

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: $\frac{1}{2}$, $\frac{7}{8}$, $\frac{5}{8}$, $\frac{1}{8}$, $\frac{3}{4}$, $\frac{3}{8}$, $\frac{1}{4}$. Which will he use?

Student response

Paora: He'll use the $\frac{3}{4}$ and $\frac{1}{4}$, the $\frac{1}{2}$, $\frac{7}{8}$, and $\frac{5}{8}$.

Teacher: Tell me how you did that.

Paora: Well $\frac{3}{4} + \frac{1}{4} = 1$ and $\frac{1}{2}$ is $\frac{4}{8}$, and $\frac{4}{8} + \frac{5}{8} + \frac{7}{8}$ is $\frac{16}{8}$ 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 $\frac{3}{4} + \frac{1}{4} = 1$, $\frac{4}{8} + \frac{5}{8} + \frac{7}{8} = \frac{16}{8} = 2$, $1 + 2 = 3$) or you could just show it all as eighths in which case it would total $\frac{24}{8}$.

$$\frac{3}{4} + \frac{1}{4} = 1$$

$$\frac{4}{8} + \frac{5}{8} + \frac{7}{8} = \frac{16}{8} = 2$$

$$1 + 2 = 3$$