- **Objective:** Add and subtract fractions with different denominators and mixed numbers using the concept of equivalent fractions

Year 6 Task:

18 This is a diagram of a vegetable garden.

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

potatoes
$\frac{2}{3}$

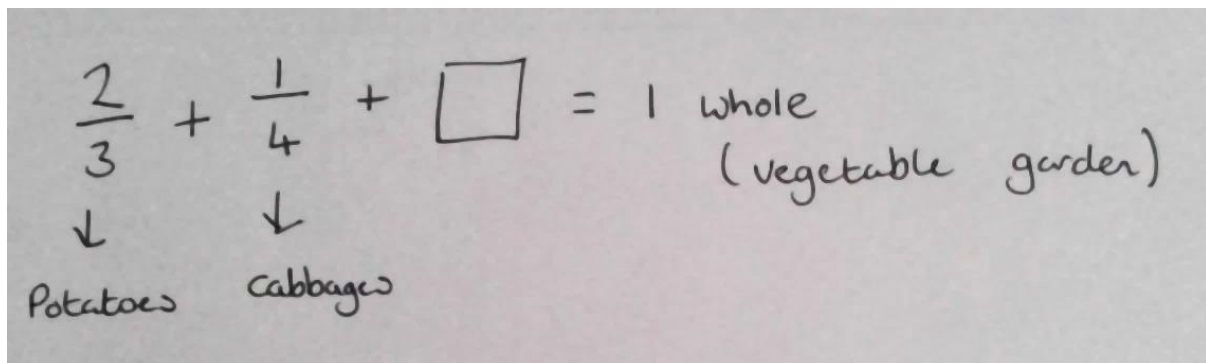cabbages
$\frac{1}{4}$

carrots

Not to scale

The remaining area is planted with carrots.

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

KS2 SATs question

Open Government Licence v3.0 found on the National Archives website and accessed via the following link:
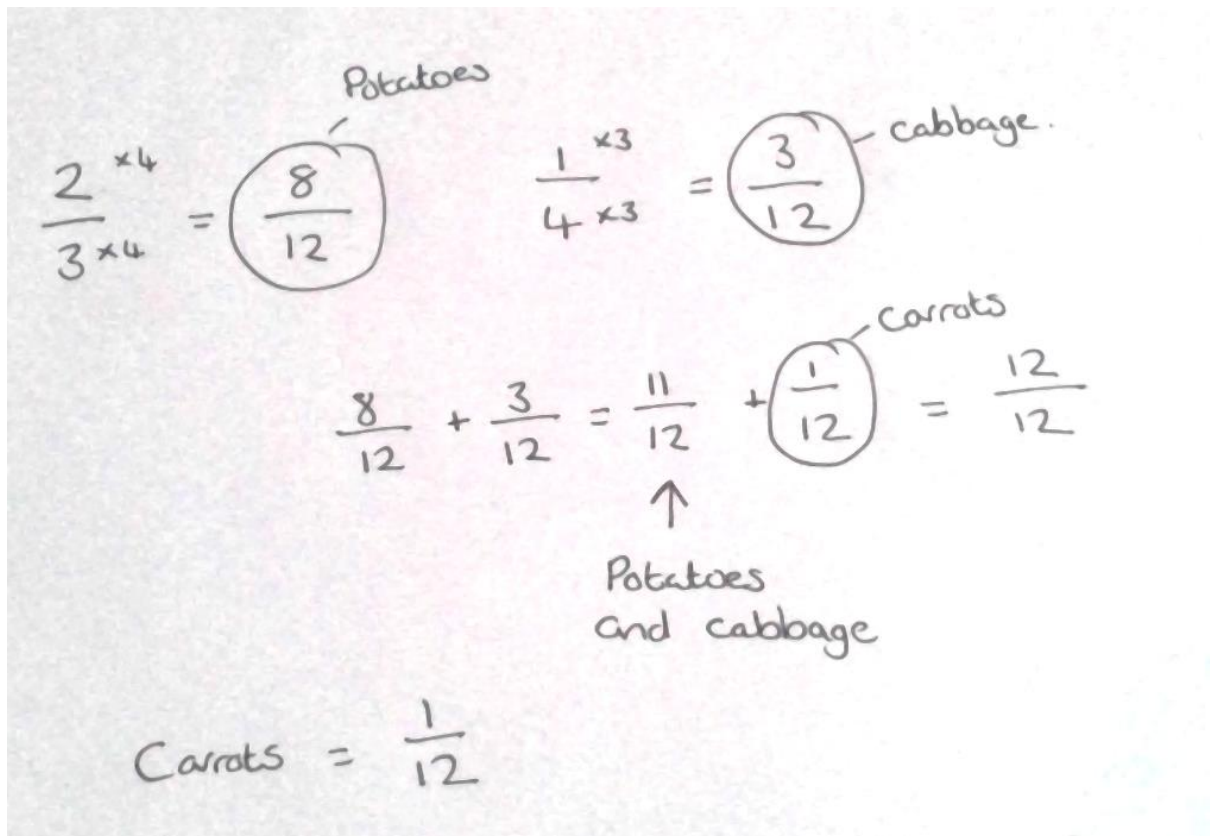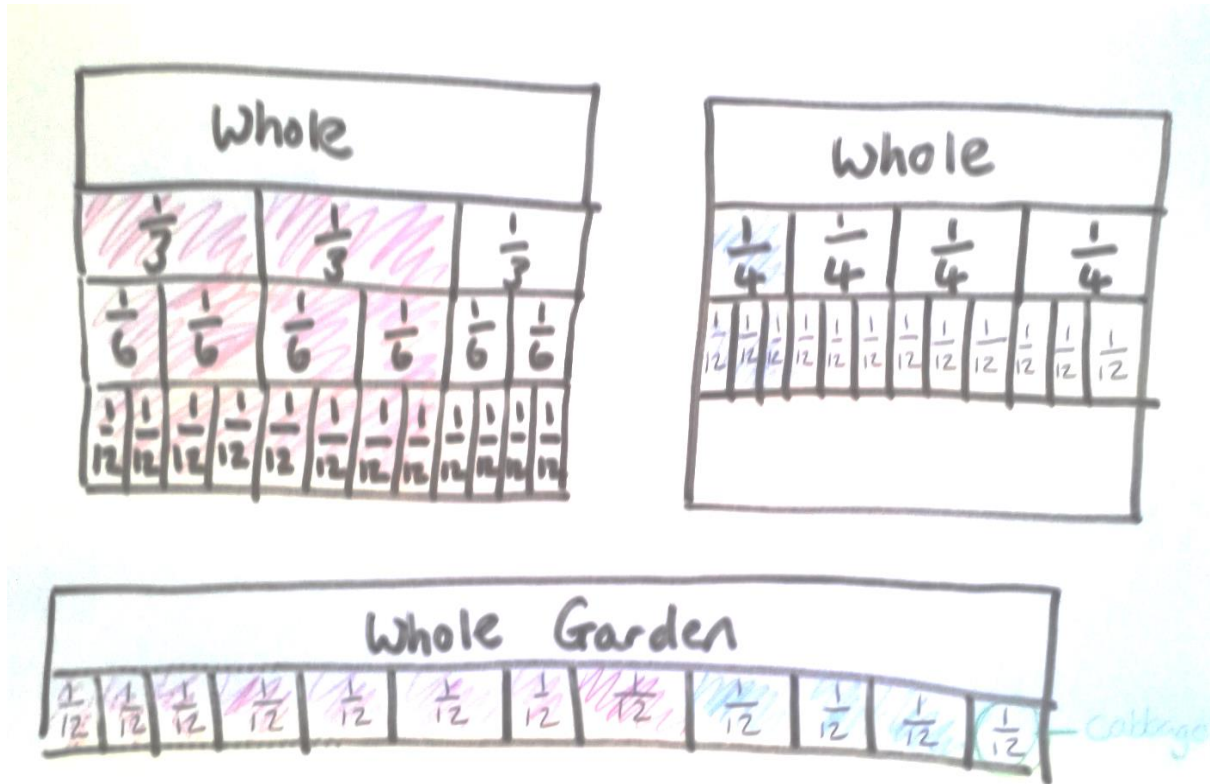www.nationalarchives.gov.uk/doc/open-government-licence

Worked example

$$\frac{2}{3} + \frac{1}{4} + \square = 1 \text{ whole (vegetable garden)}$$

↓ Potatoes   ↓ Cabbages

Whole

$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$

| $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ |

Whole

$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$

| $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ |

Whole Garden

| $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ | $\frac{1}{12}$ — cabbage |

Potatoes

$$\frac{2^{\times 4}}{3^{\times 4}} = \boxed{\frac{8}{12}} \qquad \frac{1^{\times 3}}{4^{\times 3}} = \boxed{\frac{3}{12}} \text{ — cabbage.}$$

Carrots

$$\frac{8}{12} + \frac{3}{12} = \frac{11}{12} + \boxed{\frac{1}{12}} = \frac{12}{12}$$

↑

Potatoes
and cabbage

$$\text{Carrots} = \frac{1}{12}$$

Variation

What if $\frac{3}{5}$ of the vegetable garden was potatoes and $\frac{1}{10}$ of the garden was cabbages. What fraction of the garden was carrots?

Show your workings here:

Answer: $\frac{3}{10}$ of the garden was carrots

What if $\frac{5}{8}$ of the vegetable garden was potatoes and $\frac{1}{3}$ of the garden was cabbages.

What fraction of the garden was carrots?

Show your workings here:

Answer: $\frac{23}{24}$ of the garden was carrots

HIAS HOME LEARNING