you get a place mat? Student, did you label the next page in your notebook?

Student: No, I didn't start [crosstalk 00:02:48]

Teacher 1: Actually, that's the step after you label your next page, okay?

Student: Oh.

Teacher 1: Let's look back at the Do Now slide, okay? Awesome. I am looking for the weirdest position ever, but no one seems to have it.

Student: I have it.

Teacher 1: Yes, that's what I'm looking for, but you can only really put both of your hands on your head like this, really, really strange, kind of like, ah, I'm ready to go to the beach and relax, unless you have modeling dough, a place mat, your modeling dough in a what shape?

Students: Square.

Teacher 1: Square, your modeling dough in a square, right? Then, your hands should be on your head like you're going to the beach and relaxing.

Teacher 2: You have about seven times five seconds to do this because we have [crosstalk 00:03:43] scheduled today [crosstalk 00:03:44].

Teacher 1: Oh, it's not a lot.

Teacher 2: Seven times five seconds.

Teacher 1: Let's put this on here.

Teacher 2: Miss [inaudible 00:03:51]?

Teacher 1: Yeah.

Teacher 2: I took attendance, but I don't want to open Jump Rope on the projector.

[00:04:00]

Teacher 1: I'll do it, yeah, yeah, yeah, definitely. No it's fine. Nice job getting started, Student. Good, Student, we need a bigger square, okay? That's like an almost square, but we need a square, okay? No. Try your best with it, Student. Nice, [inaudible 00:04:54], slightly bigger square, okay? Nice job, I'm seeing super-small squares. Do you want to draw a square on the board for like about how big it should be?

Teacher 2: Oh, like life-size?

Teacher 1: Yeah.

Teacher 2: Okay, mathematicians.

Teacher 1: Hey, what? Let's try that one more time.

Teacher 2: Hey mathematicians.

Students: Hey, what?

Teacher 2: I see much more eyes on me after that, that's what happens after a signal like that. I'm noticing a lot of small squares, and I'm telling you right now, I know it's hard to make a perfect square, don't worry, it's okay, but I'm just tell you right now that the exercise that we're going to do with this is going to be difficult for you if you don't make the biggest square possible. Try to make the biggest square possible using all of your modeling dough because we're going to make ...

Teacher 1: That's a good one.

[00:06:00]

Teacher 2: ... [crosstalk 00:05:58] out of the solid pieces, so if you start with a really itty-bitty square, your pieces are going to get super, super tiny, okay? It doesn't have to be a hundred percent perfect, but ...

Teacher 1: [crosstalk 00:06:10] by flattening this out, just [crosstalk 00:06:15]

Teacher 2: Do your best, okay? Any questions [inaudible 00:06:23]?

Student: Is this too small?

Teacher 2: If you are done, please help your table. If you're done, if you found a strategy to make a

square, you should help your table get [crosstalk 00:06:36]

Student: Anyone need any help, because I have a good strategy.

Student: [crosstalk 00:06:39] a good strategy.

Student: No, I actually do have a good strategy.

Student: Strat.

Student: Strat.

Student: You said strat.

Student: Yeah, I know, strat.

Student: Some strat, [crosstalk 00:06:46]

Student: Everyone calls it strat.

Teacher 1: How's that? Better? Yeah, a little bit bigger, a little bit straighter. Nice, Student.

Teacher 2: Does everyone have a strategy here? Almost.

Teacher 1: Okay, it looks like we're almost done. Nice, Student.

Teacher 2: I didn't foresee a square being so hard to make [crosstalk 00:07:07].

Teacher 1: I think we're ready to move on, though.

Teacher 2: Okay.

Teacher 1: That's right, here, let's just trim the edges a little bit. Do you guys have knives? Yeah, that's perfect, good. There we go, here. Yeah, just try to straighten the edges. Okay, ready?

Student: Do I have to re-do this?

Teacher 1: Wait one second. You have a cube, you don't have a square.

Student: It's a 3-D square.

Teacher 1: I know, I love it, but you need to make a square.

Teacher 2: I got a lot of response on that table. Okay, I know you're not completely done, but can I see your hands on your head? That helps me. I'm [inaudible 00:07:56] modeling dough

[00:08:00] anymore. [inaudible 00:07:58] it's time to [crosstalk 00:08:00] our investigation. I need [for 00:08:05] a hundred percent put your hands on your head.

Teacher 1: [crosstalk 00:08:09]

Teacher 2: We chose a position where you could actually rest your hands so that you're not really getting them all tired. We did that on purpose.

Teacher 1: Thank you.

Teacher 2: Awesome, I see a hundred percent [crosstalk 00:08:20]

Teacher 1: Great.

Teacher 2: Okay, you can remove your hands from your head, but they should not be touching your modeling dough. Here's the thing, all last week we worked with carnival maps, and park maps, and you got creative, so we built [crosstalk 00:08:34]

Teacher 1: Pretty good, kind of rectangle-ish.

Teacher 2: Some of you built [inaudible 00:08:36], some of you chose to do Pokemon.

Teacher 1: What do we need to do with our bodies when Miss [inaudible 00:08:41] is talking? Thank you.

Teacher 2: Right now your eyes need to be up here on me or on the screen. Don't worry about your modeling dough, okay? Miss [inaudible 00:08:50] chose to make a zoo.

Teacher 1: I did, because I love animals like so much, okay? Some of the animals I decided to put in my zoo were hippos, giraffes, puppies obviously, right? Parrots, koalas, toucans, wolves, even though they're not usually in zoos, hopefully they won't get out and eat the rest of the animals, and flamingos because they just have an amazing outfit everyday. I just love that vibrant pink. Okay, but here's a problem, there was an issue with this, okay, Student? The issue was that by mistake, I kind of forgot, and I had already broken up my map for all of the exhibits. Every animal had exactly what, the amount of space I wanted them to have, and then I realized something. I forgot the most amazing marsupial.

[00:10:00] Close, not a chinchilla, does anyone know? A wombat, okay? I forgot a wombat. Now, does anyone know what a wombat looks like? Dylan? Student? They're really floppy, they're super soft, and they're also really cuddly and like super adorable. Have you seen a picture Student?

Student: Well, I do see them on my video games.

Teacher 1: Awesome, great. Wombats, while the name sounds super-scary, they are a really awesome animal and I wanted them in my zoo, okay? As you can see up here, so you

can read my problem, this is my actual problem, we made it into a word problem for you guys. Can I have, pause, should we do reading figures?

Student: Yeah.

Students: No.

Teacher 1: Let's do it just to be fun, okay? Can I have reading fingers out, Student, and up here, Student?

Student: [inaudible 00:10:59]

Teacher 1: Can you put these down, please? Thank you, awesome. I don't want to take that away.

Student: [inaudible 00:11:09]

Teacher 1: Okay, and are guiding question for this problem is, what, Student?

Student: [inaudible 00:11:27]

Teacher 1: What's our guiding question, though?

Student: What fraction of the [inaudible 00:11:31].

Teacher 1: Exactly, so Student was right the first time, so my goal, my challenge, is making a habitat for the wombats when I already have a full zoo, right? Okay, but my actual goal, the fraction that I want to come out with at the end, is what fraction of the whole zoo was the wombat exhibit?

[00:12:00]

Teacher 2: You have five minutes to use any tool at your disposal [crosstalk 00:11:59]

Teacher 1: Can you put this down while we're talking?

Teacher 2: Try to solve this problem.

Teacher 1: I've had to talk to you a couple of times now, okay? Do you need a [inaudible 00:12:05] to refocus? Okay.

Teacher 2: What fraction of the whole zoo was the wombat exhibit? Okay, and it doesn't need to [pop out 00:12:11] an answer. If you have an answer, you need to be ready to support your answer with reasoning, explain your reasoning, and to say how you got there, right? If you tell us it has to do with the wombat exhibit, you need to be ready to prove your answer to the people at your table or to your classmates, okay? You have five minutes right now to use any tool in front of you. You can use expo markers on your place mat if you choose.

Teacher 1: You can use Play Doh, you can use your notebook, any of those tools are fine ...

Teacher 2: ... to solve this problem, okay? We will be walking around to check in.

Teacher 1: Oh, and what Work Cabin are we working on right now?

Student: [inaudible 00:12:53]

Teacher 1: Student got it. Say it a little bit louder.

Student: Participates effectively.

Teacher 1: Excellent, and the sustainability scale, Student, you were right on it.

Student: [inaudible 00:13:05]

Teacher 1: It could be that one, but I'm not sure what you're saying.

Teacher 2: Communicating power fleet?

Teacher 1: It could be communicating power fleet, could it also be, what's the other one about group work?

Student: Collaborating.

Students: Collaborating productively.

Teacher 1: Collaborating productively. Awesome, okay, get started.

Teacher 2: All right, so [crosstalk 00:13:29]

Teacher 1: Okay, what are you guys using to figure this out? What tools are you going to use?

Student: Expo marker.

Teacher 1: Okay, first, so what you have to do, Student? What's your first step?

Student: Cutting it?

Teacher 1: In a ... Is that a square?

Student: I don't know how to make a square.

Teacher 1: Okay, would you like some help?

Student: [inaudible 00:13:52] There's two lines, and they're [important 00:13:56]

[00:14:00]

Teacher 1: Cool noticing, okay, so that's what you're going to do first, Student?

Student: Yeah.

Teacher 1: Okay, you guys can also do this in your notebook if you feel more comfortable doing that.

Student: You know what I was actually going to wish for? I was going to wish that I could use a pizza cutter.

Teacher 1: Oh yeah, that might work. That would definitely work, there you go. There's your square, my man.

Student: Oh, nice.

Teacher 1: Okay?

Student: Can I use that as another square?

Teacher 1: No. You're going to use that square right now, and we're going to put the extras in here, and then you may need to use them later. Okay, so now look, that's the zoo, so how are you going to divide up? What are these, Student?

Student: They're fourths.

Teacher 1: Norths, awesome.

Student: In one-quarter, there's two animals.

Teacher 1: Okay.

Student: In one, there's one animal, and there's two, and then there's four animals. I don't get it.

Teacher 1: Okay, there's four animals in one, okay, so let's look. Where's the knife? Let's see, Student, can I use the knife? Here, so in one there's two, in one there's three, right?

Student: Mm-hmm (affirmative).

Teacher 1: We could do this, right? In one there's two ...

Student: Mm-hmm (affirmative).

Teacher 1: ... and in one there's four.

Student: Mm-hmm (affirmative).

Teacher 1: Does that look like it? Put all of these together. Form the zoo, see if that looks like it. There is one hippo, but this is the hippo now and this is the wombat, right? That's that top square here, Student. Check this out. Right, Student? See that? That's the fourth, and then one, two, three, but this is the hippo so you can erase that line, right? See that [00:16:00] kind of dotted line, right there? Right? Student, did you come to a conclusion?

Student: No, because I don't have a knife.

Teacher 1: Oh, okay. Well, I wonder if you could work on in your notebook, then? Or do you want to ask [Student 00:16:15] to borrow the knife? There you go, now think about it. We're asking you what fraction is the wombat? What fraction. Oh, I like your labels here. Hi, did you figure it out? I think you might have. That's okay, you might have figured it out on your own answer. Do you want to put in expo marker what you figured out right here so we can see your thinking? Okay, great. It looks like, Student, how are you doing?

Student: I'm good.

Teacher 1: Okay. How about I help you make a square? Can you listen to Student's thinking because I'm pretty sure she's kind of on the right track. What do you think? Student, do you want to explain your thinking to Student while I make him a perfect square. Oh, you all know how much it is? How much?

Student: One-twelfth.

Teacher 1: One-twelfth? Did you get the same? Yeah? Awesome.

Student: If we divide it into fourths first, it all equals fourths. The puppies, parrots, koalas, and toucans are into one-sixteenths. The flamingos and wolves are into one-halves.

Teacher 1: Okay.

Student: Then, the giraffes are into one-fourths ...

Teacher 1: Okay.

Student: ... but the flamingos and wolves are one-eighth, so I just felt like explaining all that [inaudible 00:17:27]. The hippos and wombats are one-ninth.

Teacher 1: Awesome, well let's see if Student and model that with his dough, his modeling dough. Student, where's your visual?

Student: I need a visual?

Teacher 1: Yeah, so I'm thinking, I know you can explain it perfectly orally, but Student, you can use your notebook for a visual, or you can use the modeling dough for a visual. Either is fine.

Student: I want to use the modeling dough.

Teacher 1: Okay, great.

Student: Can I get [crosstalk 00:17:56]

Teacher 1: Yeah, of course, thank you for asking.

[00:18:00]

Student: Thank you.

Teacher 1: Yeah.

Teacher 2: A paper clip makes a good cutting tool.

Student: There's ten animals [inaudible 00:18:06] one out of ten.

Teacher 1: Okay, so there's ten spots, so there's one out of ten animals is the wombat. I wonder, this is the wombat, right?

Student: Mm-hmm (affirmative).

Teacher 1: What if you divided all of the section like you divided this one? Flip these over, now divide all of them like you did this.

Student: There.

Teacher 1: See how many parts, oh, okay, so what fraction is the wombat cage, Student?

Student: One-ninth?

Teacher 1: Student ... One-ninth?

Student: Yeah.

Teacher 1: Okay, do you have, because when we say one part out of nine parts, that means that all nine parts are equal. Do you have nine equal parts right there?

Student: I was talking about the cages.

Teacher 1: Oh, okay, so there's out of nine cages, one of them is a wombat cage?

Student: Yeah.

Teacher 1: Great, we want to know what fraction though, so can you open your notebook and make me a square zoo, because I want to know what. Now there's what? What fraction is the wombat. Wait, fifteen? One, two, three, four, five, six, seven, eight, nine, ten, eleven, fifteen. Ten, eleven, twelve. I got twelve.

Student: Oh yeah, twelve.

Teacher 1: Twelve, so one is, this is the wombat. What fraction of the whole is the wombat?

Student: One-twelfth?

Teacher 1: One-Twelfth. One out of twelve, right? Awesome. Are you prepared to explain that? I wonder, Student, can you and Student share strategies and answers so that you guys can figure out whether you're both on the right track? Okay, turn and share to each other. Nice, are you going to try again to make it into equal parts?

[00:20:00]

Student: Yeah.

Teacher 1: Great, okay. I love it. I love the persevering. Nice.

Teacher 2: You've got wombats?

Teacher 1: Cool.

Teacher 2: This is one-third, and you [crosstalk 00:20:12]

Teacher 1: I like it.

Teacher 2: Right?

Teacher 1: Where's yours at?

Student: [inaudible 00:20:19]

Teacher 1: Yeah, sure, definitely. You're going to try it with that? Just give us, bring it back over here, okay? We don't have too many. Nice, [inaudible 00:20:29], I like how your modeling the zoo first.

Teacher 2: You just made a huge jump in your head, your thinking changed. I encourage you to [crosstalk 00:20:40]

Teacher 1: Are you guys trying to model it, or are you guys ...

Student: No, we already modeled it [crosstalk 00:20:44] accidentally ...

Teacher 1: Oh. Oh, sorry.

Student: ... but then we kept on [crosstalk 00:20:46]

Teacher 1: But then you accidentally ... Okay, so next if you already modeled it, take it a step further. Make a zoo, make your own zoo, or figure out if I had two wombats.

Student: Oh, I know that answer.

Teacher 1: What's that answer?

Student: Two-twelfths.

Teacher 1: Two-twelfths, two-twelfths, so that would mean, I am talking about if I have one-twelfth, one wombat cage, and I divide it in two ...

Students: Oh ...

Teacher 1: ... then what fraction would each wombat cage be.

Student: 0.5

Teacher 1: What is that in a fraction?

Student: A half.

Teacher 1: Yeah, let's go.

Teacher 2: I'm going to put [inaudible 00:21:26].

Teacher 1: Yeah, no, I think that's great. Okay, ready?

Student: How do you spell wombat?

Teacher 1: I'm going to wait for a couple of people because I'm still waiting for some hands-off modeling [inaudible 00:21:42]. Thank you. Thank you, okay, so if your body is not faced towards the front of the room, can you please face it towards the front of the room. We're going to have a quick share-out. Do we need our community ball?

[00:22:00]

Teacher 2: No, because of timing, we're being [inaudible 00:21:59]. We're kind of over time, because of timing, we're going to have to [steal 00:22:04] that, the share. We're going to have to guide the sharing, okay, so that it goes, so make sure you give them a lot of [inaudible 00:22:10] and time to get to our [inaudible 00:22:11], okay? Student, I see your hand up, no, just stretching. [inaudible 00:22:19] share with us [crosstalk 00:22:23]

Teacher 1: Awesome, thank you for listening. Student ...

Teacher 2: Eyes are on her.

Student: This is how I used my modeling dough, and [inaudible 00:22:34] the wombat, so since I heard Miss [inaudible 00:22:38] that she split the hippos into thirds, the hippo area in thirds to make the [inaudible 00:22:45] wombat [crosstalk 00:22:48]

Teacher 1: She's good.

Student: ... half of it into six, and the other half into another [kind of 00:22:56] six. The blue stands for wombat, and [inaudible 00:23:02] the corner here, it's one, in all of the area is twelve pieces, so it's one-twelfth.

Teacher 2: I tried to draw, like Student said, she continued this the way that the hippo was split up, she continued, and to split up every section, every fourth, the same way the hippo was split up. She split every fourth into thirds.

Teacher 1: Can you raise your hand if you did use a similar strategy as Student and got a similar answer? Can you raise your hand nice and high just so we can see, okay. Student, great, okay, awesome, nice. Good, I'm glad to see that we are using similar strategies. I had a couple of people who I was talking to and they were making the case that it was one-ninth. I wonder how that answer was come to, and if that's a correct answer. Did anyone get one-ninth and want to talk about it? No? Yeah, Student?

[00:24:00]

Student: Student thought it was one-ninth because I think there was, at least what I thought, was there was nine animals, and the hippo one was cut into thirds and stuff, so I thought it was one-ninth because there was only one wombat, so I thought it was one of every animal.

Teacher 1: Awesome, thank you for explaining your thinking. I'm wondering if it is one-ninth, or if Student was just using a ratio, like the wombat was one one animal out of nine animals in the zoo. Is Student right for the one-ninth or is he on the right track but not quite there?

Student: On the right track [inaudible 00:25:04] right there.

Teacher 1: Okay, tell me why that's not, because that makes sense to me. There's nine animals, right, and one animal is the wombat, so one out of nine. Why is that not correct? Why is one-ninth not the answer? Student.

Student: Because those are just the animals, not the format of the zoo.

Teacher 1: Oh, okay. Okay, can you add to her answer, Student?

Student: Because it's all the habitat, so they have different sizes.

Teacher 1: Oh.

Student: There might be nine animals, which is correct, but then there's different sizes of habitats, so we have to divide, go by the habitats, I guess.

Teacher 1: [00:26:00] Okay, awesome. What I hear you saying, Student, tell me if I'm wrong, and Student, tell me if I'm wrong, is that Student divided it up, but it wasn't in equal pieces. Student, can you put that down while we're talking, thank you. It wasn't in equal pieces. I'm wondering about that.

Teacher 2: That brings us back to Student's explanation. She actually focused on the wombat piece, and was like, "I need the entire zoo to be equal pieces to the wombats." That actually brought us back to our original explanation, and she's thinking, okay, the wombats are a third of a fourth, so I need the rest of the zoo to be split up into pieces that are equal to this, because that's the only way that we can get an accurate fraction for what this part of the park is, right? If we used this example, we could count how many parts there are, but they're not all equal parts, so if you created a fraction it wouldn't be mathematically accurate. By splitting up the rest of the zoo into the same sized pieces as the one we're focusing on, we can then find the mathematically accurate fraction.

The wombats, we split all the fourths up into three parts, and we count total. Now it's twelve equal parts in the zoo, and the wombats are how many of those?

Students: One.

Teacher 2: One, right? It would be one-twelfth of the zoo. Visually, does this make sense?

Student: Yes.

Teacher 2: Or do we have questions about this visual representation? I see a hand. Student, go for it. Ask a question.

Student: [00:28:00] It does make the most sense because that would be where the other animals would be, but then if we were splitting up the hippo habitat, then it would be over, so it doesn't make most sense I don't think.

Teacher 2: What do you mean it would be over?

Student: The hippos are in a different location on the zoo [inaudible 00:28:10].

Teacher 1: Oh, so you mean why would we split the giraffe habitat into three parts? Is that what you were saying?

Teacher 2: I'm wondering if this question might be answered if we give a different example, and we try that one out. Student, do you want to add to this explanation before we move

forward? Go for it.

Student: I want to answer her question.

Teacher 2: Okay.

Student: [inaudible 00:28:39]

Teacher 2: What do you want to do? On the whiteboard, or [inaudible 00:28:43] here? Yeah.

Student: It's already split into fourths, and all I'm doing is the [inaudible 00:28:50]. Since this is already split into thirds, I'm splitting this in thirds and ...

Teacher 1: Kind of carrying it over? Okay, so we're kind of, if you noticed too, which may help, is that that dotted line is kind of an imaginary line. I don't have two hippos, I only have one hippo. No, sorry, I have two hippos, but I only have one hippo habitat, right? The two hippos are together in that one habitat, which is why I used a dotted line, right? That dotted line represents something a little bit different, so what Student is saying is that she actually, all of the other lines that we used up there are dotted lines, right? They don't actually exist, but we use them to figure out what part of the whole the wombat cage was.

Teacher 2: This, one-third of one-fourth, we agreed that this represents one-third of one-fourth.

Teacher 1: Can you turn your body, this is a really important question, it's going [inaudible 00:29:53] the rest of the lesson.

[00:30:00]

Teacher 2: One-third of one-fourth, equals one-twelfth, sorry, that makes it a sentence. That's goes as a visual. We're going to try to create a second visual together with a new set of examples to make this make a little bit more sense. I need a fraction from someone, not a very complicated one, come on.

Student: One-fourth.

Teacher 2: One-fourth. I just need one fraction.

Student: Okay.

Teacher 2: Okay, one-fourth of, I need another pretty simple fraction from someone who I haven't heard from yet. Student.

Student: One-half.

Teacher 2: One-half, okay. We want to visually represent one-fourth of one-half. We're taking a part of a part. What should we start with? What should we cut our square into first?

We're taking a fourth of one-half, which fraction should we represent first? Everyone should be trying to think about this. I see some hands up, I'm going to wait for a little bit more hands, which fraction should we cut the square into first?

Teacher 1: Should we cut it into halves, or into fourths first? Which one should we do?

Teacher 2: On the [layout 00:31:11], what is your original [crosstalk 00:31:13]

Teacher 1: I'm going to take this [crosstalk 00:31:12] because I see you continuously playing with it, okay? We just asked a question and we need your valuable input as part of the class, okay? Okay, and it's going to help you for things later, okay? Afterwards, and I know you have Play Doh at home, right, I know that, so you can you use your Play Doh [crosstalk 00:31:34] okay? Okay, so let's look up there, okay? Thank you.

Teacher 2: Show me that you are participating effectively right now by giving me, "Yes, I agree one-half first," or, "I don't agree."

Teacher 1: Yeah? Student? Yeah, oh, in the middle.

Teacher 2: I see that most are in agreement. If you disagree, then follow along and see if you change your mind or if you want to add to this discussion.

Teacher 1: We can always change it after, right?

[00:32:00]

Teacher 2: If you cut it in half, I'm going to shave one-half. Is that okay with everyone, to represent that one half?

Teacher 1: Student, can I have your eyes on the board and your body turned? Thank you.

Teacher 2: Now, what do we want? How can we finish representing one-fourth of one half? I see more hands up, what do we need to do? What is our next step?

Teacher 1: What do we need to find? What do we need to break it up with ?

Teacher 2: [crosstalk 00:32:19] take your hands off your modeling dough, and your eyes are in the perfect spot to see this board. You actually are really lucky in your spot, so we're trying to represent one-fourth of one-half. We have one-half, how do you represent taking one-fourth of this? What lines do we need to draw? Does anyone feel confident coming up and drawing these lines? Student, come on up. Can anyone lend Student [inaudible 00:32:52], so Student is going to draw what our next step would be. What do you do, Student?

Teacher 1: [crosstalk 00:33:11] She cut it in half first, and then she broke that half into four parts, right?

Teacher 2: Student, do you agree that Student just cut this half into four parts?

Teacher 1: Because we have one-half [crosstalk 00:33:19]

Teacher 2: Student, do you agree that Student just cut this half into four parts?

Teacher 1: We actually did this second fraction before the first. Kind of backwards, huh?

Teacher 2: With the blue?

Teacher 1: Did you see that? Awesome.

Teacher 2: You did, can you see it?

Student: Yeah, I can see it.

Teacher 2: Student, do you agree that she just cut the half into four parts?

Student: Yeah.

Teacher 2: Okay, so we're in agreement.

Teacher 1: She cut it in half first, right, which is actually the second fraction, if you look up there, right? Look, and then she used the first fraction to cut it into fourths, right? It looks like right here we almost did the one-half before the one-fourth, right?

Student: Mm-hmm (affirmative).

[00:34:00]

Teacher 1: When we saw [off/off 00:34:01].

Student: Yeah.

Teacher 1: Okay, let's look at what Student does.

Teacher 2: I'm going to do it a little bit darker, exactly what you did but darker, so people in the back can see. Thank you, Student, so I'm now creating this. I'm pretending this is a pan of brownies. I like brownies.

Teacher 1: I love brownies.

Teacher 2: We're going to talk about brownies all day. We just shaded one-fourth, one part out of four from this [pan 00:34:31]. Are we on the same page?

Student: Yeah.

Teacher 2: Okay, but now we need to figure out how much this is of the whole pan. Top of your tables, and for forty seconds about how to figure out how much of a whole pan this might be.

Teacher 1: If you already know off of the top of your head, draw it or model it out. Ready? Go.

Student: I've got a question. Did you bring any brownies?

Teacher 1: No.

Student: Oh.

Teacher 1: But did you bring any for me?

Student: I would have baked some. My mom ...

Teacher 1: Well, then why would I bring some for you if you didn't bring any for me?

Student: Well, I brought other stuff ...

Teacher 1: Okay, so now let's look, okay? I love this that you've created right here, but we're actually going to take away from that right now, okay, and we're going to open our notebook.

Student: What time is lunch?

Teacher 1: Soon, I'm getting hungry, are you?

Student: It's 11:23.

Teacher 1: Okay, let's write this down. If you guys have expo markers, write this down, but Student, here's your brownie pan, can you divide this?

Student: With no brownies?

Teacher 1: With no brownies, but look, now divide it like that and figure out what part is shaded both blue and red up there. Nice, good getting started. Student, thank you. What is, how much is that part right there?

Student: One-fourth is shaded, [inaudible 00:35:50] one-fourth.

[00:36:00]

Teacher 1: One-half, so how much is actually shaded? It's only one-fourth of one half, so how many parts are shaded?

Student: One-fourth.

Teacher 1: One-fourth of one half though. We're asking now, Student, how many out of the whole pan is that?

Student: One-fourth out of seven ...

Teacher 1: It's one part ...

Student: Wait, where's the marker?

Student: Done.

Student: Of fours, six, seven.

Teacher 1: Is it seven, or is it eight? Okay, so look, look, let's deal with the dotted line, okay? Ready? Now, one out of how many parts?

Student: Eight parts.

Teacher 1: Are they all equal? You got it. Good, you are mastering fractions, my friend. Okay, good. What is that part then?

Student: One-fourth of one-half.

Teacher 1: How many equal parts? If that's one-fourth or one-half, wait, write one-fourth of one-half right under it. Or write on the side of it. Good, now what is that part? It's one out of how many?

Student: One-eighth?

Teacher 1: Good, equals one-eighth. Good job, Student, nice work, okay.

Teacher 2: [inaudible 00:37:21] because our brains are growing, and that's okay, because we're being flexible with our class, okay? How much time you take [inaudible 00:37:28]. It's important we understand what's happening conceptually, so like what's actually happening to a physical [thing 00:37:35] when you take a part of a part, okay? At this point, you can [crosstalk 00:37:44]

Teacher 1: Can you come with me the back way, quickly? [crosstalk 00:37:44] notebook?

Teacher 2: ... on your notes if you want to be [crosstalk 00:37:46].

Teacher 1: Okay, o you have your pen?

Teacher 2: Sorry, if you want to be drawing notes.

Teacher 1: Your pencil? Where's your pen? It's in here? Okay, come, real quick.

[00:38:00]

Teacher 2: [crosstalk 00:37:50] You shouldn't be playing with anything, okay? What is the next step in finding one-fourth, of one [crosstalk 00:38:02]

Teacher 1: I love brownies, do you love brownies, or do you love cake better? You love cake, okay, it's going to be cake, okay. Should it be yellow cake or chocolate cake? Chocolate, I love chocolate too. Okay, so here's our cake pan, okay?

Teacher 2: Student.

Teacher 1: We wanted to find one-fourth of one-half. What did Miss [inaudible 00:38:24] find first? What? She found what? Oh, it's one-eighth, how did you know? How do you know? Can you show me how you knew it? Show me how you know.

Teacher 2: [crosstalk 00:38:32] cuts this half into fourths also so that a full pan [crosstalk 00:38:39] two even pieces, correct? Then, what did you say?

Student: Then from that [inaudible 00:38:50], the part that's shaded, and [inaudible 00:38:56] one over something.

Teacher 1: Okay, so let's look. First let's start, we'll start with the second one, right? What are we going to do? Can you divide that square in half?

Teacher 2: Raise your hand if you see that there are eight total squares here, eight [crosstalk 00:39:11]

Teacher 1: That's a half, right? Now, we have one-fourth of one-half.

Teacher 2: [crosstalk 00:39:17] telling me that you don't think there are eight [crosstalk 00:39:18]

Teacher 1: Can you divide that into four parts?

Teacher 2: I'm going to ask if you're [crosstalk 00:39:20], which is okay. Student, why are there not eight total rectangles here?

Teacher 1: Okay, great, and now one-fourth of one-half. What's one-fourth? Shade one of those four.

Teacher 2: How many equal rectangles are there?

Student: Which one?

Teacher 1: Shade one out of one of those four, any of those. Great, good, so you shaded that one, right? Now, I'm looking at the whole pan, and now I'm zooming out and I'm looking at

the whole pan, okay? How much of that is of the whole thing?

Teacher 2: Okay, here's another example, and I've been talking a lot, and Miss [inaudible 00:39:58] [00:40:00] was talking a lot, so now, we're going to [crosstalk 00:40:01]

Teacher 1: We're going to make this ...

Teacher 2: I'm going to leave these up here so you can see, but we're going to go [crosstalk 00:40:08]

Teacher 1: ... and we're going to divide this into four too. Now, are all those parts equal now?

Teacher 2: We're just doing part A.

Teacher 1: Yeah, good, they all look equal, right? How many total parts?

Teacher 2: Okay, can we pause for a second?

Teacher 1: How many total parts?

Teacher 2: [crosstalk 00:40:22] stretch [crosstalk 00:40:23] seats for a second?

Teacher 1: How many total parts, even the shaded one?

Student: Eight?

Teacher 1: Eight, good. Now, how many of them are shaded?

Teacher 2: Today is a short class, so we're not going to get to stretch because it takes a lot of time, but you can definitely stretch out on your own [crosstalk 00:40:38] okay?

Teacher 1: That's how you got one-eighth. Does that make more sense? Yeah, so we're going to do a problem right now, a problem to [inaudible 00:40:46], and we're going to do brownies, okay? Does that sound good? Okay?

Teacher 2: [crosstalk 00:40:47] We'll do that picture of brownies, does it make you hungry?

Student: No.

Students: Yes.

Teacher 1: Okay, let's go back to our seats [crosstalk 00:40:55] so we can listen to what Miss [inaudible 00:40:58] is saying, okay?

Teacher 2: Student, what needs to happen right now based on the instructions written on the board?

Student: [crosstalk 00:41:06]

Teacher 2: Yes, we are opening to page thirty. Problem 2.1, okay? We kind of stopped our discussion so you can practice this on your own.

Student: [crosstalk 00:41:17]

Teacher 1: Thank you.

Teacher 2: You can do some modeling dough if you want it, you're going to solve problem A, parts one through three. Student, do we need to write all our work in our notebooks?

Student: Yes.

Teacher 2: Student, do we need to show all of our work in our notebooks?

Student: [crosstalk 00:41:39] we do because [crosstalk 00:41:41] cheating or looking at other people's work [crosstalk 00:41:47].

Teacher 2: I know, it's a great habit [crosstalk 00:41:50]

Teacher 1: About fifteen minutes, Student.

Teacher 2: ... showing all our work so we can explain our reasoning.

Student: Even if we can do it without [crosstalk 00:41:55], do we still have to?

[00:42:00]

Teacher 2: Student, what should be open right now on our desks? Our workbook, and ... and our notebooks.

Teacher 1: If you do not want to use modeling dough, can you make our clean-up simpler? Put your modeling dough back in, and then just put it in the center of the table. You can keep your mini white board if you'd like, okay? Whatever strategy you think is going to work for you.

Teacher 2: It's already 11:30.

Teacher 1: I know. It's okay, we're fine. We end at :40, right?

Teacher 2: Yeah.

Teacher 1: We have ten minutes to solve 2.1.

Teacher 2: Yeah, what we can do ...

Teacher 1: Nine minutes, and then we'll give them their homework and their homework checkers.

Teacher 2: I'm wondering if homework should be finished? No?

Teacher 1: I think we should just have homework be something different, because I think they're going to get it after this. We took a lot of time, but I think they're going to get it.

Teacher 2: So for, ["do/du 00:42:50] math," we label this, right?

Teacher 1: Yeah.

Students: [crosstalk 00:42:50]

Student: Say please?

Teacher 1: I'm not sure why you're asking him to say please as that is his.

Student: Because he's asking me ...

Teacher 1: Okay, thank you. Let's get started.

Student: ... and because he never says please to anything, that's why.

Teacher 1: Oh, okay.

Student: [crosstalk 00:43:07]

Teacher 1: Let's get started right here. Okay, let's do that later, I'm going to put this right there.

Student: Goodbye.

Teacher 1: Goodbye. Ready? Here's [inaudible 00:43:19] there you go. Awesome.

Student: Okay, goodbye. I'll miss you.

Teacher 1: Okay, I'm going to stop you guys right now, if you're not using your modeling dough, put it away. We have problem 2.1 that we need to focused on right now, and we need to get done. We have about eight minutes to do that. That's what you need to do, so get out your book, get out your notebook, and let's get started, okay? If you know this, Student, and this explanation was boring you, then you need to prove it. Prove to me that you know this, okay? Thank you. Okay ...

Student: I was stalling on purpose.

Teacher 1: Are you done?

Student: Mm-hmm (affirmative).

Teacher 1: Yeah?

Student: Yeah, we are all done.

Teacher 1: You're done. Can you put that away?

Student: [crosstalk 00:44:06] if you all need it.

Students: [crosstalk 00:44:08]

Teacher 1: Thank you.

Students: [crosstalk 00:44:15]

Teacher 1: Here, Student. Thank you, thanks, sweetie. Just put it up here. Okay, Student, we're good, thank you for organizing those. Okay. Okay, Student, so are we starting with the brownies?

Student: Square [inaudible 00:44:37].

Teacher 1: Great.

Student: I don't think a rectangle.

Teacher 1: No, that's fine, and then let's see. Your pan of brownies, we do the second fraction first, right, so let's make that into two-thirds.

Student: Or maybe, [crosstalk 00:44:50] like this?

Teacher 1: Well, that's in half, right? We need to make it in two-thirds first before we do a half. Do you want to do it on your paper?

Student: I [crosstalk 00:45:00] two-thirds.

Teacher 1: Well, let's see. Let's make it in thirds. Let's make it in three parts.

Teacher 2: What? You need that for school, [crosstalk 00:45:07] for helping her stay focused ...

Student: Start ...

Teacher 2: ... and lending her a pencil.

Teacher 1: Great, good, now shade in two. Great, nice job. Okay, now, they're going to buy half of

that. Can you shade just the part you shaded in, Student? Okay, you're showing me in the modeling dough too, great.

Student: There you go.

Teacher 1: Now, they're going to buy half of that.

Student: Half.

Teacher 1: Half of this.

Teacher 2: One second.

Student: Oh, I think that's going to be ...

Teacher 1: Look, it looks like you already have a line.

Student: Yeah, here, so that's going to be six.

Teacher 1: They're buying this, how much are they buying?

Student: Two-sixths.

Teacher 1: Yeah. Nice work, good.

[00:46:00]

Student: One is two-sixths?

Teacher 1: One is two-sixths, good. That's actually one and two, and then, now they're asking you how much she paid.

Student: Three?

Teacher 1: Now, look. How much did she pay? A half of a pan, so a whole pan costs twelve dollars, how much did she pay if she only bought two-sixths of a pan?

Student: I don't know.

Teacher 1: Well, let's see. How much would she pay if she bought a half?

Student: If she bought a half, she would ...

Teacher 1: Half of twelve, right? What's half of twelve?

Student: Have of twelve, that's going to be six.

Teacher 1: Right, okay, so ...

Student: [crosstalk 00:46:48]

Teacher 1: Oh, okay, you're going to put it all together. Half of twelve would be six, great. Great, okay, so she basically, she bought these, so I'm going to separate them a tiny bit, Student, just so we know this is what she bought, right? What is she going to pay if the whole thing cost twelve? How much does each piece cost then?

Student: This would be probably four.

Teacher 1: How much would she pay?

Student: Four dollars.

Teacher 1: Yeah, good job, there you go, you got it.

Student: Three, or four?

Teacher 1: Four dollars, right, because this is two, four, six, eight, ten, twelve. Each piece ...

Student: Is worth two dollars.

Teacher 1: Good, each piece is worth two dollars, so two plus two equals ...

Student: [Six 00:47:38]

Teacher 1: Awesome, you are awesome. Can you get started on B? That's your homework for tonight that I think you can get started right now. Okay, good. You did it, that's going to be your homework eventually, yeah. Nice, good at getting started. Okay, Student, can I help you with this? First it's two-thirds full. Can you break this up into thirds?

[00:48:00]

Student: Wait.

Teacher 1: Student, can we use our notebook right now. I want to see if you can do ...

Student: I don't have one.

Teacher 1: Your notebook? It's right here.

Student: It's at home, oh.

Teacher 1: Okay, so use this in this hand to keep you focused, okay? That's like our power dough, right? Okay, I'm going to make your pan of brownies a little straighter, okay? I mean, sorry, your pan of chocolate cake.

Student: Okay.

Teacher 1: You separated it into thirds, right? Now, you need to find two of those thirds. Can you shade in two-thirds? Shade in two out of three.

Student: [crosstalk 00:49:03] one-third, or two-thirds.

Teacher 1: Great, nice, awesome. You shaded in two-thirds, right, and this is how many brownies are left. Now, they're saying someone bought half of that, can you split that shaded part in half? Can you split that shaded part in half? Now, make that even darker.

Teacher 2: The easiest one got the least participation. Mathematicians ...

Student: [inaudible 00:49:42]

Teacher 2: ... part of life is that things take longer when our brains are growing, and it's the first time of kind of jumping in and investigating, finding parts of parts, and just a natural [inaudible 00:49:55] being the first time we're investigating this, means that it took a little longer than we expected, which is okay because we took the time to have a discussion about this. Please, can I see your eyes? That's why I did the silent signal, it's not just a quieting signal, it's like a "stop what you're doing, please." I appreciate that you're [investigating 00:50:16].

[00:50:00]

Student: Three-fourths of another pan, that is [crosstalk 00:50:17]

Teacher 2: What naturally happens is [crosstalk 00:50:21]

Student: ... three-fourths would be more.

Teacher 2: We're actually going to have to pause you in the middle of your investigation with this. Did she tell you what your homework is? Your homework is actually to [crosstalk 00:50:31]

Teacher 1: It's half full.

Student: Mm-hmm (affirmative).

Teacher 1: [crosstalk 00:50:30]

Student: It's three-fourths, so it would be more than ...

Teacher 1: She's buying three-fourths of what's left.

Student: Okay.

Teacher 1: You're going to do this.

Teacher 2: Part C is a little bit more [crosstalk 00:50:39]

Teacher 1: Better?

Student: Mm-hmm (affirmative).

Teacher 1: Does that make more sense?

Student: Yes.

Teacher 1: Okay.

Teacher 2: There's three steps that I want you to do. If you actually [inaudible 00:50:43] part C right now, can [crosstalk 00:50:46] part C? It says to draw a brownie picture for each problem, right? Joni, what does the second sentence say of part three? Read it nice and loud.

Student: Okay, how much does [crosstalk 00:51:00].

Teacher 2: The second sentence of part C.

Student: Oh, C. I'm sorry, I didn't see that. One-fourth of one-third [crosstalk 00:51:08]

Teacher 2: Then, then ...

Student: Oh, okay. Then write number [crosstalk 00:51:15]

Teacher 1: Friday.

Student: Oh.

Student: Do we have [middle 00:51:18] math on Thursday?

Teacher 1: Oh yeah, due Thursday, [write 00:51:22] Wednesday though.

Student: Oh, yeah.

Teacher 2: Which is like this. One-fourth of one half, that's what [inaudible 00:51:28] is, and then the last part is asking you to do what? Find the part of the whole, because that means you would find what it equals to, okay? You're going to be drawing a lot of pictures for homework, and that's going to be the time when you're going to feel your brain growing more. If it's a struggle, that's okay, it's really important that you try your best on this homework, okay? Are there any questions about that?

Teacher 1: Yeah, that's not yours.

Student: I put something inside, I'll try to get it out.

Teacher 1: Yeah.

Teacher 2: You need to write that down.

Student: I'm trying to get that metal thingy I put in.

Teacher 1: Yeah, you put something in here?

Student: Yeah.

[00:52:00]

Teacher 1: Is that safe, do you think?

Student: No, I was trying to do like how they buried coins and stuff, I wanted to bury it.

Teacher 1: Do you think it's safe though for someone ...

Student: No.

Teacher 1: Yeah, I don't think that's a safe decision.

Student: I was trying to bury it and then dig it out.

Teacher 1: Okay, yeah. We're not actually doing [inaudible 00:52:15] though because we need to be focused on math right now, okay? Do you understand that?

Student: Yeah.

Teacher 1: Can you write down your homework, please? Thank you. I would love that, but I'm going to be gone. You have to bring them next week. I'll tell you later. Homework checkers are checking.

Teacher 2: [crosstalk 00:52:41] is a homework checker.

Teacher 1: Good, let's get these supplies back. Let's write down our homework, which actually, did you finish?

Student: I'm only on C.

Teacher 1: Okay, so on B, and then you're also going to finish this.

Student: Yeah.

Teacher 1: Okay? Does that make sense?

Student: [crosstalk 00:52:57]

Teacher 1: It is C, yes. Student, the homework is C, but you can do B if you would like, or you can do both, okay? Student, can you erase this, also? This is ours. Okay, thanks sweetie. Where's yours? Did you get it done?

Student: Yeah. You could eat one before class, and then [crosstalk 00:53:21]

Teacher 1: Nice. Thank you for writing that down. This is numbers one through four, okay? Does that sound good? Okay? Your challenge homework, did you see your challenge homework? Make brownies in real life. Miss [inaudible 00:53:52] wants homework checkers. Just as a clarification, homework checkers can dismiss if your entire table has been checked. Please clean up your area. I would love to check this, technically, I'm not your homework checker though. What do I always make you do? There you go, and I know you want my signature just because you collect it. There you go. Awesome, Student, you want to turn in your homework?

[00:54:00]

Student: Yeah.

Teacher 1: Are you ready for me to check it? What? Student already checked it? Okay, awesome.

Teacher 2: [crosstalk 00:54:38] for next class ...

Teacher 1: I guess.

Teacher 2: .. to not have so much more [signed things 00:54:43].