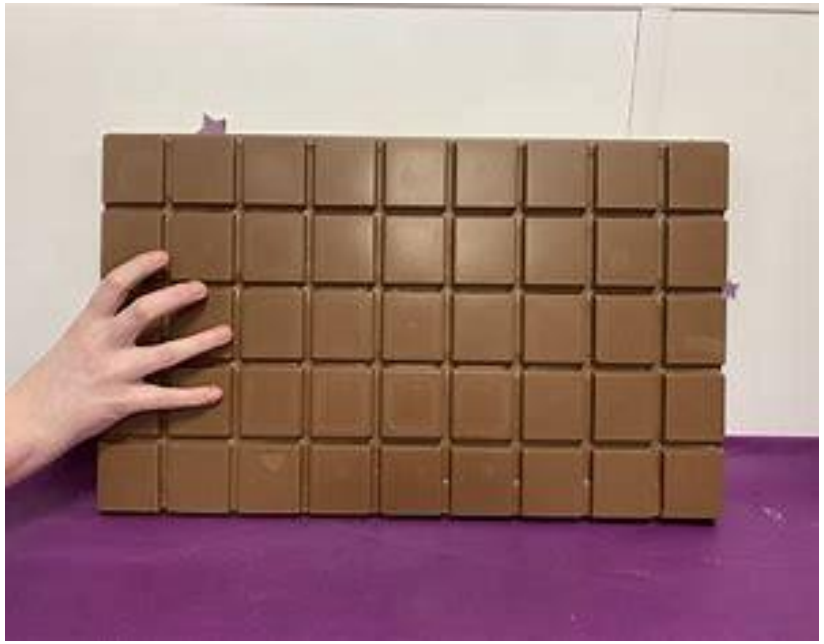
Year 5 & 6 Fractions Evening

November 2022

Exploring fractions with chocolate!



How this kind of activity can aid an understanding of fractions

Children’s difficulties with fractions

Knowledge of fractions and division can predict a child's success in mathematics in later stages of their schooling. (Siegler et al. 2012)

Why children don't like or understand fractions

- Lack of Conceptual Understanding
- Not viewing fractions as numbers at all but as meaningless symbols
- Focusing on numerators and denominators as separate numbers rather than thinking of the fraction as a single number. This ignores the essential relationship between each fraction's numerator and its denominator.
- Confusing properties of fractions with those of whole numbers.

(There is no whole number between 5 & 6 so there is no number of any type between 5/7 & 6/7)

Pupils need to experience multiple forms of fractions to have a comprehensive conceptual understanding.

The importance of making explicit links between fractions in different contexts.

What is a fraction?

- 1. fractions as part of a whole
- 2. fractions as measures (mass, capacity, time)
- 3. fractions as a number (comparing it to 1, placing on a number line, ordering fractions)
- 4. fractions as ratios (three quarters of the class are girls)
- 5. fractions as operators ('3/4 of' can be thought of as the process of multiplying by 3 & then dividing by 4 or dividing by 4 then multiplying by 3)

Prior Learning

- KS1

Recognise key fractions- ¼, 1/3, ½, ¾

Calculate fractions of amounts

Count up in fractions

- Years 3 & 4

Adding & subtracting fractions with the same denominator

Ordering unit fractions

Fractions as numbers

Equivalent fractions

Decimal equivalence

Year 5 & 6 Objectives

- compare and order fractions whose denominators are all multiples of the same number
- identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
- recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]
- add and subtract fractions with the same denominator and denominators that are multiples of the same number
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
- read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$]
- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- use common factors to simplify fractions; use common multiples to express fractions in the same denomination
- compare and order fractions, including fractions > 1
- add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
- multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$]
- divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]
- associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$]

Resources to aid understanding

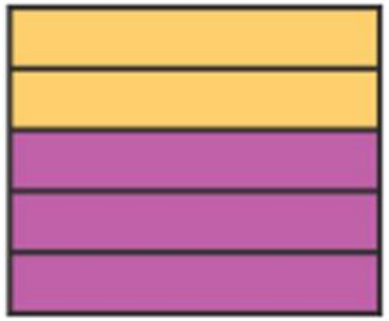
- The CPA approach
- How can tell which fraction is bigger?
- How can we add fractions with a common denominator?

Misconception 1: When adding (or subtracting) fractions pupils add (or subtract) both the numerators and the denominators.

e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{14}$ or $\frac{5}{7} - \frac{1}{7} = \frac{4}{0}$

Pupils do not recognise that the denominator indicates the number of 'parts' of the same whole and therefore treat the two fractions as 4 'whole numbers' to be added together.

Before performing addition and subtraction of fractions, pupils should experience describing part/ whole relationships verbally and in written form, in the same way that they would describe whole number trios.



e.g. The yellow and purple shaded parts in the shape below represent $\frac{2}{5} + \frac{3}{5} = \frac{5}{5}$ or 1; or the yellow parts are represented by 1 $- \frac{3}{5}$;

or the yellow and purple shaded parts in the shape below represent $\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$

Comparing, adding & subtracting with a common denominator

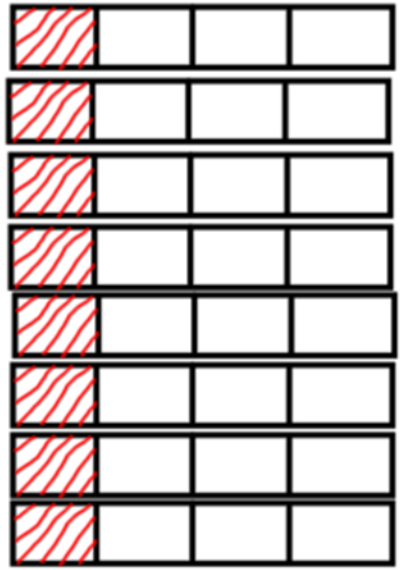
- Understanding of times tables & multiples

Multiplying fractions

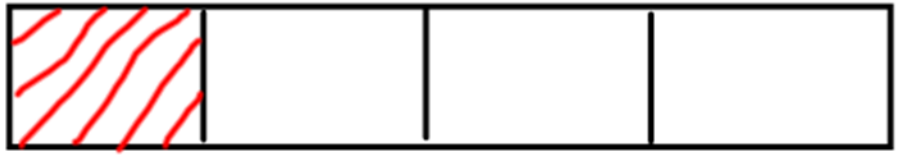
- A simple method
- x or ‘of’
- Array to represent the problem

of or *x*

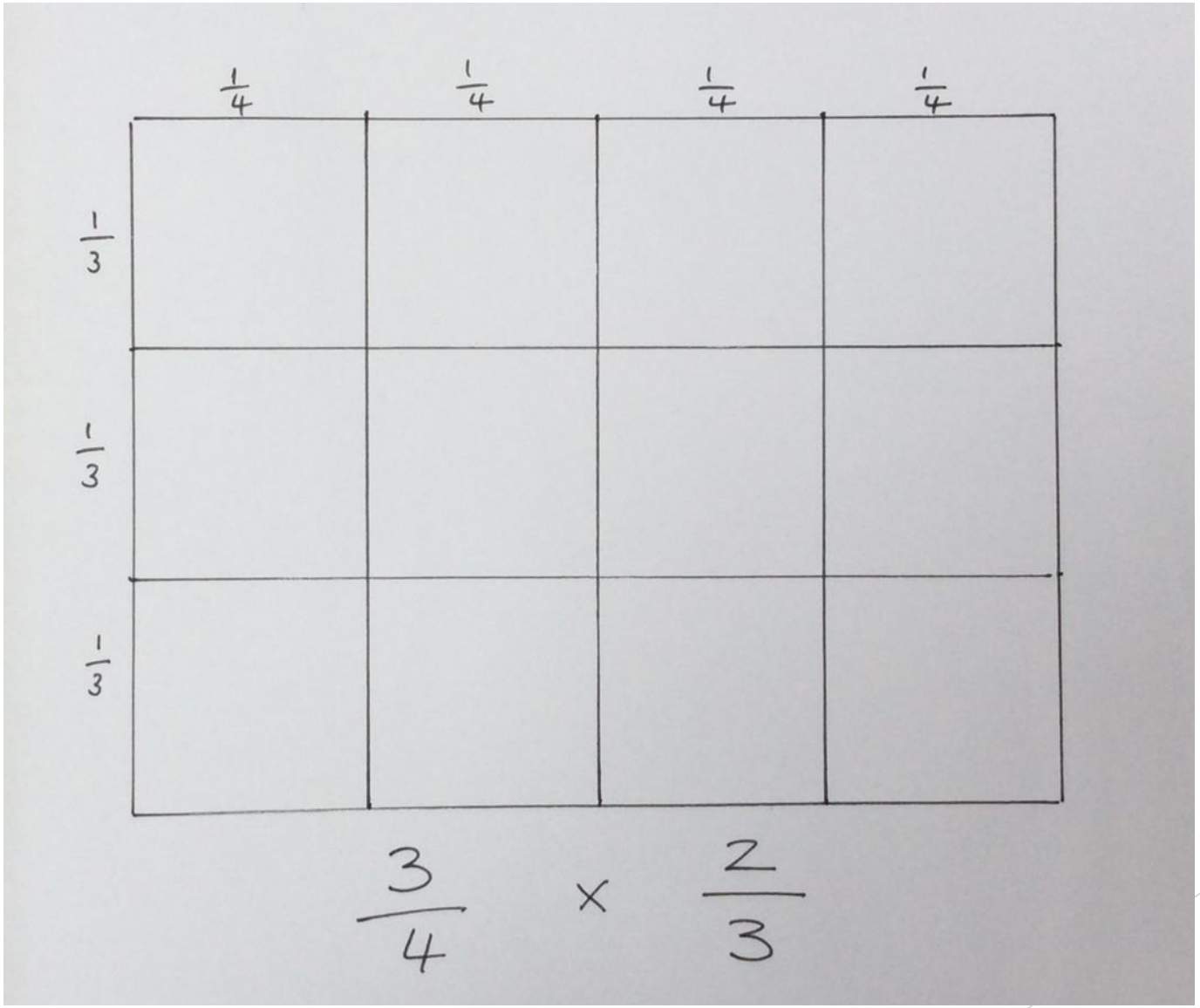
1/4 x 8

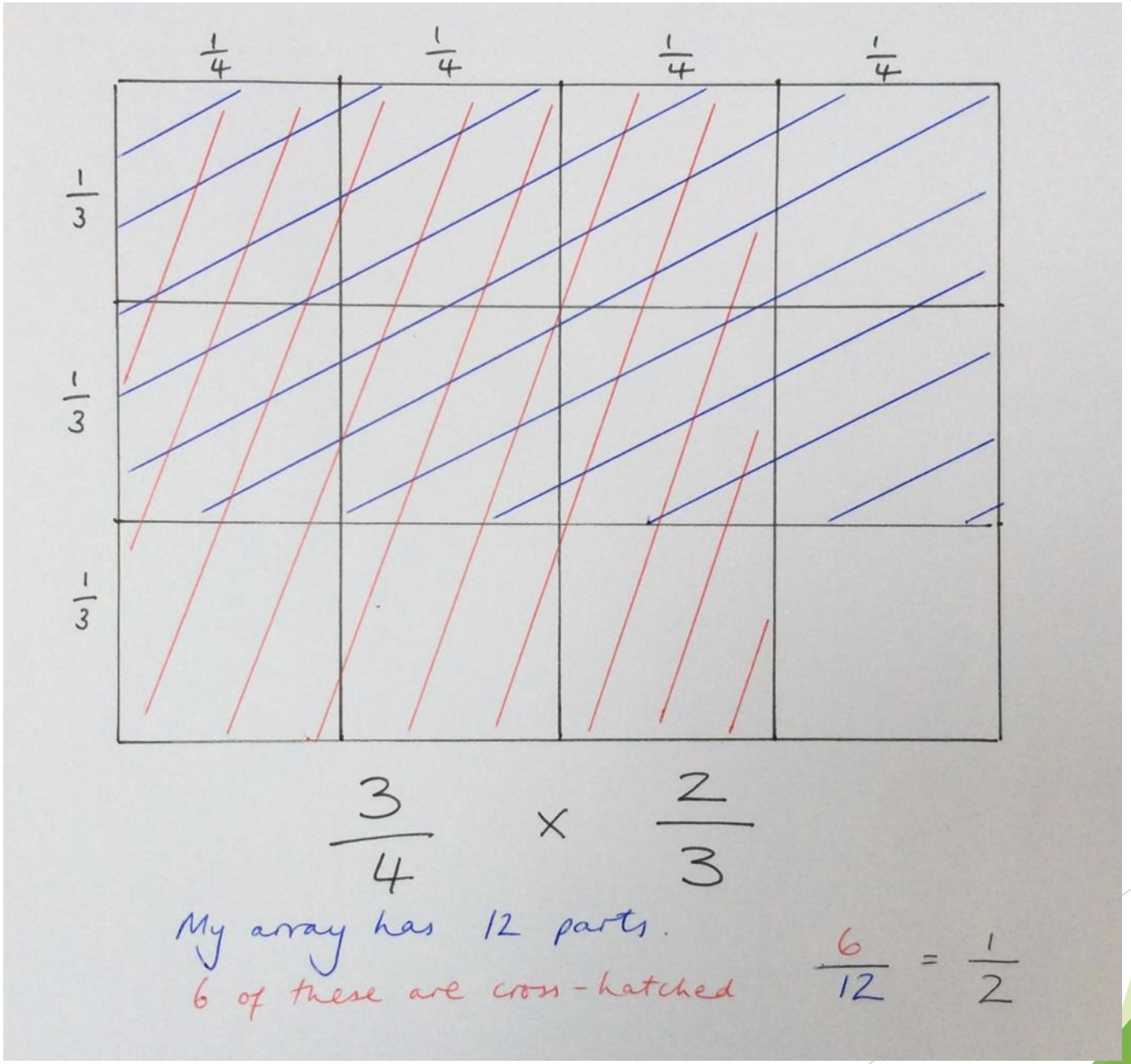


1/4 of 8



8


1/4
1/4
1/4
1/4
1/3
1/3
1/3
3/4 × 2/3

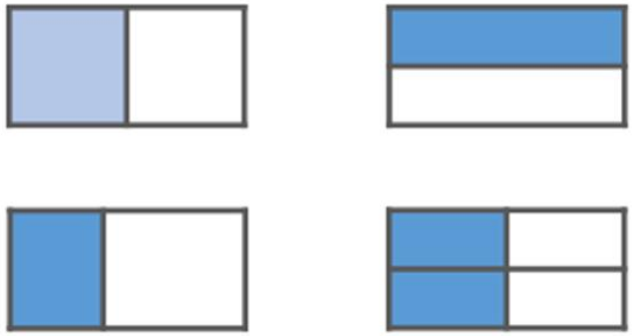

1/4
1/4
1/4
1/4
1/3
1/3
1/3
3/4 × 2/3
My array has 12 parts.
6 of these are cross-hatched
6/12 = 1/2

Dividing fractions

- Sharing the given value
- 2/3 ÷ 2
- 2/3 ÷ 4
- The famous chicken restaurant

Reasoning & problem solving activities

Odd one out

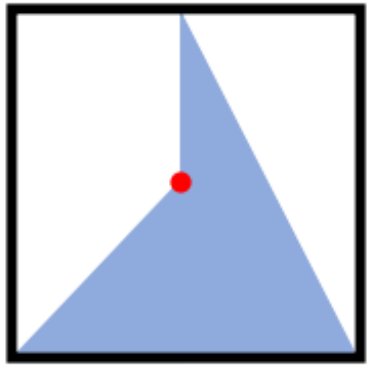


Challenge: think of a reason for each shape.

True or false?

✓ ✗

Is it $\frac{1}{2}$ blue?



What fraction of the square is blue?

The red spot is in the middle of the square.

Different Ways

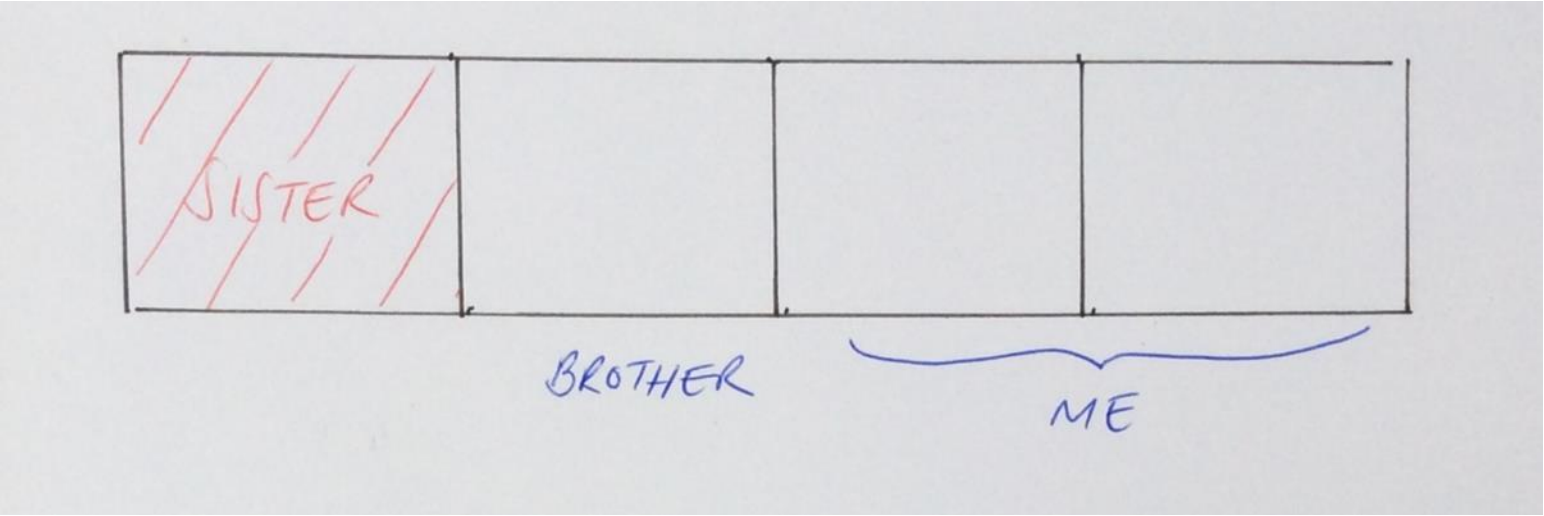
Ways to calculate $\frac{3}{4} + \frac{5}{8}$

Convert $\frac{3}{4}$ into $\frac{\square}{\square}$

$$\frac{1}{2} + \frac{1}{2} + \frac{\square}{4} + \frac{\square}{8}$$

Split $\frac{5}{8}$ into $\frac{\square}{8}$ and $\frac{\square}{8}$

My sister ate 1/4 of my chocolate bar.
My brother had 1/3 of what was left.
How much did this leave me?



On Friday, Florence read $\frac{3}{10}$ of her book.

On Saturday she read another $\frac{1}{5}$ of her book.

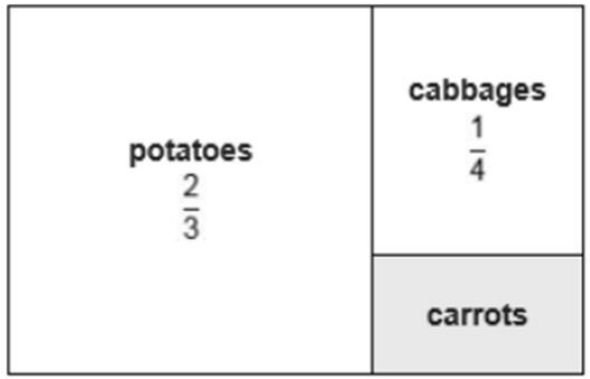
On Sunday she read another 90 pages and finished the book.

How many pages were in Florence's book?

End of KS2 assessment questions

This is a diagram of a vegetable garden.

It shows the fractions of the garden planted with potatoes and cabbages.



Not to scale

The remaining area is planted with carrots.

What **fraction** of the garden is planted with carrots?

Lara had some money.

She spent £1.25 on a drink.

She spent £1.60 on a sandwich.

She has **three-quarters** of her money left.

How much money did Lara have to **start with**?

Supporting your child with fractions

- Videos on Seesaw
- Mymaths