

Intermediate Math Parts

Main

Teacher 1: Thank you, thank you.

Student: Here, I'll do this.

Teacher 1: Okay. What do you guys need to do? What does step number two say? Did you fill the other one up? Okay, how are we going to make this ... what pages, what do you need to leave in the front? Yes, yes. Would you like me to sit with you and organize it at some point? When? Do you want to set a time now or do you want to set a time at the end of class? Okay, so you leave these two, start this, and we'll figure it out. You need to check in with me, take responsibility. Student, what do you need to be doing? You're what? Yup. Thank you Student. You guys are checking in. Is someone getting your modeling done?

Student: Yeah.

Teacher 1: Okay. Is someone getting your modeling done?

Student: Yeah.

Teacher 1: Okay. Is someone going to get your modeling done at this table?

Student: I want to get it. I'll do it.

Teacher 1: We only have five minutes for it to Do Now, you've got to be on it. Okay, so Erwin ... that's okay. I wanted to see your carnival map, not jump rope. Right now, we'll check it tomorrow, okay? Right now we've got to move on with the Do Now, you need to take out your notebook and do step number two. Thank you guys, you can take three of these per table, okay? You can take three knives per table, actually take two because you guys have a smaller table, okay? Do you need other things?

Student: Yeah.

Teacher 1: Okay. Do you still need modeling done?

Student: No.

Teacher 1: No? You need more, guys? How many more?

[00:02:00]

Student: Two more.

Teacher 1: Okay, I'll get you two more, I'll bring it to you. What? No, colors don't matter, you need five total. Student, so you're using the whole thing to make a square, not a bunch of little squares, okay? Why don't you go out, find a student back there? Okay, no, it's still

doable.

Student: I had my notebook in my bag, but it's not-

Teacher 1: You don't have your notebook? Where is it? Okay, after this first exercise then you'll go get it, okay. Not yet. I need to take attendance. All right.

Student: I am looking for the weirdest position ever and no one seems to have it. Yes. That's what I'm looking for, but you can only really put both of your hands on your head like this, really strange, like, "Oh, we're going to go to the beach and relax", unless you have modeling dough, a place mat, your modeling dough in what shape?

Teacher 2: Square.

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

Teacher 1: You have about seven times five seconds to do this because we have to stay on schedule today, we have a lot of fun things to do. You have seven times five seconds. Teacher 2, I was going to take attendance but I don't want to open Jump Rope on the projector.

Teacher 2: I'll do it.

Teacher 1: Okay, sorry.

[00:04:00]

Teacher 2: No, it's fine. Nice job, guys.

Teacher 1: Use a knife to scrape it out if you need to a little. Student, I'm going to ask you to use this ... is that side ... sorry. Do you want to ... okay, never mind. At least you have a square here. What does it say? This is a square, that can help you. You have enough, it doesn't have to be a big square. Okay, I see Student has a strategy, Student has a strategy ... Student actually cut a square out, that's actually fine. She does have a little bit extra modeling dough, that's okay. She's just going to roll it up and put it in her cup. If you'd like to cut a square out to make it easy, a student on another table just cut a square out. Use as much modeling dough as possible, though, because our pieces are going to get really tiny. You might want to make it a little bigger.

Student: Is this okay?

Teacher 1: You might want to make it a little bigger.

Student: I am.

Teacher 1: Yeah. Life size? Hey mathematicians.

Teacher 2: Let's try that one more time.

Teacher 1: Let me try again. Hey mathematicians!

Student: Hey, what?

Teacher 1: 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 telling 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 be cutting it up into smaller pieces, so if you start with a really itty-bitty square, your pieces are going to get super tiny, okay? It doesn't have to be a hundred percent perfect, but use the knife or use a sharp edge or just squish the edges down, so do your best, okay? Any questions about this? We do need to move on. If you are done, please help your table. If you're done, it means you found a strategy to make a square, so you should help your table get on the same page as you.

[00:06:00]

Student, much better. It's been way more than seven times five seconds. Great, much better, good. This is fine, see? This is okay. Just ... yes?

Student: Is this okay?

Teacher 1: Almost. Make this edge ... pinch this corner a little bit better, then you're good. I didn't foresee a square being so hard to make with modeling dough.

Teacher 2: I think we're ready to run.

Teacher 1: Okay. I'm going to ask, Student, that you hold off on the pounding, Student.

Student: That was me.

Teacher 1: Okay. Thank you for taking responsibility. I'm going to ask that you hold off on the pounding because it causes a lot of noise for everyone. All right. I got a lot of response from that table. Okay, I know that you're not completely done, but can I see your hands on your head that tells me, "I'm not touching my modeling dough anymore, I'm putting that on pause, it's time to move on and to start this investigation". I am waiting for a hundred percent of hands on head. Notice we chose a position where you could actually rest your hands so that you're not getting your arms tired? We do that on purpose. Awesome. I see a hundred percent of hands on head now. Okay, you can remove your hands from your head but they should not be touching your modeling dough.

[00:08:00]

Here's the thing. All last week, we worked with carnival maps and park maps and you got creative. Some of you put Whole Carnival, which is coming up, some of you built zoos, some of you chose to use Pokemon, okay? Teacher 2 ... so right now your eyes need to be up here, on me or on the screen, either way. Don't worry about your

modeling dough, okay? Teacher 2 chose to make a zoo with funky animals.

Teacher 2: Because I love animals so much, okay? Some of the animals I decided to put in my zoo were hippos, giraffes, puppies, obviously.

Teacher 1: Don't touch it.

Teacher 2: Parrots, 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 every day. I just love that hybrid, okay? Here's the problem, there was an issue with this, okay? The issue was that, by mistake, I forgot and I had already broken up my map for all of the exhibits, every animal had exactly the amount of space I wanted them to have. Then I realized I forgot the most amazing marsupial. Close, not a chinchilla.

Student: A wombat.

[00:10:00]

Teacher 2: A wombat, okay? I forgot a wombat. Now does anyone know what a wombat looks like?

Student: Me.

Teacher 2: Student? Student?

Student: They're really floppy.

Teacher 2: They're really floppy, right? They're super soft.

Teacher 1: Student.

Teacher 2: They're also really cuddly and super adorable. Have you seen a picture of one?

Student: I do see them on my video game.

Teacher 2: Awesome. Great. Wombats, while the name sounds super scary, they're a really awesome animal and I wanted them in my zoo, okay? As you can see up here, so I can read my problem, this is my actual problem and made it into a word problem.

Teacher 1: Nice and loud.

Teacher 2: Can I have ... pause. Can I have ... should we do reading fingers?

Student: No.

Teacher 2: Let's do it just to be fun, okay? Can I have reading fingers out? Up here.

Student: Teacher 2 made a ... she realized that she forgot some food at the habitat for the wombat ...

Teacher 2: Our guiding question for this problem is what, Student? What's our guiding question, though?

Student: What fraction ... was the wombat in?

Teacher 2: Exactly. Actually, it was right the first time. My goal, my challenge is making a habitat for the wombats when I already have a full table, right? Okay? My actual goal, the fraction that I want to come out with at the end is what fraction of the whole zoo was a wombat?

[00:12:00]

Teacher 1: You have five minutes to use any tool at your disposal, that means any tool in front of you to try to solve this problem, this question, to try to answer this question. What fraction of the whole zoo was the wombat exhibit, okay? That doesn't mean just pop out an answer; if you have an answer, you need to be ready to support your answer with reasoning, to explain your reasoning and to say how you got there, right? If you tell us half of the zoo is 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 2: You can use Play-Doh-

Teacher 1: You can use your notebook.

Teacher 2: Notebook, any of those tools are fine.

Teacher 1: To solve this problem, okay? We will be walking around to check in. Go ahead.

Teacher 2: What more pattern are we working on right now? He got it, say it a little bit louder.

Student: Participates effectively.

Teacher 2: Excellent, and the sustainability skill, Student ... could be that one, but I'm not sure what to say. Could be communicating powerfully, but then what's the other one about wood work? Collaborating productively. Awesome, okay, get started.

Teacher 1: Reasoning analytically. All right, so ... yes. You may please touch your modeling dough now. Student, are you clear on what the question is asking? What do you need to be figuring out right now? You can also use a ruler.

Student: Puppies, pandas ...

[00:14:00]

Teacher 1: Student, what's the question you're trying to answer? It's written really big on the board.

Student: I'm just trying to figure it out. The four small ones, I think they're one-fourth.

Teacher 1: Of the whole zoo?

Student: No.

Teacher 1: They're a fourth-

Student: Fourth in they don't equal the giraffes-

Teacher 1: All those fourths together equal a giraffe. Okay, Student.

Student: Wait, I think the giraffe is one-fourth, the yellow ones are one-eighth. All of that, it goes one-half.

Teacher 1: Okay. I see that you're-

Student: Equal to one-fourth.

Teacher 1: Okay.

Student: Added ... three-fourths for the giraffes, the puppies, the parrots, the koalas, the toucans and the ... and the werewolves.

Teacher 1: Would it help you, Student-

Student: The hippos, they were running fourth until they could do threes. You figure about ... one-fourth divided by three.

Teacher 1: One-fourth divided by three, that's what you need to figure out?

Student: I think, because it's going to the cards. Yeah.

Teacher 1: Okay, I heard you walk through every corner of the park. That was a really interesting strategy. First you looked at this corner, this fourth, then you looked at this fourth, then you looked at this one, and now you're focusing on this one, right?

Student: Yeah.

Teacher 1: Is it helpful to have that in front of you so it's a little closer? Would you like me to leave this Expo marker with you or are you going to choose to use your modeling dough, or a pencil? It's all up to you. Sorry that this is written on, you can write over this, okay? Did you see why I colored this in?

[00:16:00]

Student: I need this.

Teacher 1: You want to use that?

Student: Yeah, I just need to-

Teacher 1: Okay, would you like me to leave this here in case you decide to come back to it?

Student: Yeah.

Teacher 1: Okay. I just tried to take note of your thinking right here, so it sounds like you have some idea of what you need to do. You can also use this half of the place mat for your modeling dough. You told me you want to figure out what one-fourth of one-third ... sorry, no. You said we need to divide one-fourth by three, right?

Student: Yeah.

Teacher 1: Okay. If you don't want to make a square and you want to make a different shape to try to answer this question, Student, you could make a different shape to try to answer this question that you created. Does that make sense? Okay. Do you need a knife?

Student: Yes.

Teacher 1: Thanks, Student. Very collaborative of you. I see some different strategies happening here. Do not feel that you have to use your modeling dough, you don't have to; you can select any appropriate tool, okay? Ricule, what do you need to be working towards right now? Cule, what do you need to be working towards right now? What's your goal?

Student: To find out.

Teacher 1: To find out what? Say the words. Yes.

Student: Can I borrow ...

Teacher 1: Yes, do you think you could share this one with Student, because there's very few up there. I see you took out a calculator, that's another tool. Student, I'm noticing, if it takes too long to make a square, keep going, know that you have five minutes, okay? Use a tool that's going to help you work efficiently towards this problem.

Student: Can I cut this into nine pieces, because-

[00:18:00]

Teacher 1: You can cut that into whatever you think you need to. Here, a paper clip makes a good cutting tool also. Does your table agree?

Student: Are you guys supposed to be working all together to solve this problem?

Teacher 1: You can. I'm just letting you know that we have about two minutes left, so if your modeling dough is not being an efficient resource for you, then I suggest maybe taking out an Expo marker or you're just using a pencil. I see that you're being really careful about cutting that into fourths. Student, I see that you're trying to ... are you cutting that into ... what are you cutting that into? I see you cut into half, right? What do you think comes next?

Student: I think this part is the long part.

Teacher 1: Continue cutting, okay? What did you get? One-ninth, why?

Student: Because if you split the giraffes in half, that's-

Teacher 1: In half?

Student: Yeah. Then cut these into [inaudible 00:19:37].

Teacher 1: Why did you split the giraffes in half?

Student: Because that makes each side one-third.

Teacher 1: What do you mean it makes each side one-third?

[00:20:00]

Student: One that's one-third, it goes two-thirds, giraffes two-thirds ...

Teacher 1: Then where's the other one-third, if I close the giraffes? No, you said wombats is one-third and hippos is two-thirds, right? That's one whole as that quarter, right? Then the giraffes-

Student: Is one-third.

Teacher 1: Okay, so it's not two-thirds. What would you need to split the giraffes into?

Student: The giraffes is one whole, too. Then it's one-twelfth.

Teacher 1: You just made a huge jump in your head. You're thinking change. I encourage you to think out how you made that jump from, "Oh, one-twelfth". Where did you get one-twelfth now, okay? It's okay if this is hard, that's why it's a challenge, okay? Take about one more minute. Wow, Jaden, I see a lot of labels and different things cut up, do you feel like you have an answer, or are you still working through it? We're super behind, so I'm going to cut down the sharing time.

Teacher 2: Yeah, no, I think that's-

Teacher 1: Okay.

Teacher 2: I'm looking for a couple people because I'm still waiting for some hands off modeling dough. 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 1: No, because of timing, we're being very transparent, we're over time. Because of timing, we're going to have to guide the sharing, okay, so that it goes ... make sure to hear from a lot of people, we also get time to get to more of our investigation, okay? Student, I see your hand up. No? You're stretching? Student, could you share with us either what strategy you used or how you used your modeling dough? We're facing Student right now and our ears and eyes are on her.

Student: This is how I used my modeling dough. [Inaudible 00:22:41] All of the area, it's twelve pieces, so it's one-twelfth.

Teacher 2: I tried to draw what Student said, she continued-

Hippo was split up, she continued to split up every section, every fourth, the same way that the hippos was split up, so she split every fourth into thirds.

Teacher 1: 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, awesome, nice. I'm glad to see that we're 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 is that the correct answer? Did anyone get one-ninth and want to talk about it? No? Yeah, Student.

[00:24:00]

Student: [Inaudible 24:08]

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 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 but not quite there.

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

Student: [Inaudible 25:20]

Teacher 1: Okay, keep after her answer.

Student: Because all the habitats, they had different sizes, so there might be nine animals, which is correct, but then there's different-

Teacher 1: Can you make sure you're focusing on what's being said, but with your eyes?

Teacher 2: Okay, awesome. What I hear you saying, tell me if I'm wrong, Student, Student, is that [00:26:00] Student divided it up but it wasn't in equal pieces. I'm wondering about that.

Teacher 1: 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" ... Student and Student, can I have your eyes up here, please? Thank you. 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 use this example, we could count how many parts there are, but they're not all equal parts, so if we created a fraction it wouldn't be mathematically accurate. By splitting up the rest of the zoo into the same size pieces as the one we're focusing on, we can then find a mathematically-accurate fraction. The wombats, if we split all the fours up into three parts, we count total. Now there's twelve equal parts in the zoo, and the wombats are how many of those?

Student: One.

Teacher 1: One, right? It would be one-twelfth of the zoo. Visually, does this make sense, or do we have questions about this visual representation? I see your hand, Student, go for it, ask a question.

Student: It does make the most sense because that's 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 the most sense, I think. [00:28:00]

Teacher 1: What do you mean it would be over.

Student: The hippos are in a different location on the zoo map.

Teacher 2: You mean why would we split the giraffe habitat into two parts. Is that what you're saying?

Teacher 1: 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 ...

Teacher 1: Okay, what do you want to do? On the white board, point to here? Yeah. She's okay, if we can.

Student: It's already split into fourths, and all I'm doing is, since this is already split into thirds ... splitting this in thirds and [inaudible 00:29:01].

Teacher 2: You're carrying it over? If you noticed, too, which may help, is that dotted line is an imaginary line. I don't have two hippos, I'm sorry, I have two hippos but I only have one hippo habitat, right, so the two hippos are together in that one habitat, which is why it's a dotted line, right? That dotted line represents something a little bit different. What Student is saying is that all 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 of the wombat cage is.

Teacher 1: This, one-third of one-fourth, do we agree that this represents one-third of one-fourth? Okay, so this is a number sentence, one-third of one-fourth, that equals one-twelfth.
[00:30:00] Sorry, that makes it a sentence, that goes with this 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. Student. One-fourth. I just needed one fraction. Okay, one-fourth of ... I need another pretty simple fraction from someone who I haven't heard from yet. Student.

Student: One-half.

Teacher 1: 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 up into first? If 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 up into first?

Teacher 2: Should we cut it into halves, or into fourths first? Which one should we do?

Teacher 1: Student, Student, what is your original thought?

Student: Cut it in one half.

Teacher 1: Cut it into half. Why?

Student: Because it's just one-fourth of one-half so you have to have the one-half actually there.

Teacher 1: We need the one-half there first before we take a fourth of it, right? Put a thumbs up if you agree, put a thumbs down if you disagree with that, really high, quickly, that we should cut it into one-half first. I'm waiting, you two need to show me that you are participating effectively right now by giving me, "Yes, I agree, one-half first", or "No, I disagree". You disagree, okay. All right, I'm seeing mostly agreements; if you disagree,

then follow along and see if you change your mind or if you want to add to this discussion.

Teacher 2: You can always change it after.

Teacher 1: We cut it in half. I'm going to shade one half, is that okay with everyone, to represent that one half? Now how can we finish representing one-fourth of one-half? I should see more hands up, what do we need to do? What is our next step?
[00:32:00]

Teacher 2: What do we need to find?

Teacher 1: This table, you need to take your hands off your modeling dough and put your eyes up here, you're in the perfect spot to see this board, you actually are really lucky in your spot. We're trying to represent one-fourth of one-half, how do we 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. I wish I had a different color, can anyone lend me ... can I borrow this? Student's going to try to draw what our next step would be. That's okay. What did you just do, Student?

Student: I cut the half into fourths.

Teacher 1: Student, do you agree that Student just cut this half into four parts? Jaden, do you agree that Student just cut this half into four parts, with the blue? Can you move this way, can you see it?

Student: Yeah, I can see it.

Teacher 1: Student, do you agree that she just cut the half into four parts?

Student: Yeah.

Teacher 1: Okay, so we're in agreement. What do we need to shade now? Thank you, Student. What do we need to shade? Student? Come shade. I saw her little hand go up like this, so I'm going to challenge you to come shade. One-fourth of one-half. Okay, thank you. I'm going to do it a little bit darker, exactly what you just did just darker so people in the back can see. Thank you, Student. I'm now creating this, I'm pretending this is a pan of brownies. I like brownies. We're going to talk about brownies a lot today. We just shaded one-fourth, one part out of four, from this half. Are we on the same page?
[00:34:00]

Student: Yes.

Teacher 1: Okay, but now we need to figure out how much this is of the whole pan. Talk at your tables for forty seconds about how to figure out how much of the whole pan this might be.

Teacher 2: If you already know off the top of your head, draw or model it out. Ready? Go.

Teacher 1: Okay. This table, we have this fourth, right? We need to figure out how much of the whole pan this is. What do we do? What did we do for the zoo? Do we need to draw more lines on the pan? Student is nodding, who is saying yes? Student's nodding. What? Why do you say one-seventh? Pause there. Student's saying cut the other half into fourths also, what do you guys think of that?

Student: Yes.

Teacher 1: Yes, why? If we cut this into four parts also, does that give us all equal parts in the pan, Student? If we cut this into four, are all our parts equal now? They're all equal to this
[00:36:00] one, right? They're all the same size? Okay, so they're all the same size. Now what? We want to know how much is the blue out of the whole thing? What fraction of the whole thing is the blue part? One-eighth, what do you think? Student, what do you think? How much of the whole thing is the blue? How many parts are there total? There's one whole, how many parts? Eight. How many of those are shaded blue? How much is this of the whole thing? Do you agree with that, Student? How much is this of the whole part? Okay, I'm going to erase this because the rest of the class is going to talk about it. Boys, I don't want to see that at all, put it away. If it stays there, that's fine.

Okay. We're being flexible today because our brains are growing and that's okay, so we're being flexible with our class, okay? With how much time we take to talk about each thing, because it's important that we understand what's happening conceptually, so what's actually happening to a physical thing when you take a part of a part. Okay? At this point, you can be following along on your notes, if you want to be taking pictures ... sorry, if you want to be drawing notes, or your eyes should be up here. Those are the two options; you shouldn't really be playing with anything else, okay?

[00:38:00] What is the next step to find one-fourth of one-half? This table, you all knew, you should have more hands up. You all knew, we did it together. Student.

Student: You can split the other side into more than two.

Teacher 1: Why?

Student: It's even and when you shade that one part in, then you can count it as the whole, not as a half.

Teacher 1: Okay. We did the same thing, I'm going to walk you step by step by what you said. We cut this half into fourths also, so that our whole pan is now split up into even, set pieces, correct? Then, what did you say?

Student: Then, from that you can take the part that's shaded and you're going to have to do be one over something.

Teacher 1: Because it's only one part?

Student: Yeah.

Teacher 1: Okay.

Student: Then you can count all the squares, that would be eight squares.

Teacher 1: Raise your hand if you agree that there are eight total squares here, eight total smaller, equal rectangles. If you're not raising your hand, you're telling me that you don't think there are eight total rectangles and I'm going to ask to hear why, which is okay. Jaden, why are there not eight total rectangles here, or are there? How many little equal rectangles are there? There are eight, so you agree. We have one out of a total of eight total ones. This tells us that one-fourth of one-half is actually one-eighth of the whole thing.

[00:40:00] Okay, we just did another example and I've been talking a lot, and Teacher 2 was talking a lot. This is now ... we're going to switch gears and we're going to let you try this a little bit more. I'm going to leave these up here so you can see. We're going to go into problem 2.1 in our books that asks you to do a very similar thing to this. We're just doing part A, so you shouldn't feel overwhelmed. Can we pause for a second? Everyone put your hands up, we're just going to stretch in our seats for a second. Wiggle out, we've been sitting for a while, you can stand up if you need to wiggle, but only in your spot. Today's a short class, so we're not going to get up and stretch because it takes a lot of time, but you can definitely stretch out on your own if you need to do that. I'm stretching around here, sorry you guys.

Look at that picture of brownies, does it make you hungry? We have lunch after this, it makes me hungry. Okay. Student, what needs to happen right now based on the instructions written on the board?

Student: Open up to page 30, problem 2.1.

Teacher 1: Yes, we are opening to page 30, problem 2.1, okay? We stopped our discussion to let you practice this on your own. You can use the 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 1: Student, do we need to show all of our work in our notebooks?

Student: Of course we do, because then, otherwise ... cheating or looking at other peoples' work and, unfortunately, I'm one of those kids that don't like to show all their work.

Teacher 1: I know, but it's a great habit, we have to get into the habit of showing all our work so we can explain all our work so we can explain our reasoning.

Student: Even if we [inaudible 00:41:55].

[00:42:00]

Teacher 1: Student, what should we open right now on our desks? Our workbook and ... our notebooks.

Teacher 2: If you do not want to use modeling dough, can you make our cleanup 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 1: It's already 11:30.

Teacher 2: I know, it's okay, we're fine. We end at forty, right?

Teacher 1: Yeah.

Teacher 2: We have ten minutes to get them to solve 2.1.

Teacher 1: Yeah. What we can do-

Teacher 2: There's nine minutes and then we'll give them [inaudible 00:42:32].

Teacher 1: I'm wondering if homework should be finished ... no?

Teacher 2: I think we should just-

Teacher 1: Just do it?

Teacher 2: Something different, because I think what they're going to gather after this [inaudible 00:42:44].

Teacher 1: Student, what are you doing? For Do Now, you labeled this, right?

Student: Yeah, but I was trying to find out the page and I forgot.

Teacher 1: Okay, you're just going to use this page and we'll organize our notebook after, okay? Guys, this class is short, I want to stay with math, but we need to make sure that we're being efficient with our time. I'm going to collect these. Are you going to use that? Thank you, I'll mark that in. I'm going to be your materials checker for today and start collecting your materials, okay? To help get it out of your way. Student, what page do you need to be on, what needs to be labeled? You labeled this for your Do Now, you should have labeled Finding Parts of Parts. Student, do you know what you're working on right now?

Student: The brownies, in A?

Teacher 1: Yes, exactly. You can use the modeling dough, Student; I'm not saying you can't, but you do need to start showing work in your notebook, so you should have a page for Finding Parts of Parts. Okay, you do have a pencil. Your first step is actually going to be to draw a square so you can represent this brownie pan. Can you draw that square? Can I have that, please? If you are throwing it up in the air, it's not being a tool and it's being a distraction, so I'm going to collect it, okay? To help you focus. Next question.

[00:44:00]

Teacher 2: Thank you for organizing those.

Teacher 1: Thanks, Student. It actually says ... it says to use this model of the square but we're drawing a square on our ... it says use a copy of the brownie pan, we're just drawing the brownie pan, okay? We all should start by drawing a square. What do you do? We are starting by drawing a square, I'm helping you with your first step. We are starting by drawing a square, it's nice to use a copy. Student, you need to get to work.

Student: I just don't have a pencil.

Teacher 1: What? You need that for school. Thank you, Student, for helping her stay focused and lending her a pencil. The thing says use a copy of the brownie pan, you're just going to start by drawing a square. Student? You're jumping right in, you don't have your notebook. Would you like a piece of paper?

Student: No, it's in my locker.

Teacher 1: Nope, we're not going to waste time going to our locker; you need to come prepared. I hear you, one second. I need a piece of paper for Student. Instead of sitting there and zoning out, can you ask someone for a piece of paper?

Student: I actually asked for a piece of paper.

Teacher 1: There we go. Yes, Student? This is two-thirds, right? You want half of that, so can you mark half of that with a different ... okay, so how much is that of the whole?

[00:46:00]

Student: A third.

Teacher 1: Make sure you're doing every step, okay? Don't roll your head like that. As we noticed in our investigation at first, sometimes you get to an answer and you're like, "Oh, wait", you might discover something about it halfway through your explanation, right? You see that everyone drew a square, that's exactly ... Guys.

Student: Yeah, I know. I was trying to get this open, it's stuck closed.

Teacher 1: I'm going to encourage you to draw a square and use that as a model instead, to be as mathematically efficient as possible.

Student: My hands are slippery and I can't open it.

Teacher 1: Yeah, that's a frustrating consequence of using modeling dough. You need help, did you draw a square?

Student: Yes.

Teacher 1: Okay, I'm going to put this down and come to you. Have a seat and I'll come to you. You are drawing a square and this is your problem. Sorry, Student. Student, what do you need to be doing?

Student: I know. I don't know if we're supposed to do this part or this part.

Teacher 1: What does it say on the board? Yes. Okay, so what is the problem? You're already on number three. Wait, so you used a different color. Can you point to the part that Mister Williams is buying?

Student: The red.

Teacher 1: The red. Both of these? Okay. I'm going to read this part again to you. Actually, the whole table can listen into this. Mister Williams asks to buy one half of a pan of brownies that is two-thirds full. We first need to show a pan of brownies that is two-thirds full. How do we show that, two-thirds full, on our piece of paper? That's our first step, yeah. What's two-thirds here? Your red is the two-thirds. Mister Williams only wants half of that red part, so how much is that? This is an explanation for what this is talking about.

[00:48:00]

Student: Do we need to read the explanation?

Teacher 1: Can you understand it without it?

Student: Yes.

Teacher 1: Okay, then that's fine. Student, you can actually just start here. You're going to start by drawing a square. It says use a copy of the brownie pan, but you're just going to have to draw your own square, okay? Same with you, Student, it says use a copy of the brownie pan, but you're just going to draw your own square. Jaden?

Student: Yeah?

Teacher 1: Did you read the problem? Yeah, you started. Wow, your pen is hard to see. This is what the brownie pan has, right? It's only two-thirds full. Mister Williams only wants half of what's here. Can you use a different color to show what half of that is?

Student: I've got neon yellow.

Teacher 1: Okay. How much is that of the whole brownie pan, Student?

Student: What?

Teacher 1: How much is that of the whole brownie pan? Yes, exactly, so please write that label. I'm squeezing behind you, Student. Student, this is going to be a little difficult on your digital notebook.

Student: No, I can do it.

Teacher 1: Teacher 2. The easiest one got the least participation. Mathematicians, a part of life is that things take longer when our brains are growing, and it's the first time we're jumping in and investigating finding parts of parts and just a natural consequence of it 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, could 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 invested in this, though.

[00:50:00]

What naturally happened is that we ran out of time, so we're actually going to have to pause you in the middle of your investigation of this to tell you what your homework is. Your homework is actually ... please don't move yet ... part C of this problem. Hopefully, part C, it lays it out very clearly. It has three steps it wants you to do. If you actually glance down at part C right now, can everyone glance down at part C? It says to draw a brownie picture for each problem, right? Student, what does the second sentence say of part three? Read it nice and loud? The second sentence of part C.

Student: Part C. Sorry, I didn't see that. [Inaudible 00:51:06] That's where my workbook is.

Teacher 1: Then ... Student. Your homework asks you to draw a brownie pan, write a number sentence using "Of", which is like this: one-fourth of one-half. That's what a number sentence is, and then the last part asks you to do what? Find the part of the whole. 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? Okay, I'm going to project the homework now, and you need to write that down in your homework folder.

[00:52:00] There's an optional challenge for anyone feeling up to it, do you see what it is?

Student: I can definitely do it.

Teacher 1: Making brownies. Okay, you're taking out your homework folder and you're writing down the homework. Unfortunately, we're going to have to come back to this. Who wants to be the homework checker today? Student's being your homework checker.

Who is your homework checker today?

Student: I'll do it.

Teacher 1: Whoa. Student, you're up.

Student: Yes.

Teacher 1: Can I have this back, actually, now?

Student: Are we actually going to make brownies in this challenge?

Teacher 1: It's an optional challenge, if you want to. [Crosstalk 52:31]

Teacher 2: Homework checkers are checking.

Teacher 1: Student is your homework checker. Who is your homework checker at this table?

Student: We don't know.

Teacher 1: Student? Perfect. I'll take these to make your job easier. You need to write your homework down, too. It doesn't matter. Who's your homework checker at this table?

Student: Me.

Teacher 1: Awesome. Who's the homework checker at this table?

Student: Me.

Teacher 1: Awesome. Who's the homework checker at this table? Student, you need to check your homework folder. Boys, I'm a little bit frustrated with the lack of efficiency in math class today, so I'm hoping that next class, tomorrow, we'll feel a little bit more productive, okay, by not having so many side conversations. I'm actually going to help you out today and take these up for you, I'm going to save you a trip, okay? Student, what do you need to be doing right now?

Student: Number two and three.

Teacher 1: Student, what do need to be doing right now?

Student: Writing down the homework.

Teacher 1: Yeah.

Student: Am I allowed to bring cupcakes to school instead of brownies?

Teacher 1: The point of making brownies is so we can talk about cutting them up. I can't stop you from bringing cupcakes.

Student: She can torture you if you do.

Teacher 1: Yeah, homework checkers can dismiss, right? Is it time?

[00:54:00]

Teacher 2: Just as a clarification, homework checkers can dismiss if your entire table has been checked. Please clean up ...