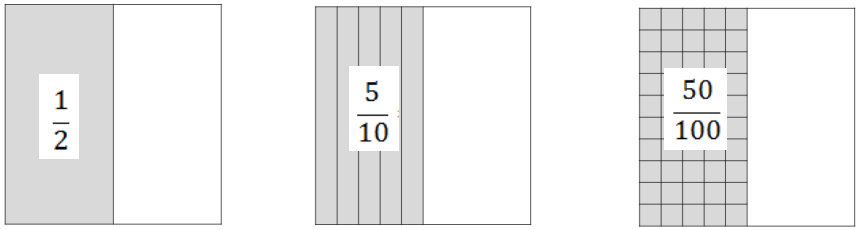
Fractions, Decimals and Percentages

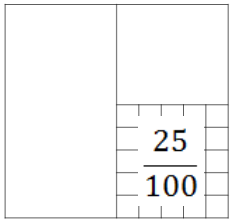
Through rich learning experiences, learners develop a deep, conceptual understanding of all the different ways we can represent the same number.

For example: $\frac{1}{2} = \frac{5}{10} = 0 \cdot 5$ and $\frac{1}{2} = \frac{50}{100} = 0 \cdot 50 = 50\%$

One half is the same size as 5 tenths (0 ·5) and is also the same size as 50 hundredths (0 ·50).



One quarter is simply 'half of a half'



$\frac{1}{4} = \frac{25}{100} = 0 \cdot 25 = 25\%$

Percentages are just another way of writing hundredths.

Percentages without a calculator!

All percentage calculations can be solved by using the building blocks:

- 50% is a half
- 25% is a half of a half
- 10% is equal to a tenth (divide by 10)

for example:

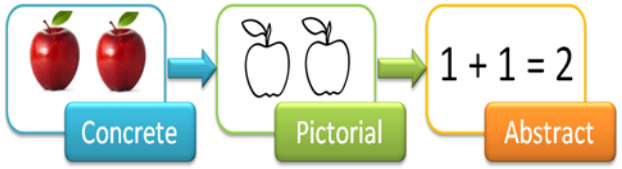
- 20% is simply double 10%
- 5% is half of 10%
- 40% is 4 x 10% or double 20% or 50% - 10%
- 75% is 50% + 25% (half plus a quarter = three quarters) or 100% - 25% .

Fractions	Decimal fractions		Percentages
	tenths	hundredths	
$\frac{1}{100}$		0.01	1%
$\frac{5}{100}$		0·05	5%
$\frac{1}{10} = \frac{10}{100}$	0·1	0·10	10%
$\frac{1}{2} = \frac{5}{10} = \frac{50}{100}$	0·5	0.50	50%
$\frac{1}{4} = \frac{25}{100}$		0.25	25%
$\frac{1}{5} = \frac{2}{10}$	0·2	0.20	20%

Using a variety of strategies helps develop mental maths agility.

Glasgow Counts

Parent Information Leaflet for Second Level Numeracy



Glasgow's Improvement Challenge
Unlocking Learning

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Partitioning, re-grouping and re-ordering:

Partitioning is splitting numbers into parts, such as hundreds, tens and ones.
We can split numbers many different ways to help make calculations easier.
For example:

1. 770 + 350 = (700 + 50 + 20) + (300 + 50) partitioning
= 700 + 300 + 50 + 50 + 20 re-grouping
= 1000 + 100 + 20 = 1120

2. 2 x 7 x 5 = 2 x 5 x 7 = 10 x 7 = 70 re-ordering

3. 62 x 7 = (60 + 2) x 7
= (60 + 2) x 7
= (60 x 7) + (2 x 7)
= 420 + 14
= 434

This calculation can also be shown as an area model

	60	2
7	420	14

62 x 7 = 420 + 14 = 434

4. 635 + 449

600	30	5
+ 400	40	9
1000	70	14 = 1084

5. 632—214

600	20	12
- 200	10	4
400	10	8 = 418

6. When dividing, partitioning into 70 + 8 is not very useful.
We need to partition into multiples of 6

$$6 \overline{)78} = 6 \overline{)60 + 18} \quad 10 + 3 = 13$$

Grid / Area Method:

partitioning large numbers into smaller, more manageable chunks / areas and then adding the products together.

1342 x 6

	1000	300	40	2
6	**6000**	**1800**	**240**	**12**

1342 x 6 = 6000+1800+240+12
= 7800 + 200 + 40 + 12
= 8052

1342 x 15

1342

	1000	300	40	2
10	10000	3000	400	20
5	5000	1500	200	10

15

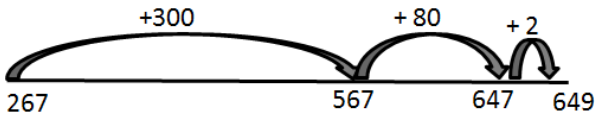
10000 + 9500 + 600 + 30 =
10000 + 9500 + 500 + 100 + 30 = 20130

Using Open Number Lines:

Before progressing to formal calculations, counting with an open number line helps us to better understand place value and improves our mental agility.

for example:

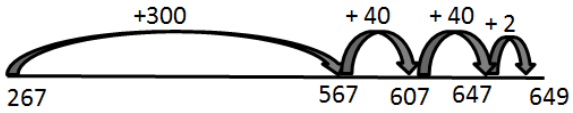
1. 267 + 382 = 267 + (300 + 80 + 2) partitioning



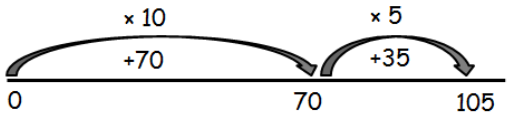
$$\begin{array}{r} 267 \\ +382 \\ \hline 6_{1}49 \\ \hline \end{array}$$

or there are many different ways....

267 + 382 = 267+ 40+ 40 + 2 partitioning and bridging to ease the calculation



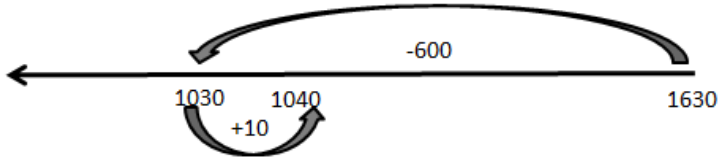
2. 105 ÷ 7 becomes easier if we think if this as 7 x ? = 105



7 x 15 = 105
105 ÷ 7 = 15

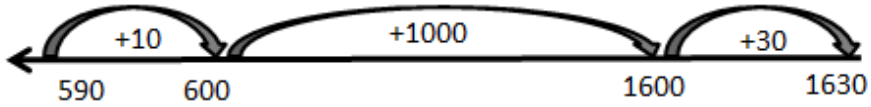
Rounding and Compensating:

We can often make maths simpler by rounding to the nearest 10 or 100
e.g. 1630—590 would be easier if we thought of it as 1630—600 + 10



Counting-on strategy:

Why count back when it might be easier to count on!



= 1040