Subtraction

Hi 2a,

today we will be working within a couple of varied contexts, and I am quite curious about how you reason when finding answers.

(The purpose is: emphasise how subtraction can be understood as "taking away" or "finding the difference", using a number line)

Teacher 1: First task, Ole has 32 marbles, then he gives away 25. How many marbles does he have left?

Pupil: The answer is 8.

Teacher 2: That was an interesting answer. I'm wondering how you came to that answer. Do you guys know how to get 8 as answer?

Pupil: *Silence*

Teacher 3: Maybe you can explain how you got that answer?

Pupil: I counted upwards: 25, 26, 27, 28, 29, 30, 31 and 32. That gives eight (shows with 9 fingers)

Teacher 4: Is there anyone who got another answer?

Pupil: The answer is 7.

Teacher 5: Yes, how was your thinking, when you got 7?

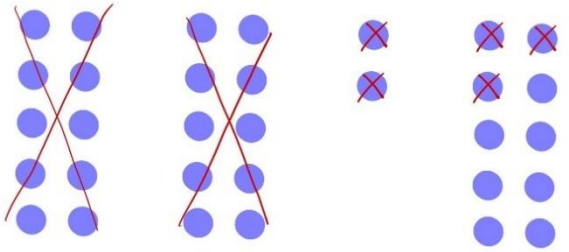
Pupil: I thought that Ole has 32 marbles, so I removed 25 marbles.

Teacher 6: Can we use the marbles to see how you did it? Did you remove all at once? Or did you remove some at the time?

Pupil: To begin with, I removed 20. Then I had 12 marbles left, so I removed 2 more, and then I had 10. So, then it was just three marbles left to take away, so it's 7.

Teacher 7: Yes, so you were thinking that we start at 32, and we remove 20. Then we have 12 marbles left. Then you choose to make a 10 by removing 2. We have then taken away 22 and we should take away 25. So we have to remove three more marbles. Let's draw it.

Teacher 8:



Pupil: Yes, but that doesn't show how many I removed each time

Teacher 9: No, that’s true. Maybe we can differentiate by using different colors?

Pupil: Yes, that’s clever.

Teacher 10: Which colors do you want us to use then?

Pupil: Eeh, I don’t know what will fit.

Teacher 11: Should we choose red for the one you removed first, then green and blue?

Pupil: Yes, that sounds nice.

Teacher 12: Next task: Ole has 32 marbles, Simen has 25 marbles. How many fewer marbles does Simen have than Ole? How can you think to find the answer to this one?

Pupil: I did the same thing. This task is also subtraction. I did 32 minus 25.

Teacher 13: Why do you think this task is a subtraction task? It is not about removing anything.

Pupil: Now I am a bit uncertain. Isn't it subtraction?

Teacher 14: Sure, we can solve this using "minus". But what does the context tell us to do?

Pupil: It says that we are to find "how many more", so then I took Ole's marlbes and removed the number Simen has.

Teacher 15: Yes, so you think we always should remove something when we are supposed to find a difference? That is also fine. Is there anyone who thinks in a different way?

Pupil: I started at 32, then I counted down to 25.

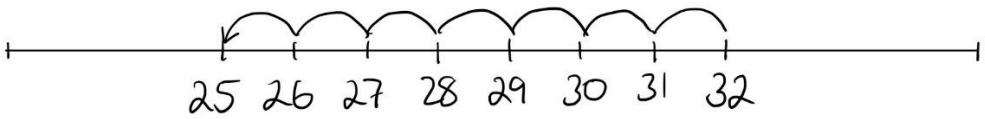
Teacher 16: Yes, maybe we should draw this solution at a number line.

Pupil: Yes, we can do that.

Teacher 17: What did you start with?

Pupil: I started with 32 and then I counted down, so down to 25.

Teacher 18:



Pupil: Yes

Teacher 19: Then we see that subtraction can be understood as both removing and also as finding the difference. Great! Then we are done.

Pupil: (How do you PSTs think it could be possible to orientate the pupils towards the models you have chosen to show how subtraction can be understood in two different ways?

Windup: Have a nice day!