

Getting off the bus

Annotation

Toetu describes his use of a standard place value partitioning strategy to solve this double-digit subtraction problem. He uses the same place value strategy for most addition and subtraction problems. Toetu identifies that subtracting multiples of 10 makes subtraction easier.

Problem: Getting off the bus

The teacher shows this problem to the student and reads it with him as required:

53 people are on the bus and 26 people get off. How many people are left on the bus?

Student response

Toetu: It's 27.

Teacher: Tell me how you did that.

Toetu: I took 20 away from 53 and got 33. Then I took away 3 and took away 3 again which got me to 27.

Teacher: What do you know that helped you?

Toetu: I know how to take lots of 10 away and that taking away a tidy number like that makes it easy.

Teacher: Tell me why you did it that way.

Toetu: Because I could see the 20 and the 6 in 26.

Teacher: How would you record that?

Toetu: Well the bus question was really 53 takeaway 26 so like this.

$$53 - 26 = 27$$

Buying a cell phone

Annotation

Zac uses rounding and compensation to solve this subtraction problem. He identifies the challenge of compensating when a rounding strategy is used, and demonstrates his understanding of having taken away too many. He indicates that this is a newly learned procedure. He correctly uses a number line to demonstrate his rounding and compensation strategy.

Problem: Buying a cell phone.

The teacher shows this problem to the student and reads it with him as required:

I had \$120 and I spent \$98 on a cell phone. How much do I have left?

Student response

Zac: It's \$22.

Teacher: Tell me how you did that.

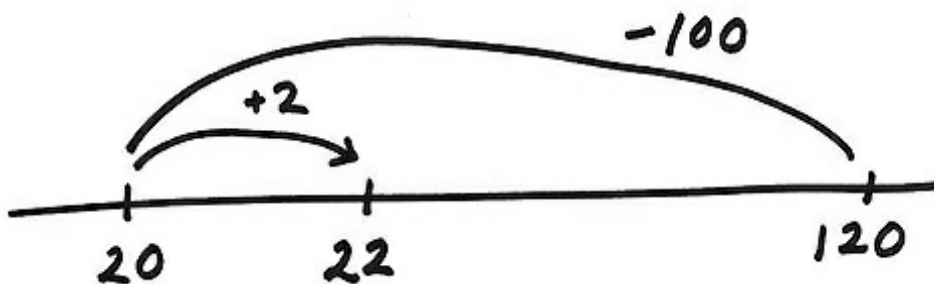
Zac: I added 2 to 98 and took away 100 which left 20. Then I knew to just add the 2 back on again because I took away 2 too many. So it's 22. Actually that's the hard bit – knowing whether to take the 2 away or add it on.

Teacher: Tell me why you did it that way.

Zac: Because it's easier with this one to round it and I've been learning how to put the extra bit back on at the end.

Teacher: How would you record that?

Zac: On a number line's the easiest. We've been learning to use these in class. I'd start here at 120 and go back 100 like this to 20 then just add 2 here to make 22.



Final score

Annotation

Laki uses a standard place value partitioning strategy to solve this double-digit addition problem. He explains that this is his preferred strategy for most addition and subtraction problems.

Problem: Final score

The teacher shows this problem to the student and reads it with them as required:

You scored 49 points in the first half of your game and 26 points in the second half. What was your final score?

Student response

Laki: It's 75.

Teacher: Tell me how you did that.

Laki: I just said $49 + 20$ is 69 and 6 more is 75.

Teacher: What do you know that helped you?

Laki: Well I know $20 + 6$ is 26 so it's kind of easy to add it like that. That's the way I like to do those ones.

Teacher: How would you record that?

Laki: The question that you asked was actually this: (he records $49 + 26$) which equals 75. So that'd be $49 + 20 = 69$ and $69 + 6 = 75$ so the final score is 75.

$$49 + 26$$

$$49 + 20 = 69$$

$$69 + 6 = 75$$

The marathon

Annotation

Michaela solves this change unknown problem by partitioning the difference between 85 and 170. She understands that the sides of an equation are equal and that the order doesn't matter. However, she doesn't recognise that using double 80 would be a more efficient strategy. She uses a number line correctly to explain her thinking.

Problem: The marathon

The teacher shows this problem to the student and reads it with her as required:

There are 170 runners altogether in the marathon. 85 have already run past the half-way mark. How many are still to run past?

Student response

Michaela: It's 85.

Teacher: Tell me how you did that.

Michaela: I said 15 added to 85 is 100 and then there's 70 more to go to get to 170. So I added 15 and 70 and that's 85.

Teacher: What do you know that helped you?

Michaela: I know that this is a 'something and what' problem and it doesn't matter if the total is given first.

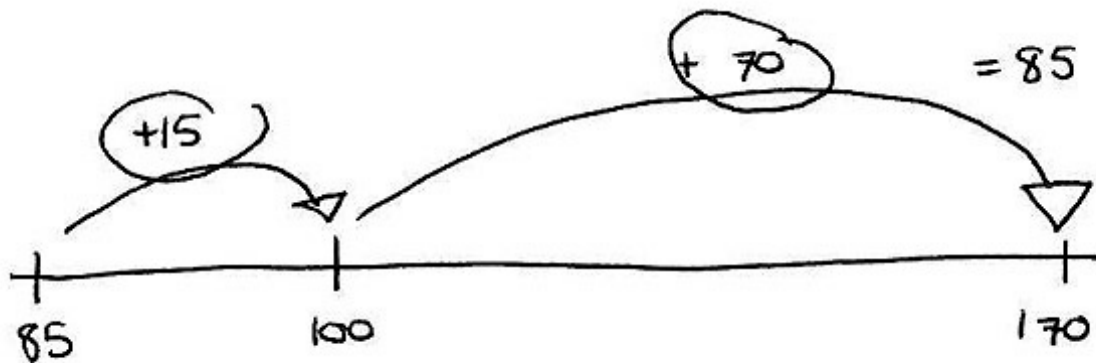
Teacher: Tell me why you did it that way.

Michaela: Because I was adding up to get from 85 to 170 and it's the way we've been learning.

Teacher: How would you record that?

Michaela: Well probably a number line. I'm good at these.

She records $85 + 15 + 70$ on a number line then puts a circle around 15 and 70 to combine them to make 85.



My bank account

Annotation

Ngahina uses standard place value partitioning to solve this problem and indicates that this is her preferred strategy. She explains that adding in tens (10) makes finding the difference easier.

Problem: My bank account

The teacher shows this problem to the student and reads it with her as required:

I put \$35 into my bank account. I now have \$54 in my account. How much did I have to start with?

Student response

Ngahina: Nineteen dollars.

Teacher: Tell me how you did that.

Ngahina: I know if I start at 35 and add something up to 54 I'll find out what I started with. So I added 10 to get to 45 and then it's just another 9 to make 54. And so it's 19 because that 10 and that 9 make 19.

Teacher: Tell me why you did it that way.

Ngahina: Because I always find it easier to add tens and then the extra ones.

Teacher: How would you record that?

Ngahina: I'd write it like I did it.

$$35 + 10 + 9 = 54$$