Bags of wheat

Annotation

Ali uses his sound place value knowledge of our number system to efficiently solve this decimal fraction problem. He is able to work easily between whole numbers, fractions and decimals.

Problem: Bags of wheat

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

Malu needed 2.5kg of wheat for a large wheat bag. She had 0.88kg and 1.7kg in 2 separate bags. If she combined these would she have enough?

Student response

Ali: Yes, she'd have 2.58 kg because 1.7 + 0.88 = 2.58.

Teacher: Tell me how you did that.

Ali: Well I could see that 0.8 or 8/10 added to 1.7 or 1 and 7/10 is 2.5. And there's just that 0.08 or 8/100, which is 80 grams, left over

Teacher: How would you record that?

Ali: I'd probably write 1.7 + 0.88 = 2.58

Estimates

Annotation

Rick works easily with positive and negative integers, he sensibly and readily estimates the solutions to problems involving the addition and subtraction for decimals and integers, and can explain his thinking.

Problem: Estimates

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

You and your classmate Dan have been making quick estimates of solutions to some money problems. What do you think of Dan's estimates?

$249.42 – $394.42= –$255

$78.85 + $79.85 + $98.60 = $301.20

$71.43 – $69.88 = $11.60

Student response

Rick: Dan isn't that great on estimating.

Teacher: How do you know that?

Rick: I just know that it can't be –255 because if I took 400 from 250 it'd be –150, not like –250. You can kind of ignore the .42 bit because that's being subtracted anyway. And that one would be like 80 + 80 + 100, which'd be more like 260. The last one's out too because it'd be about $1.60 not $11.60, because it's like $71.50 – $70. Mmm… he needs to improve his estimation I reckon.

Pipe pieces

Annotation

Paora solves this problem by efficiently combining fractions to make whole numbers. He demonstrates his ability to mentally apply the addition operation to fractions and to work with different denominators, equivalent fractions, and with improper fractions. His solution and explanation demonstrate a strong number sense.

Problem: Pipe pieces

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

Hemi wants to use the smallest number of leftover pieces of pipe to make a 3 metre length. These are the lengths, in metres, that he has: 1/2, 7/8, 5/8, 1/8, 3/4, 3/8, 1/4. Which will he use?

Student response

Paora: He'll use the ¾ and ¼, the ½, 7/8, and 5/8.

Teacher: Tell me how you did that.

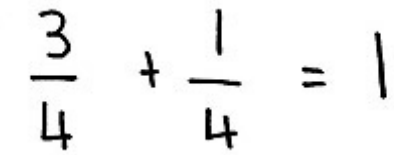
Paora: Well ¾ + ¼ = 1 and ½ is 4/8, and 4/8 + 5/8 + 7/8 is 16/8 which is 2. 1 and 2 is three.

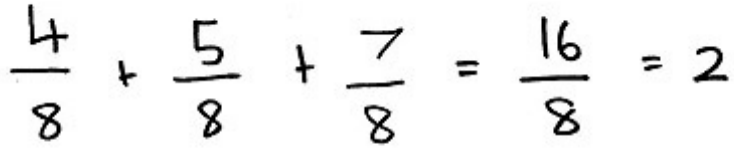
Teacher: Why did you do it that way?

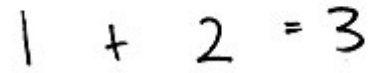
Paora: It's just easier to make wholes with the pieces in my head.

Teacher: How would you record that?

Paora: I'd probably write it as a fraction equation like this. (He writes ¾ + ¼ = 1, 4/8 + 5/8 + 7/8 = 16/8 = 2, 1 + 2 = 3) or you could just show it all as eighths in which case it would total 24/8.







Sugar for jam

Annotation

Uputaua immediately responds to the numbers within this problem, seeing differences and combining these easily. She works efficiently with whole and decimal numbers to calculate a 'start unknown' problem.

Problem: Sugar for jam

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

Eva was making jam. She was weighing sugar from two partly used bags. When she added 0.67kg sugar from the second bag the scales showed 2.33kg. How much was in the first bag?

Student response

Uputaua: I first thought around 1.7 and it's actually 1.66kg.

Teacher: Tell me how you did that.

Uputaua: Well I could just see that 0.67 + 0.33 made 1, another 0.33 makes 1.33 and so it's just another 1kg.

Teacher: Why did you do it that way?

Uputaua: The numbers kind of suggested it. I could see that those two 0.33s would make 0.66, then there's the 1.

Teacher: How would you record that?

Uputaua: I'd write it the way the problem is, 0.67 + 1.66 = 2.33

Still chilly

Annotation

Foufili solves this problem by adding integers and in doing so demonstrates that he understands their practical application. With reference to the context he is able to succinctly explain the addition operation with integers and the relationship of the sum to zero.

Problem: Still chilly

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

Since last month the temperature in Anchorage, Alaska, has increased by 22° C. It is now 5° C. What was the temperature last month?

Student response

Foufili: –17° C.

Teacher: How did you work that out?

Foufili: Because if I take 22 from 5 I will have –17.

Teacher: What do you know that helps you?

Foufili: Well I know if I add a positive number to a negative number it will reduce the size of the negative number and in this case the addition of +22 takes the temperature into positive numbers. That means the original temperature has to be warmer than –22.

Teacher: How would you record that?

Foufili: I guess I'd write that as –17 + +22 = +5 because that explains quite simply what is happening to the temperature.

The leaky tank

Annotation

Aroha solves this multi-digit subtraction problem by using an equal additions strategy. She demonstrates and applies her knowledge of compatible numbers to 1000, her understanding of the principle of equal additions, and in her explanation she justifies her efficient strategy choice.

Problem: The leaky tank

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

There were 9608 litres of water in a large tank. The tank leaked and only 934 litres remain. How much water drained out of the tank?

Student response

Aroha: It's 8674.

Teacher: Tell me how you did that.

Aroha: When I see that 934 I just want to make it 1000 because it's easier so I add 66 to 934 and to 9608 which gives me an easier subtraction: 9674 – 1000.

Teacher: What do you know that helped you?

Aroha: I just know compatible numbers for 1000 and that when I add numbers to both parts of a subtraction equation the difference stays the same.

Teacher: Tell me why you did it that way.

Aroha: Because it's quick and it works for me. I could have written this as an algorithm but it was easier not to.

Teacher: How would you record this?

Aroha: I could write everything I did but the easiest is just to write the equation, 9608 – 934 = 8674.