

## **Math in Action**

### Math Tools

>> For a model to be powerful, it needs to have the potential to become, over time, a powerful tool for thinking. And we have to remember that mathematizing means modelling the world mathematically, so we need to be giving young children a chance. And this goes back to the idea of treating that young child as a budding mathematician, a developing mathematician. We need to be giving them opportunities to determine which model they think would be important to use for a problem. But, of course, as teachers, that means we have to have used context to generate the models that we know; in other words, we have to craft the context to generate the models that we know are the powerful models that children will be able to use as tools to think with.

>> Our strategy is going to be quite different. So we will have some rotating centres, and you're going to be working. You're going to be measuring, you're going to be weighing. A lot of you had some really good thoughts today. And we're going to keep these ideas around the room. We're going to see if maybe some of the things that you wondered might get answered in the next little while, and maybe we could take some of those ideas and build on them. The students understand that manipulatives are tools, they're not toys. And they use them as such. Now, what strategies were you using to figure out how many grams or milligrams or kilograms something weighed?

>> How I determine is, first I try to think which one is heavier and which one is lighter.

>> The students understand that the manipulatives are being used to demonstrate their knowledge. Not only problem-solving through the use of manipulatives, but being able to demonstrate that knowledge as well. The students think creatively as well when it comes to problems. Perhaps there's something non-standard that they're doing to use when they're at home. So really, we're open to exploring different ways of problem-solving through the use of tools. I'm going to leave you with thinking about how you can represent some of the other measurements here. And once again, I'd love to see them in more than one way.

>> I like to have more than one resource or more than one way. For example, if you don't have that with you, and you only know that one way, you're technically stuck. But if you know more ways you can try them out, sort of mix them together...

>> What is the difference between a guess and an educated guess?

>> An educated guess would be, like, it has supporting detail to it. So something supporting it, that you know your answer is right.

>> So then what strategy could you use to weigh kilograms, in some capacity?

>> I think we'd compare it with this one, because one thousand grams is equal to one kilogram. So then we could just see if it's near, or close.

>> Okay. Excellent. So you have a reference point. You have a kilogram weight. So then from there, you could use your body as a two-pan balance to measure from there. Is that a strategy that you used?

>> Yes.

>> Was there anything on the table that was close to a kilogram or over a kilogram?

>> The jar of beans.

>> Does anyone want to try that out? There you go. Tell us what you think.

>> This one's way heavier than this.

>> The hand is down. So that one is suggesting that one's heavier?

>> It's less than a kilogram.

>> I like that conclusion that you came to. I think that's a reasonable conclusion. And I like the strategy that you used. You did not necessarily have the scale to measure the kilograms, but you had the resources to measure the kilograms.

>> I enjoyed learning this morning, because it was so hands-on, and we were active all the time. And there was not really a time where we weren't doing anything.

>> Without this environment, I would have not learned a lot of stuff, because I like to use objects to learn. It's kind of tricky not to do this stuff when you're just writing down on paper. We use a lot of manipulators in this classroom, so it makes it easier for us to understand.