

LET'S DO MATH – CRISPY CRISPS PROBLEM

Before (Getting Started)

How much is each fraction of a dozen eggs?

- a) $\frac{3}{4}$ b) $\frac{3}{3}$ c) $\frac{15}{6}$



Solution 1

$\frac{3}{4}$ $\frac{3}{4} = \frac{9}{12}$

$\frac{3}{3}$ $\frac{3}{3} = \frac{12}{12}$

$\frac{15}{6}$ $\frac{15}{6} = \frac{30}{12} = 2 \frac{6}{12}$

Solution 2

$\frac{3}{4} = (\frac{3}{4}) \times (\frac{3}{3}) = \frac{(3 \times 3)}{(4 \times 3)} = \frac{9}{12}$

$\frac{3}{3} = (\frac{3}{3}) \times (\frac{4}{4}) = \frac{(3 \times 4)}{(3 \times 4)} = \frac{12}{12}$

$\frac{15}{6} = (\frac{15}{6}) \times (\frac{2}{2}) = \frac{(15 \times 2)}{(6 \times 2)} = \frac{30}{12} = 2 \frac{6}{12}$

During (Working On It)

Crispy Crisps Problem

On Day 1 of the Fun Fair, the Grade 5s took 7 pans of Crispy Crisps to sell. Each pan was cut into 4 treats. They sold $5 \frac{1}{4}$ pans of these treats. On Day 2, they decided to cut their 6 new pans of Crispy

Crisps into 8ths and sell them at 2 for the price of one. They sold 44 of the treats cut into 8ths. The teacher cut the treats remaining from days 1 and 2 into 12ths to share with the students in the class. For a class of 28 students, were there enough so that each student got $\frac{1}{12}$ th of one pan?

After (Consolidation)

Anticipating Student Responses:

Solution 1

Day 1
7 pans in 4ths or 28 Crisps
5 $\frac{1}{4}$ pans sold 1 $\frac{3}{4}$ pans left or 7 Crisps $\frac{7}{4}$ of a pan

Day 2
6 pans in 8ths or 48 treats
40 sold so 8 Crisps left or $\frac{8}{8}$ of a pan

After the Fair
1 $\frac{3}{4}$ and $\frac{8}{8}$ were left
 $\frac{16}{16} + \frac{12}{16} + \frac{16}{16} = \frac{44}{16}$
 $\frac{44}{16} = \frac{22}{8} = \frac{11}{4} = \frac{33}{12}$

Yes there were 33 pieces for the 28 students.

Solution 2

Day 1
 $\frac{28}{4}$ prepared and 5 $\frac{1}{4}$ pans is $\frac{21}{4}$ sold, $\frac{7}{4}$ left

Day 2
 $\frac{48}{8}$ prepared and $\frac{40}{8}$ sold, $\frac{8}{8}$ left

After the Fair
 $\frac{7}{4} = \frac{7}{4} \times (\frac{2}{2}) = \frac{14}{8}$
 $\frac{14}{8}$ and $\frac{8}{8} = \frac{22}{8}$
 $\frac{22}{8} \div (\frac{2}{2}) = \frac{11}{4} \times (\frac{3}{3}) = \frac{33}{12}$
 $33 > 28$ so there is enough for each student to get $\frac{1}{12}$.

Solution 3

Day 1
1 $\frac{3}{4}$ pans remain

Day 2
1 pan remains

After the Fair
2 $\frac{3}{4}$ pans remain cut into 12ths – draw folding lines
 $\frac{33}{12}$

Coordinating Student Discussion for Learning:

Why might solution 1 be chosen first for student discussion, followed by solutions 2 and 3?

- solution 1 → using a paper-folding-like drawing to represent the pans of 8ths as pans of 4ths are divided down the middle and the remaining Crisps are split into 16ths and combined. Then dividing by $\frac{2}{2}$ twice makes equivalent fractions, $\frac{44}{16}$ to $\frac{22}{8}$ then to $\frac{11}{4}$. By multiplying $\frac{11}{4}$ by $\frac{3}{3}$, there is $\frac{33}{12}$ left over → $33 \times \frac{1}{12}$ which is more than needed for 28 students (i.e., $28 \times \frac{1}{12}$)
- solution 2 → using ratio table strategies – dividing by $\frac{2}{2}$ and then multiplying by $\frac{3}{3}$.
- solution 3 → focused on whole pans of Crisps remaining, using mixed fraction $2 \frac{3}{4}$ to write as 12ths.

For Professional Discussion:

- What if the Problem was written this way:
- On Day 1 of the Fun Fair, the Grade 5s took 7 pans of Crispy Crisps to sell. Each pan was cut into 4 treats. They sold $5 \frac{1}{4}$ pans of these treats. On Day 2, they decided to cut their 6 new pans of Crispy Crisps into 8ths and sell them at 2 for the price of one. They sold 44 of the treats cut into 8ths. Were there enough Crispy Crisps for the class to fill a special order for 3 full pans of treats?
- Would the anticipated solutions shown still be appropriate for this version of the problem? How do you know?