# Appendix 5.3

Students' Explanations

Part 1

Statement 1. We received 10 sandwiches for the 6 members of our group.

- By drawing, we determined that each member of the group received 1 sandwich and $\frac{1}{6}$ of each of the other sandwiches, so $1\frac{4}{6}$ sandwich. Since a whole equals $\frac{6}{6}$, then $1\frac{4}{6}$ is $\frac{6}{6} + \frac{4}{6}$. So $1\frac{4}{6}$ equals $\frac{10}{6}$.

- Each member received 1 sandwich, then $\frac{1}{2}$ of a sandwich and finally, $\frac{1}{6}$ of a sandwich, so $1 + \frac{1}{2} + \frac{1}{6}$. But we had to answer by a single fraction; we then noticed that $\frac{1}{2}$ equals $\frac{3}{6}$. So, each member received $1\frac{4}{6}$ sandwich.
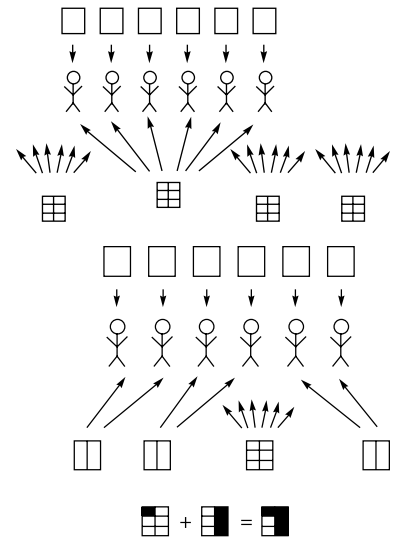
**Statement 2. Each member of the group received five one-thirds of a sandwich.**

- Each member received $\frac{3}{5}$ of a sandwich. Since 3 pieces (one-thirds) are worth a whole and there is $\frac{5}{3}$, there is a whole and 2 pieces, so $\frac{5}{3} = 1\frac{2}{3}$.

Statement 3. It was delicious. There were 8 sandwiches for Jean, Pierre and I.

- By drawing, we determined that each member received 2 sandwiches. Then, we divided each of the 2 sandwiches left into 3 pieces. So each member received $2\frac{2}{3}$ sandwiches.
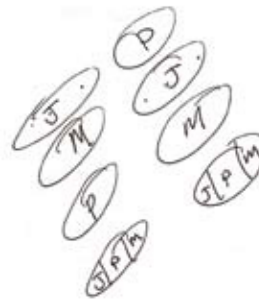
- We separated each of the 8 sandwiches into 3 pieces (so $\frac{8}{3}$ of a sandwich) then we grouped the pieces, obtaining $2\frac{2}{3}$ sandwiches.
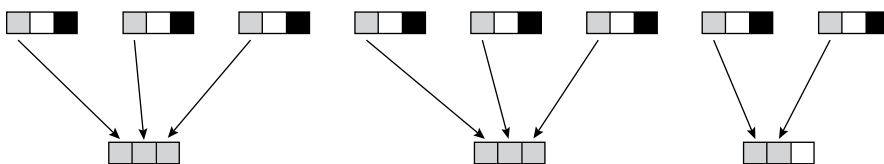
Statement 4. The 9 members of our group equally shared 15 sandwiches.

- By separating the sandwiches into 9 pieces, we found that each member received 15 pieces or $\frac{15}{9}$ of a sandwich, which is equivalent to $1\frac{6}{9}$ sandwich. Looking at a sandwich separated into 9 pieces, we noticed that $\frac{6}{9}$ equals $\frac{2}{3}$. So, $\frac{15}{9}$ of a sandwich is equal to $1\frac{2}{3}$.
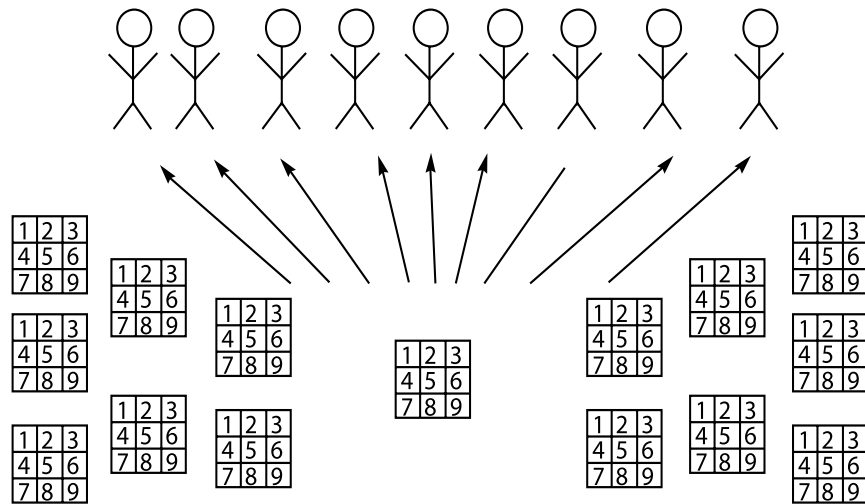
Statement 5. Each member of our group received $3\frac{2}{3}$ sandwiches.

- $3\frac{2}{3} = \frac{11}{3}$ since 3 wholes are equivalent to 3 × 3 one-thirds, so $\frac{9}{3}$ which we add to $\frac{2}{3}$.

Statement 6. We divided each sandwich into 6 pieces and each member received 16 pieces.

- Each member therefore received $\frac{16}{6}$ sandwich, which is equivalent to $2\frac{4}{6}$ or $2\frac{2}{3}$ sandwiches.

1	2
3	4
5	6

7	8
9	10
11	12

13	14
15	16

Statement 7. The sandwiches were divided in one-thirds. We each received 8 pieces.

- Each member received 8 pieces. They were one-thirds of a sandwich, so everyone received $\frac{8}{3}$ of a sandwich. Since $\frac{6}{3}$ correspond to 2 wholes, $\frac{8}{3}$ is equal to $2\frac{2}{3}$ sandwiches.

Part 2

Question 1. Cantaloupes were provided for the snack. We cut them into 4 equal pieces. Each of the 50 students received 1 piece. How many cantaloupes did we have?

- We made groups of 4 since each whole (cantaloupe) is separated into 4 equal parts. Each group of 4 pieces (one-fourths) represents a cantaloupe.

  So, 50 ÷ 4 = 12 remains 2, or $12\frac{2}{4}$ cantaloupes. At the beginning, we had 13 cantaloupes.

Question 2. At the end of the picnic, there were $12\frac{2}{3}$ sandwiches left. How many one-thirds of a sandwich were left?

- The problem involves wholes and one-thirds. So, we determined how many one-thirds there were in 12 wholes. Since each whole is equivalent to $\frac{3}{3}$, 12 wholes are equivalent to $\frac{36}{3}$. Since there also remains $\frac{2}{3}$ from another sandwich, there are $\frac{36}{3}$ left plus $\frac{2}{3}$. So, at the end of the picnic, there were $\frac{38}{2}$ sandwiches left.

12 × 3 = 36, or 36 one-thirds   36 one-thirds + 2 one-thirds = 38 one-thirds
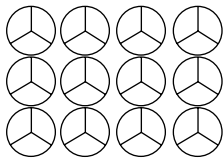
$12\frac{2}{3}$ sandwiches = $\frac{38}{3}$ of a sandwich

- We realized that each whole equals $\frac{3}{3}$. By applying this relationship to other wholes, we concluded that 12 wholes equals to $\frac{36}{3}$.

  Note : In this process, it is interesting to note that the students began to develop proportional reasoning.

Wholes	One-thirds
1	3
2	6
3	9
4	12
5	15
6	18
...	...
12	36

Question 3. A few pies were provided for dessert. We've cut each one in 8 equal pieces. We had just over $\frac{60}{8}$ pie. How many pies did we have?

- Since $\frac{8}{8}$ form a whole, then each $\frac{8}{8}$ corresponds to a pie. We therefore divided 60 by 8 (60 ÷ 8 = 7 remains 4), thus obtaining $7\frac{4}{8}$ or $7\frac{1}{2}$. So we had at least 8 pies.

  By skip-counting by 8s (8, 16… 64), we would have obtained the same result.