Wooden spears

Annotation

Zoey understands factors, and the commutative, distributive, and associative properties of multiplication. She shows a strong number sense and an ability to see and use proportional number relationships to effectively and efficiently solve this problem.

Problem: Wooden spears

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

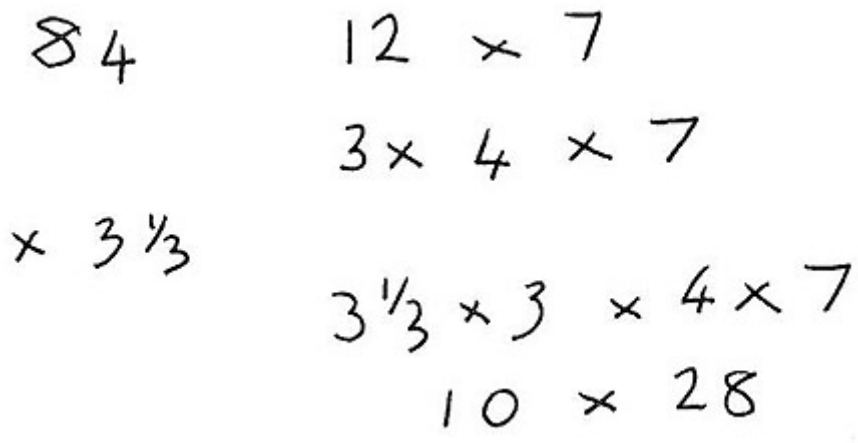
The school's stage production needs 84 wooden spears, each three and one third metres long. How many metres of wood are needed to make these spears?

Student response

Zoey: 280 metres.

Teacher: Tell me how you did that.

Zoey: Well I know the answer has to be a bit over 240 but when I saw the numbers I thought I would have to look for a way to make this easy. 3 ⅓ is hard to work with. I know that I can multiply 3 ⅓ by 3 to make 10 but then I didn't know what to do next. So I wondered if factors would help me. I looked at the 84, which is 12 x 7 and saw that 12 x 7 is the same as (3 x 4) x 7. Then I had an 'aha moment'! I saw how I could work with the 3 ⅓ x 3 = 10. I did this: (3⅓ x 3) x (4 x 7), which is the same as 10 x 28, which is 280. It's quite neat



isn't it?

Teacher: What do you know that helped you.

Zoey: Well you've got to know how to work with factors but you've also got to know how to find ways to make numbers work for you. Sometimes even when you've tried things you see it isn't going to work because the numbers just don't work together. With a problem like this I'd just reach for a calculator if that were the case.