Trusting the Count

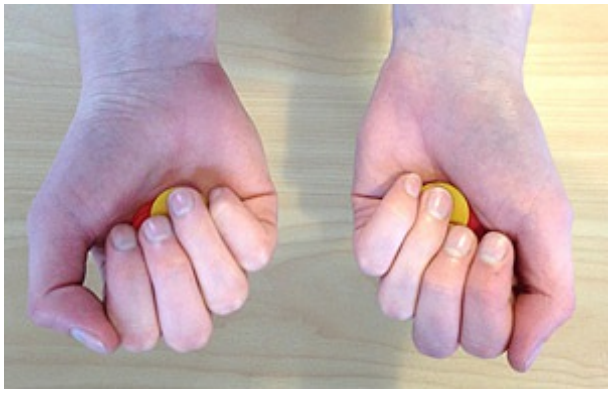
Annotation

Andrew solves the problem by counting on. It is evident that he has learned to trust the count (cardinality) as he recognises that he does not have to count from 1.

Problem: Trusting the count

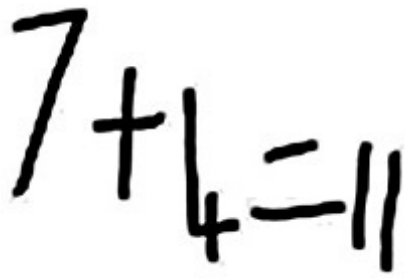
The teacher places a group of counters in each of the student's hands and poses this problem:

You have 7 counters in this hand and 4 counters in this hand. How many counters do you have altogether?



Student response

Andrew:	*It's 11.*
Teacher:	*Tell me how you did that.*
Andrew:	*I had 7 and counted on, 8, 9, 10, 11.*
Teacher:	*What do you know that helped you?*
Andrew:	*Well, I know how to count on from 7.*
Teacher:	*Tell me why you did it that way.*
Andrew:	*Because it is faster than counting everything.*
Teacher:	*How would you record that?*
Andrew:	*Well like what I did. Like this.*



Counting back

Annotation

Luisa is able to successfully count back across a decade, tracking systematically with her fingers to solve a given subtraction problem.

Problem: Counting back

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

Kat had 36 plums but she had to throw away 9 rotten ones. How many did she have left?

Student response

Luisa: It's 27.

Teacher: Tell me how you did that.

Luisa: I had 36 and I counted the 9 on my fingers like this, 35, 34, 33, 32, 31, 30, 29, 28, 27.

Teacher: What do you know that helped you?

Luisa: I know how to count backwards…you know…count down.

Teacher: Tell me why you did it that way.

Luisa: Because it's a takeaway and that's how you do them.

Teacher: How would you record that?

Luisa: I had thirty-six and nine are taken away which means there's 27.

She writes 36, and circles it, then writes 35, 34, 33, 32, 31, 30, 29, 28, and 27. She points to the 36 and says "I started here." She then circles 27 saying, "This is what I got."

More dinosaurs

Annotation

Abbey solves this problem by counting on through a decade whilst systematically tracking on her fingers.

Problem: More dinosaurs

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

Max had 15 dinosaurs and Alice had 8. How many did they have altogether?

Student response

Abbey: They had 23 dinosaurs altogether.

Teacher: Tell me how you did that.

Abbey: Max had 15 and I said, 16, 17, 18, 19, 20, 21, 22, 23 and counted on my fingers so I could know I'd done 8.

Teacher: What do you know that helped you?

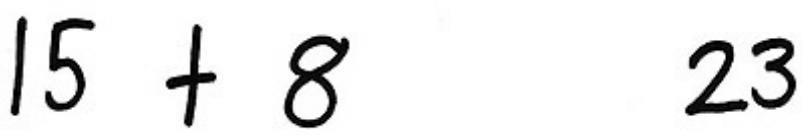
Abbey: I can count up from the biggest number.

Teacher: Tell me why you did it that way.

Abbey: Because I know that I don't have to count them all and it's like 15 and 8 more so you count them on.

Teacher: How would you record that?

Abbey: There were 15 to start with, plus 8 more is 23.



Cars in the carpark

Annotation

Robert solves this start unknown problem by counting on from 8 to 14, keeping track on his fingers of the number of counts he makes. He knows that he can change the order of addends without changing the sum (the commutative property). He also recognises that this problem could have been solved using subtraction.

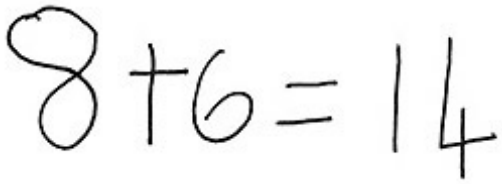
Problem: Cars in the carpark

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

There were some cars in the car park. Another 8 cars came in and parked and there were 14 altogether. How many cars were in the park to begin with?

Student response

Robert:	It's six.
Teacher:	Tell me how you did that.
Robert:	I said 8 and how many more is 14, then I counted up 9, 10, 11, 12, 13, 14 and got 6 (holding up his 6 fingers to show).
Teacher:	What do you know that helped you?
Robert:	I know that you can change it around to put the 8 at the front and ask '8 and what makes 14?'
Teacher:	Tell me why you did it that way.
Robert:	I could have done a takeaway too like, 14 – 8 but pluses are easier.
Teacher:	How would you record that?
Robert:	I'd write it like this (he writes, 8 + 6 = 14) because that's what I did.



People on the bus

Annotation

Rapata solves this problem by counting on from the bigger number and explains that this is more efficient. He knows that he can change the order of addends without changing the sum (the commutative property). In his response he recognises the context of the problem.

Problem: People on the bus

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

5 people were on the bus and another 28 got on. How many people are on the bus now?

Student response

Rapata:	It's 33 people.
Teacher:	Tell me how you did that.
Rapata:	I know to put the big number first so I counted on from 28, like 29, 30, 31, 32, 33.
Teacher:	Tell me why you did it that way.
Rapata:	Like I said, you count on from the bigger number. It would take too long to count the other way.
Teacher:	How would you record that?
Rapata:	These are both the same, but I did it the first way. They both make thirty-three.