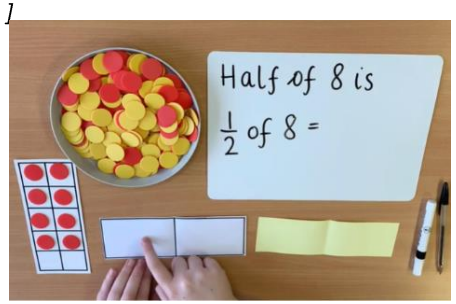
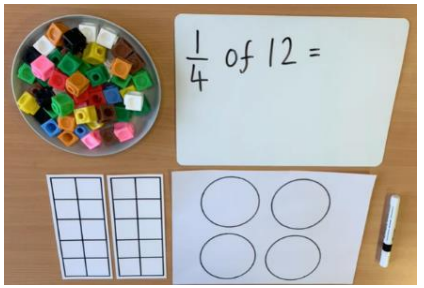
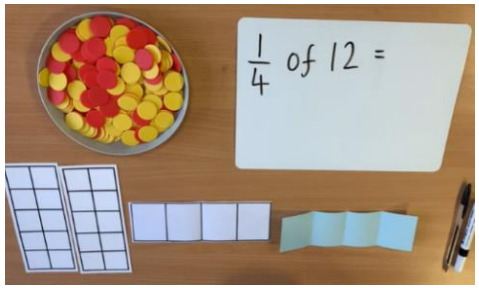
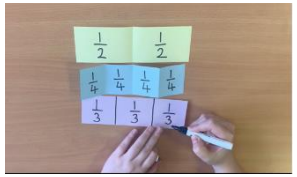
Forest Hills Primary School – Fractions and Decimals Policy

The purpose of our Fractions and Decimals Policy is to ensure consistency in the teaching of Mathematics throughout the school and to ensure that pupils develop efficient written and mental methods, underpinned by conceptual understanding.

<table>
<tr><td>Year 1</td><td colspan="6">Objective 1: To recognise, find and name a half as one of two equal parts of an object, shape or quantity.</td><td colspan="6">Objective 2: To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</td></tr>
<tr><td></td><td colspan="6">$\frac{1}{2}$ of 8 = 4

(Cubes)
 
(Bar models and counters)</td><td colspan="6">$\frac{1}{4}$ of 12 = 3
 
(Cubes)
 
(Bar models and counters)</td></tr>
<tr><td>Year 2</td><td colspan="12">Objective 1: To recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity and write simple fractions e.g., $\frac{1}{2}$ of 6 = 3.</td></tr>
<tr><td></td><td colspan="2">Recognise $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{3}$
(Bar models)
  </td><td colspan="2">$\frac{1}{2}$ of 8 = 4
(Bar models and counters)
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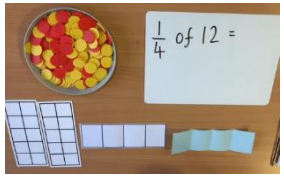
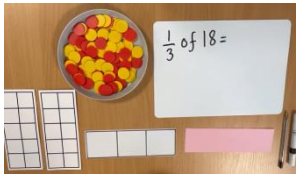
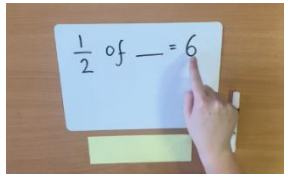
(Bar models and counters)
  </td><td colspan="2">$\frac{1}{3}$ of 18 = 6
(Bar models and counters)
  </td><td colspan="2">$\frac{3}{4}$ of 20 = 15
(Bar models and counters)
 </td><td colspan="2">$\frac{1}{2}$ of ____ = 6
(Bar models and counters)
  </td></tr>
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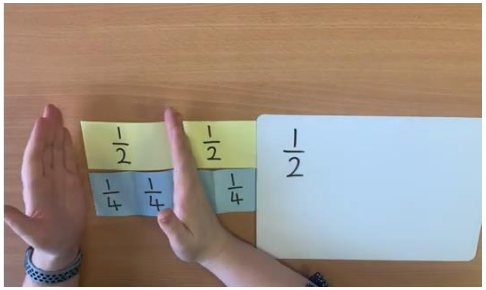
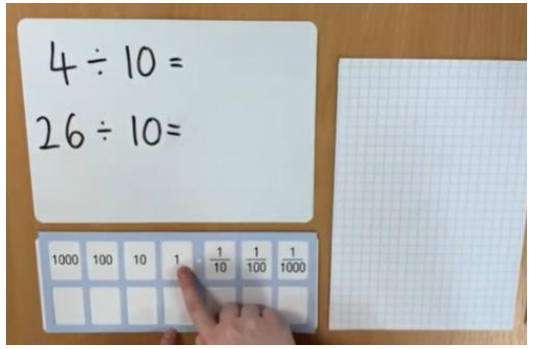
<table>
<tr><td></td><td>Objective 2: To recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.</td></tr>
<tr><td></td><td>(Bar models)
 
</td></tr>
<tr><td><u>Year 3</u></td><td>Objective 1: To count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.</td></tr>
<tr><td></td><td>
<table>
<tr>
<td>Counting in tenths

(Counters)
 </td>
<td>Counting down in tenths

(Counters)
 </td>
<td>Dividing by 10

(Place value sliders)
 
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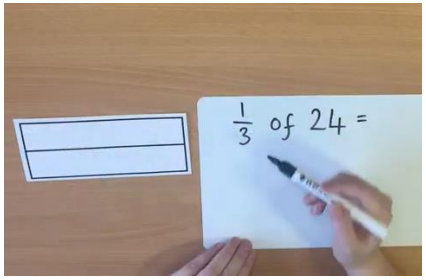
Objective 2: To recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators and recognise and use fractions as numbers, unit fractions and non-unit fractions with small denominators.

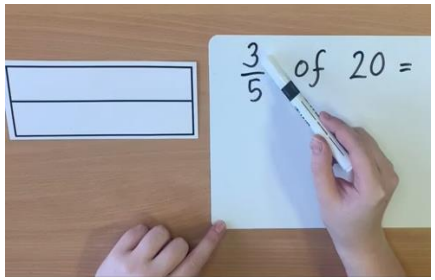
$\frac{1}{3}$ of 24 = 8

(Bar models and counters)



$\frac{3}{5}$ of 20 = 12

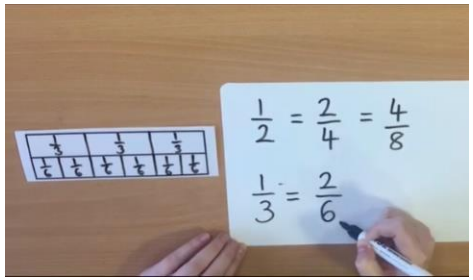
(Bar models and counters)



Objective 3: To recognise and show, using diagrams, equivalent fractions with small denominators.

$\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$ $\frac{1}{3} = \frac{2}{6}$

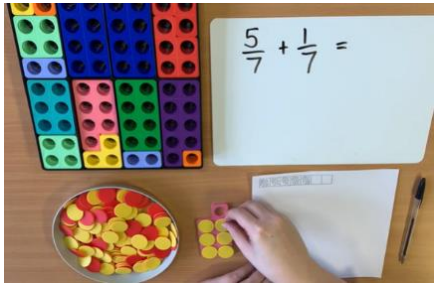
(Bar models)



Objective 4: To add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$].

$\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$

(Numicon and bar models)



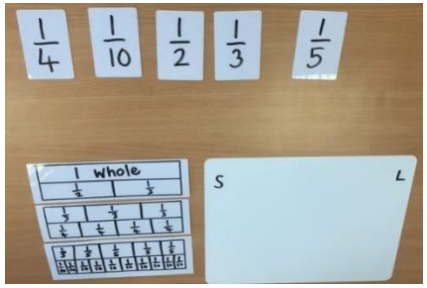
$\frac{6}{8} - \frac{2}{8} = \frac{4}{8}$

(Numicon and bar models)

Objective 5: To compare and order unit fractions, and fractions with the same denominators.

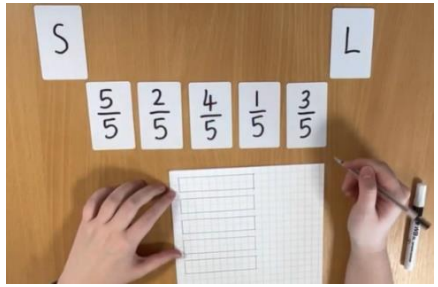
Unit fractions

(Bar models)



Same denominator

(Bar models)

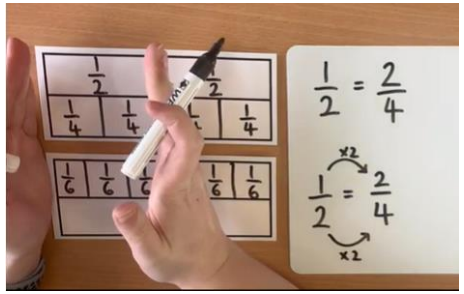


Year 4

Objective 1: To recognise and show, using diagrams, families of common equivalent fractions.

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8}$$

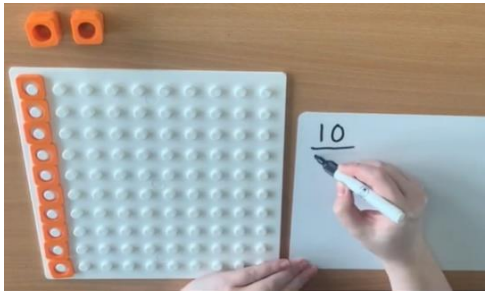
(Bar models)



Objective 2: To count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.

Counting in hundredths $\frac{1}{10} = \frac{10}{100}$

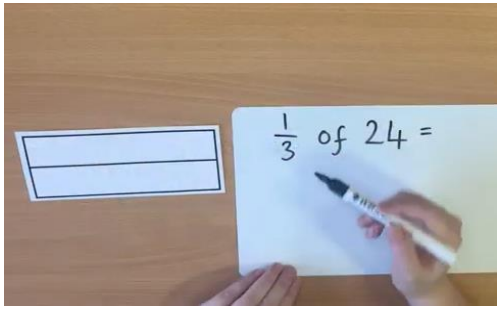
(Numicon)



Objective 3: To solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.

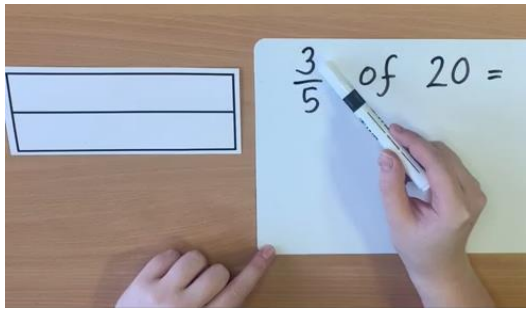
$\frac{1}{3}$ of 24 = 8

(Bar models and counters)



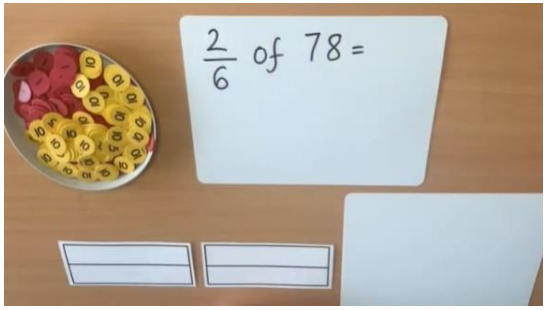
$\frac{3}{5}$ of 20 = 12

(Bar models and counters)



$\frac{2}{6}$ of 78 = 26

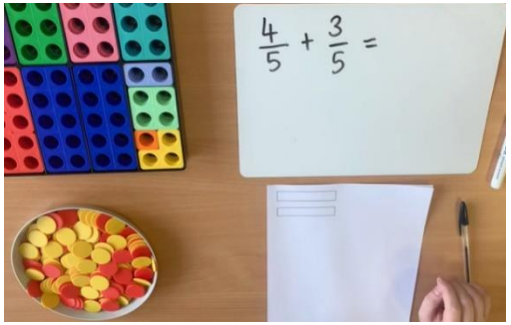
(Bar models and place value counters)



Objective 4: To add and subtract fractions with the same denominator.

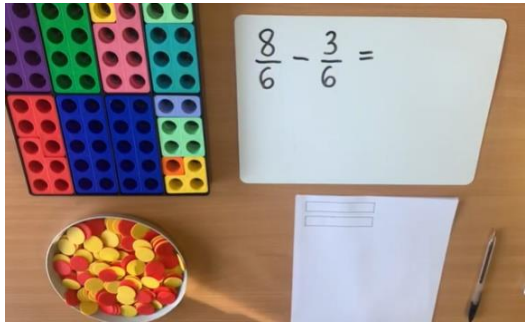
$\frac{4}{5} + \frac{3}{5} = \frac{7}{5}$ or $1\frac{2}{5}$

(Numicon and bar models)



$\frac{8}{6} - \frac{3}{6} = \frac{5}{6}$

(Numicon and bar models)



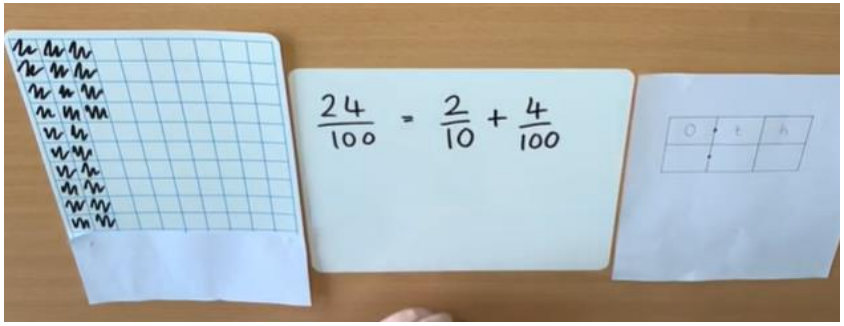
$2 - \frac{1}{3} = \frac{5}{3}$ or $1\frac{2}{3}$

(Numicon and bar models)

Objective 5: To recognise and write decimal equivalents of any number of tenths or hundredths.

$\frac{24}{100} = 0.24$

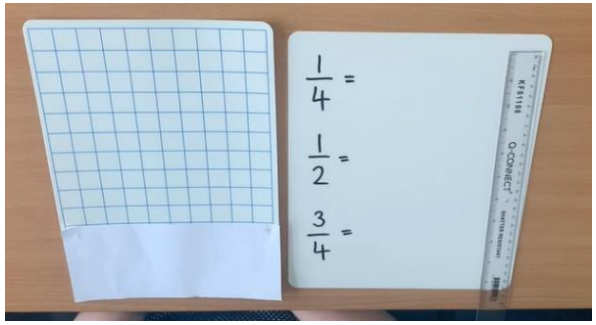
(Blank hundreds square and place value chart)

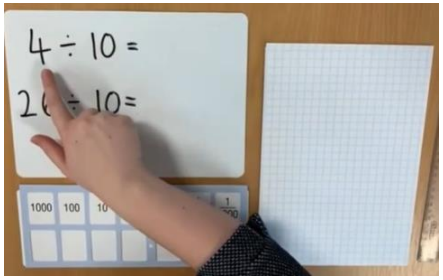
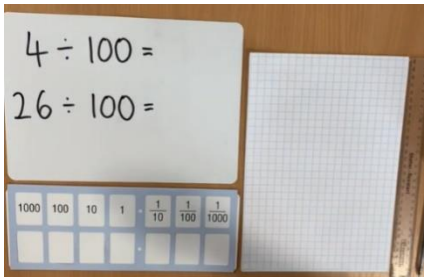
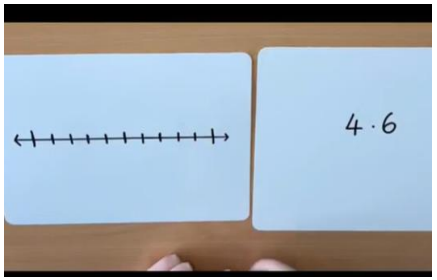
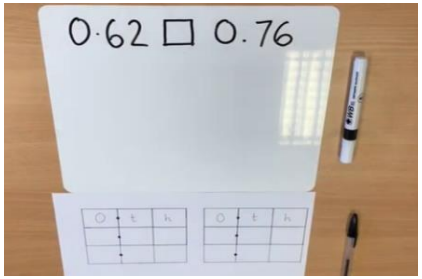
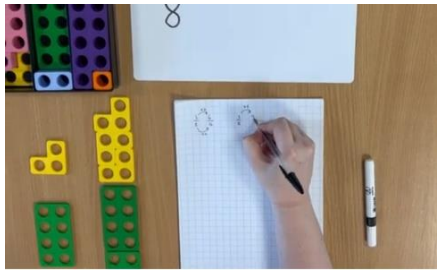
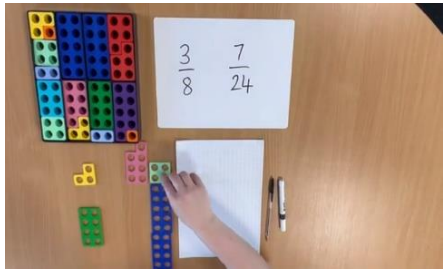
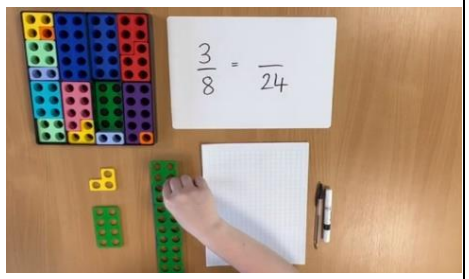


Objective 6: To recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$.

$\frac{1}{4} = 0.25$, $\frac{1}{2} = 0.5$, $\frac{3}{4} = 0.75$

(Blank hundreds square)

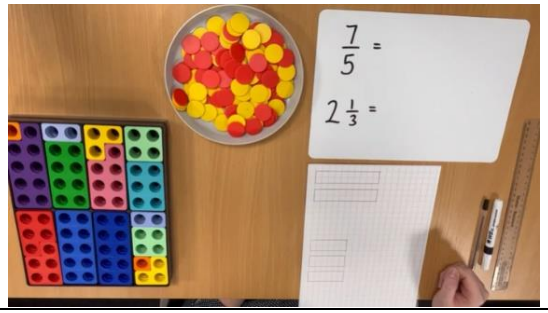


	Objective 7: To find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.		**Objective 8**: To round decimals with one decimal place to the nearest whole number.	**Objective 9**: To compare numbers with the same number of decimal places up to two decimal places.
	Dividing by 10 *(Place value sliders)* 	Dividing by 100 *(Place value sliders)* 	4.6 → 5  *(Number line)*	0.62 ☐ 0.76 *(Place value charts)* 
Year 5	**Objective 1**: To compare and order fractions whose denominators are all multiples of the same number.	**Objective 2**: To identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.		
	$\frac{1}{3}$ $\frac{5}{6}$ $\frac{2}{9}$ *(Numicon)* 	$\frac{3}{8} = \frac{6}{16} = \frac{9}{24}$ *(Numicon)* 	$\frac{3}{8} \neq \frac{7}{24}$ *(Numicon)* 	$\frac{3}{8} = \frac{\square}{24}$ *(Numicon)* 

Objective 3: To 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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$].

$$\frac{7}{5} = 1\frac{2}{5} \qquad 2\frac{1}{3} = \frac{7}{3}$$

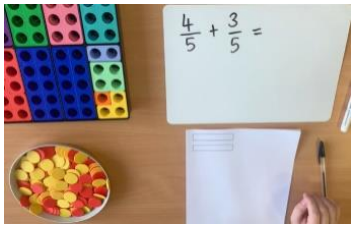
(Numicon and bar models)



Objective 4: To add and subtract fractions with the same denominator and denominators that are multiples of the same number.

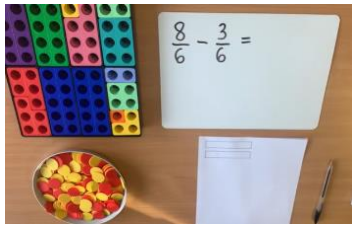
$$\frac{4}{5} + \frac{3}{5} = \frac{7}{5} \text{ or } 1\frac{2}{5}$$

(Numicon and bar models)



$$\frac{8}{6} - \frac{3}{6} = \frac{5}{6}$$

(Numicon and bar models)

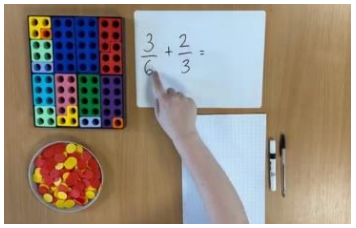


$$2 - \frac{1}{3} = \frac{5}{3} \text{ or } 1\frac{2}{3}$$

(Numicon and bar models)

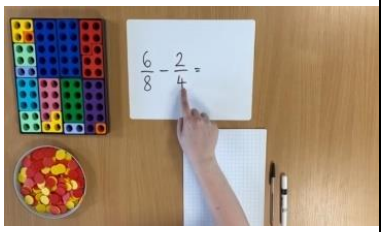
$$\frac{3}{6} + \frac{2}{3} = \frac{7}{6} \text{ or } 1\frac{1}{6}$$

(Numicon and bar models)



$$\frac{6}{8} - \frac{2}{4} = \frac{2}{8}$$

(Numicon and bar models)

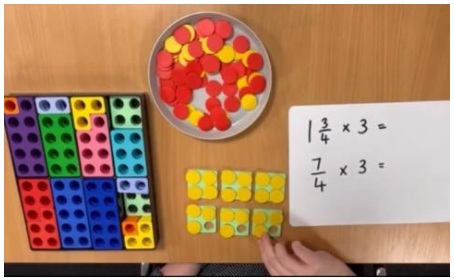


Objective 5: To multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.

$\frac{2}{6} \times 4 = \frac{8}{6}$ or $1\frac{2}{6}$

(Numicon)

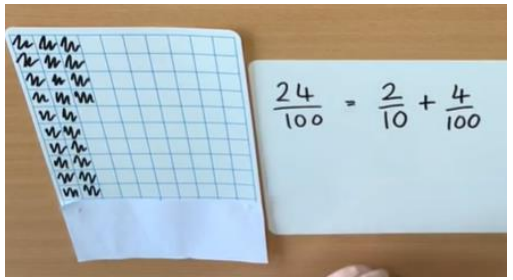
$1\frac{3}{4} \times 3 = 5\frac{1}{4}$



(Numicon)

Objective 6: To read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] and recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.

$\frac{24}{100} = 0.24$

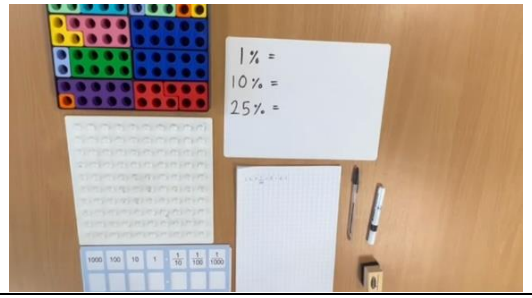


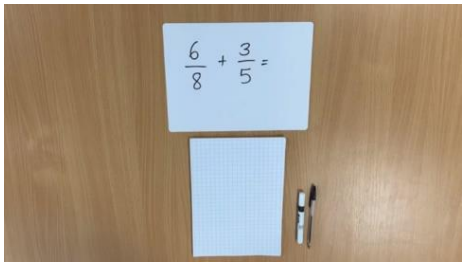
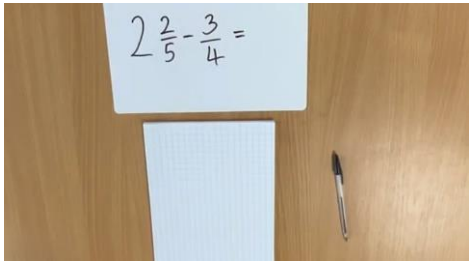
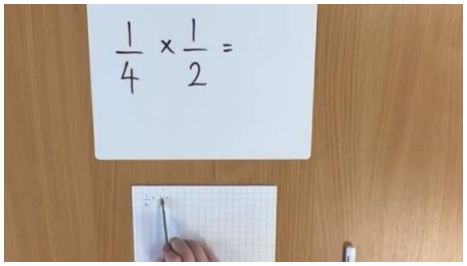
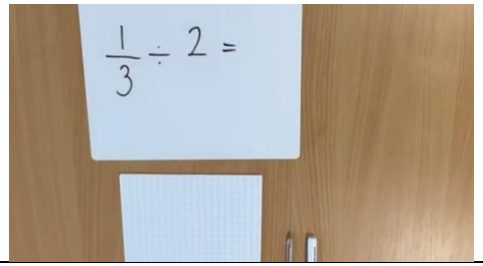
(Blank hundreds square and place value chart)

Objective 7: To recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.

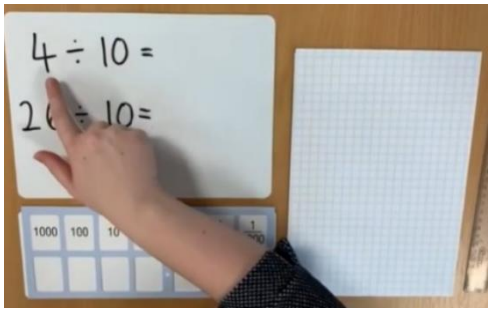
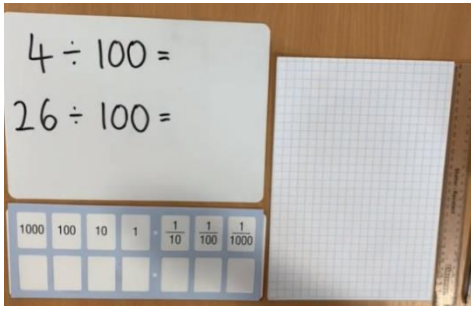
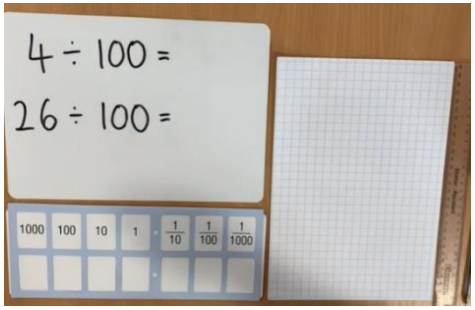
$1\% = \frac{1}{100} = 0.01$ $10\% = \frac{10}{100} = 0.10$ $25\% = \frac{25}{100} = 0.25$

(Numicon and place value chart)



Year 6	**Objective 1**: To use common factors to simplify fractions; use common multiples to express fractions in the same denomination.	**Objective 2**: To add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
	$\frac{56}{64} = \frac{7}{8}$	$\frac{6}{8} + \frac{3}{5} = \frac{54}{40}$ or $1\frac{14}{40}$ $2\frac{2}{5} - \frac{3}{4} = \frac{33}{20}$ or $1\frac{13}{20}$  
	Objective 3: To multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$].	**Objective 4**: To divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$].
	$\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ 	$\frac{1}{3} \div 2 = \frac{1}{6}$ 

Objective 7: To identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places.

Dividing by 10	Dividing by 100	Dividing by 1000
(Place value sliders) 	*(Place value sliders)* 	*(Place value sliders)*