Dog Problem Debrief

https://youtu.be/QTVNIlvW3rA

Teacher A: So you know when we do our debriefs of the lesson that I choose specific ones for specific purposes, which ones I choose has nothing to do with anything about a quality statement. It's about there's something I want to get at and you're all used to that, right? It's not personal, I'm looking at an idea or a concept that I want to bring out. So, I'd like to start with this group right here, if they would like to come on up.

Student J: For the first reason, we did dog number one and dog number two. We chose a line graph because a line graph shows change, so for the first day it started at five and then went up by three kilograms to eight. And then, for dog number two it went from three up to six, which is also a three kilogram difference

Student K: Our group decided to do this because it shows how much this, uh how much the dog changed for a kilogram and I thought it was a perfectly good example to use because it obviously shows that it grew more larger. This is going to be the three to six kilograms and this is five to eight kilograms.

Teacher A: I need someone in the class who thinks that they can re-explain one of the two representations that the two gentlemen just explained to you.

Student L: So they did the line graph to show the difference between the two dogs and I think that was probably one of the best ideas to show, to show how the numbers are changing.

Teacher A: Can you explain which one is which please Summer?

Student L: This dog number, this is dog two and this is dog number one.

Teacher A: Okay, and where does dog number two start at?

Student L: Right here.

Teacher A: How many is that?

Student L: That is three.

Teacher A: And what does it go up to?

Student L: Six.

Teacher A: Okay, and dog number one?

Student L: It goes from five to eight.

Teacher A: And, for any of you who are standing up there, what do you notice about those two lines?

Student K: We notice that the first dog goes higher because it has higher numbers than three to six.

Student J: It's because it starts at a higher number than dog number two, which also means dog number one is taller, or larger than dog number two.

Teacher A: So, you didn't tell us which one grew more? What was your final decision for your group?

Student J: Oh, neither of them grew more because they both grew three kilograms.

Teacher A: Mmhmm, right. True.

Student K: Both the dogs grew the same amount because five to eight is a three number difference and three to six is also a number difference which means the dogs grew the same.

Teacher A: Thank you. Okay.

Student M: So, we thought both of the dogs grew the same amount because the distance, like the difference between five kilograms and eight kilograms is three kilograms. And, the difference between three kilograms and six kilograms is three kilograms and we knew the difference between five kilograms and eight kilograms because we added five and eight and it took us three numbers to get to five and eight and same with the other one. And the diagram shows the first dog's change so like one puppy head equals one kilogram. So we did five kilograms and eight kilograms and the difference between is three. And, we had to switch these around because this is wrong. So, it's three kilograms and six kilograms and the difference between it was three.

Student I: They said that because the first dog started out with five and then it changed, added three to it and it added like three kilograms to itself so it changed to eight.

Student G: And the first one started off with three, or the second one started off at three and went to six, which had a three difference. And then the first explanation they used the numbers to represent the actual, I think like, number part of it.

Student I: Mmhmm.

Student G: So they did like pictures and numbers and words.

Student N: Okay, so this one started at five and it grew three and then it ended at eight.

Teacher A: And the other one goes from right to left.

Student N: Oh, and this one started at three and it added three and it ended at six, and they both had grown three.

Teacher A: Okay, thank you. Thank you folks, well done. I'd like to point out just one thing in how you represented it. So, notice that, remember we talk about how abstract in representation is in mathematics? And we've talked about that, so you can see that this one is nice because it's pretty abstract, it's just representing a dog as a little circle with a couple of puppy ears, so it's pretty abstract. This one is even more abstract, because we're representing the dogs only as points, okay? So, as we go through we, and we use whatever we need to understand it and then hopefully rather than draw one that has the actual details of the dog on it, we can just use sort of a symbol for it. Okay? In future representations.

Student P: We basically did the same thing that the other groups but this is the smaller dog that started at three and then ended at six, so it added three. And then this is the bigger dog that started at five and ended at eight, which also adds three. We know that they both grew three kilograms because dog B, which is that one grew three kilograms because five plus three equals eight, which means that it grew three kilograms. And dog A, grew three kilograms because three plus three equals six, which means double the weight, and that's how we know both dogs grew three kilograms.

Teacher A: For the doubling, can you explain what that means in this specific case?

Student Q: It means that, because it doubled because three plus three is six, which means it's doubled its weight.

Student P: We just realized it.

Teacher A: Okay, you just realized it was doubling?

Student P: Yes.

Teacher A: Okay.

Student Q: Okay, so ours is pretty much different than all these other ones because we got a different answer. We think that the dog number two grew more because dog number two doubled it's weight, while dog number one didn't double it's weight because dog number one started at five kilograms and five times two, which is doubled, equals ten, but it only reached eight. Therefore, dog number two doubled because it started at three, and times two is six, so the dog, so we think that dog number two grew more, in weight.

Teacher A: So, we now have two absolutely opposite answers, turn and talk to the people around you and see if anything is changed your mind or you think your answer is the one you want to stick with, or you're confused.

Student R: Because I never thought of that! It makes sense though, because three times two is six and it does make sense that they have grown more because it doubled.

Student S: The big dog already started, like the big dog already started bigger so obviously it's going to still be bigger.

Student Q: And it's not about the weight, it still is three kilograms so obviously they're going to stay the same.

Student S: Yeah, exactly.

Student Q: Just that the small dog was three.

Student S: Yeah, it's the same because they still grew each three kilograms, it doesn't matter.

Student Q: It doesn't matter if it doubled, they still grew three kilograms which means they still grew the same.

Student S: Exactly, because if you, it doesn't matter the size, you're still just adding three to each. It doesn't matter.

Teacher A: Okay, so we've had a nice little discussion and for now I'm not going to give you any kind of definitive answer, but what I need to know is because you were working in groups, I want to find out what each of you now thinks, alright? So, we're going to do, no no, you're going to do it on an exit card for me. So I'm going to give you a piece of paper and what I want to know from you is which dog grew more? Okay, and that dreaded word explain, yes.