



# Barham Primary School

*Striving for Excellence*

## KS1 Math's Session



# Aims of the Session

- To help you to help your child at home
- Show how maths strategies develop across key stage 1
- Share useful resources and websites



- If you have questions please write them down.
- At the end of session if I have not answered your questions please ask.



# How would you solve these calculations?

$2 + 5 =$

$2 + 8 =$

$7 + 7 =$

$6 + 7 =$

$15 + 11 =$

$24 + 9 =$

$32 + 21 =$

$45 + 36 =$

$120 + 11 =$

Which method did you use?

What skills were you using?

Does that method work for all of these calculations?



# How would you solve these calculations?

$$2 + 5 = \text{(start with the larger number \& count on)}$$

$$2 + 8 = \text{(number bonds to 10)}$$

$$7 + 7 = \text{(doubling)}$$

$$6 + 7 = \text{(near doubles; double 6, then add 1 more)}$$

$$15 + 11 = \text{(add 10, add 1)}$$

$$24 + 9 = \text{(add 10, subtract 1)}$$

$$32 + 21 = \text{(could add 20, add 1 or add tens, add units and then total)}$$

$$45 + 36 = \text{(adding by partitioning)}$$

$$120 + 11 = \text{(add 10, add 1)}$$

# What do we teach in KS1 Maths?

- Number bonds from 10 and 20 ( ie  $7+3=10$ ,  $18+2= 20$ )
- **Basic multiplication (2,3,5, 10)**
- Basic division ( 2)
- Fractions (  $\frac{1}{2}$  ,  $\frac{1}{4}$  ,  $1/3$  )
- **Addition and subtraction to 100**
- **Place value (units, tens and hundreds)**
- Time (o'clock, half past, quarter to, quarter past)
- Measurement (weight, length, capacity)
- Money (everyday money- calculating change)
- Problem solving
- Handling data (graphs, tables, sorting data)
- Shape and space

*Today we will focus on the red highlighted examples*

# Children should know the different terminology for the same word

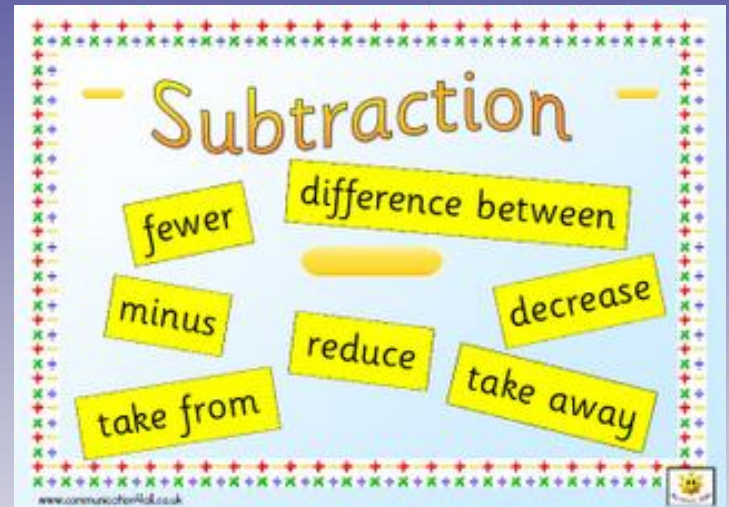


**+** Addition **+**

plus  
total  
increase  
more  
together  
add  
and  
sum

www.comunicheval.co.uk

A poster for Addition with a large red plus sign in the center. The word 'Addition' is written in yellow at the top. Surrounding the plus sign are eight orange boxes containing the words: plus, total, increase, more, together, add, and, and sum. The poster has a decorative border of small colorful crosses.

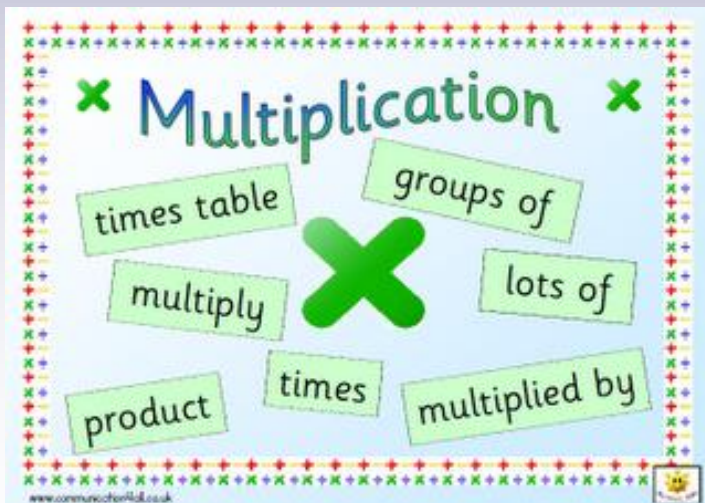


**-** Subtraction **-**

fewer  
difference between  
minus  
reduce  
take from  
decrease  
take away

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A poster for Subtraction with a large yellow minus sign in the center. The word 'Subtraction' is written in orange at the top. Surrounding the minus sign are seven yellow boxes containing the words: fewer, difference between, minus, reduce, take from, decrease, and take away. The poster has a decorative border of small colorful crosses.



**×** Multiplication **×**

times table  
multiply  
product  
groups of  
lots of  
times  
multiplied by

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A poster for Multiplication with a large green multiplication sign in the center. The word 'Multiplication' is written in green at the top. Surrounding the sign are seven light green boxes containing the words: times table, multiply, product, groups of, lots of, times, and multiplied by. The poster has a decorative border of small colorful crosses.



**÷** Division **÷**

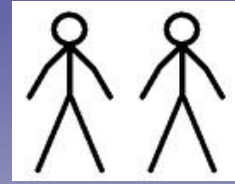
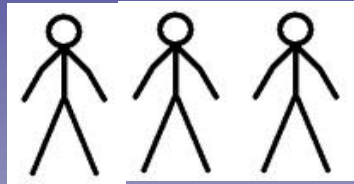
share equally  
divisible by  
divide into  
divide  
share  
group  
divided by

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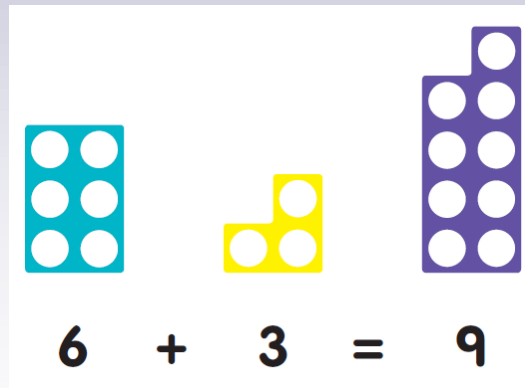
A poster for Division with a large blue division sign in the center. The word 'Division' is written in green at the top. Surrounding the sign are seven light blue boxes containing the words: share equally, divisible by, divide into, divide, share, group, and divided by. The poster has a decorative border of small colorful crosses.

# Practical Addition

(using objects and pictures)



$$3 + 2 = 5$$



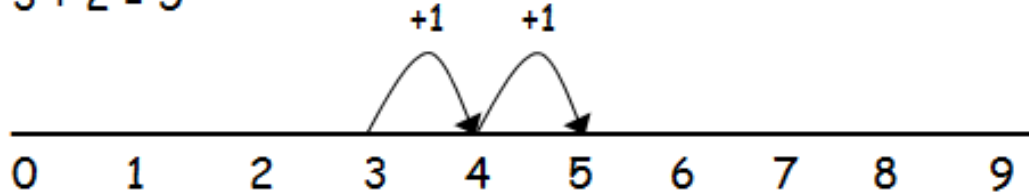
$$6 + 3 = 9$$



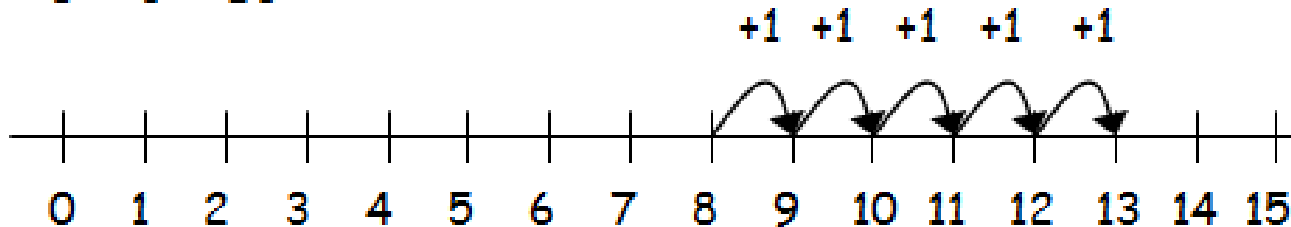
# Addition

(using a number line)

$$3 + 2 = 5$$



$$8 + 5 = 13$$



# Addition

(using a number square)



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

$$32 + 6 = 38$$

"Start at 32 and add on 6 more jumps"

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

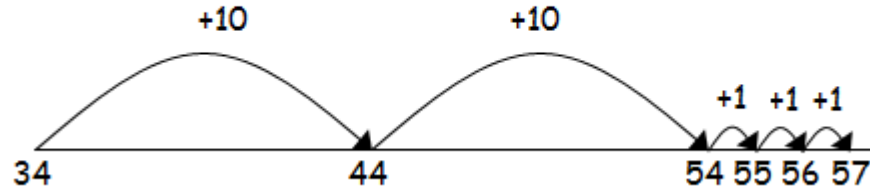
$$34 + 26 = 60$$

"Start at 34 jump down 10, 20 and across 21, 22, 23, 24, 25, 26"

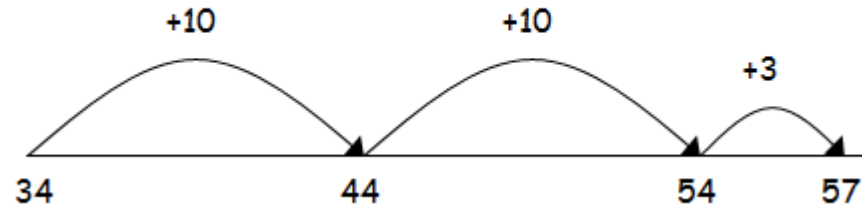
# Addition

(using an 'empty' number line)

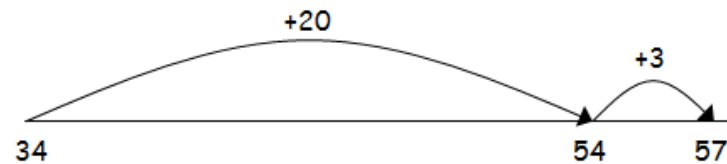
$$34 + 23 = 57$$



$$34 + 23 = 57$$

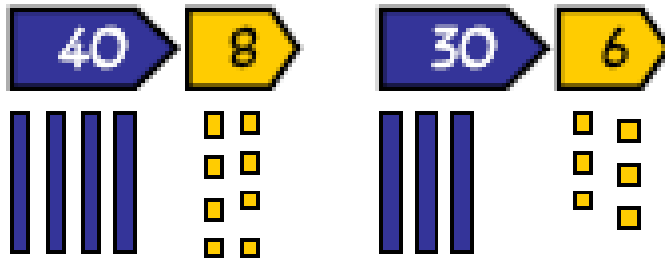


$$34 + 23 = 57$$



# Addition

(using partitioning and recombining)



$$40 + 30 + 8 + 6$$

---

$$40 + 30 = 70$$

$$8 + 6 = 14$$

$$70 + 14 = 84$$

$$32 + 25 = 57$$

$$30 + 20 = 50$$

$$2 + 5 = 7$$

$$50 + 7 = 57$$

9

$$8 + 5 + 4 = \boxed{\phantom{00}}$$



10

$$36 + 24 = \boxed{\phantom{00}}$$



Write a digit in each box to make the sum correct.

$$\begin{array}{|c|} \hline 7 \\ \hline \end{array} \begin{array}{|c|} \hline \phantom{0} \\ \hline \end{array} + \begin{array}{|c|} \hline \phantom{0} \\ \hline \end{array} = \begin{array}{|c|} \hline 8 \\ \hline \end{array} \begin{array}{|c|} \hline 3 \\ \hline \end{array}$$

Do these calculations have the same answer?

Write **yes** or **no** next to each box.

One is done for you.

yes or no?

$$8 + 2 \quad \text{and} \quad 2 + 8$$

yes

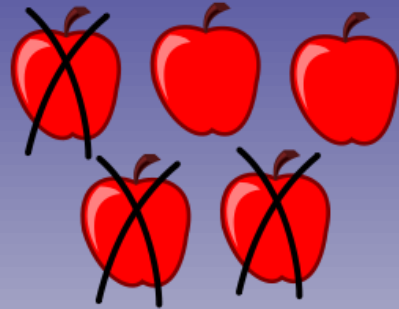
$$8 \times 2 \quad \text{and} \quad 2 \times 8$$

$$8 - 2 \quad \text{and} \quad 2 - 8$$

$$8 \div 2 \quad \text{and} \quad 2 \div 8$$

# Practical Subtraction

(using objects and pictures)



$$5 - 3 = 2$$



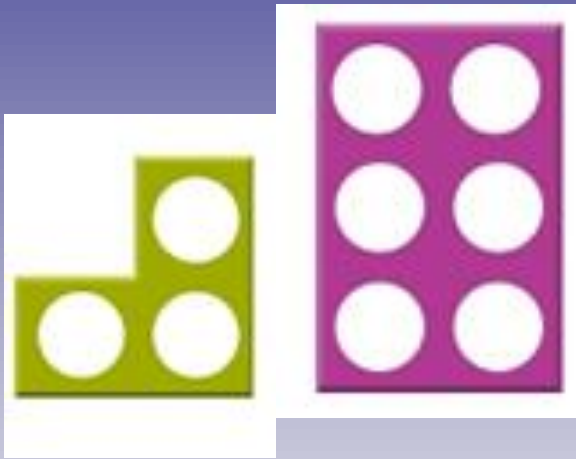
$$4 - 3 = 1$$



$$8 - 2 = 6$$

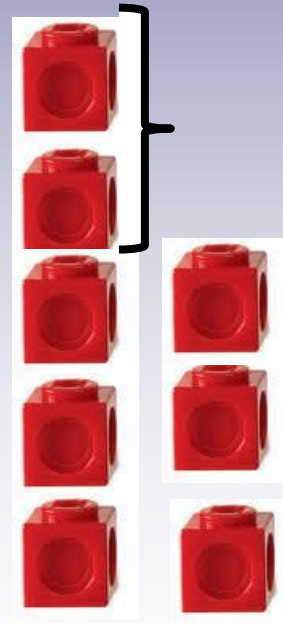
# Subtraction

(Find the difference)



The difference between  
3 and 6 is 3

The difference between  
5 and 3 is 2



# Subtraction

(using a number line)

A number line can also help you solve subtraction problems.

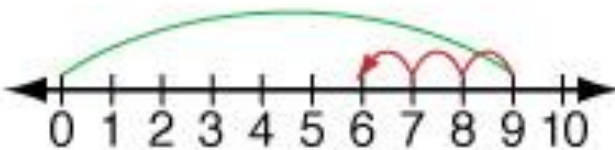


To show this problem on the number line, go from 0 to 8 and then count back 5.

Show each problem on the number line and write the answer.

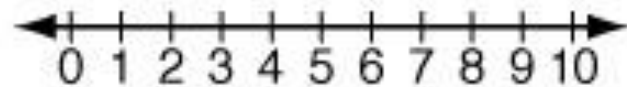
1

$$9 - 3 = 6$$



2

$$5 - 4 =$$





# Subtraction (using a number square)



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

$$29 - 5 = 24$$

"Start at 29 and jump back 5"

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

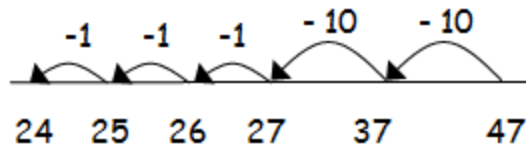
$$76 - 24 = 52$$

"Start at 76 jump up 10, 20 and back 21, 22, 23, 24"

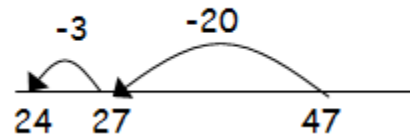
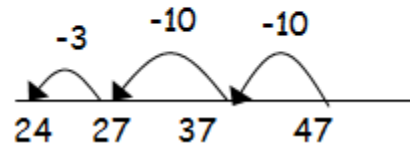
# Subtraction

(using an 'empty' number line)

$$47 - 23 = 24$$



$$47 - 23 = 24$$



# Subtraction

\*Apply what you know within a game\*

**'Four in a row' subtraction**  
Aim: to get four in a row before your partner!

56-24 <input type="text"/>	65-31 <input type="text"/>	89-44 <input type="text"/>	72-11 <input type="text"/>	94-33 <input type="text"/>	78-46 <input type="text"/>
81-20 <input type="text"/>	60-24 <input type="text"/>	76-31 <input type="text"/>	75-32 <input type="text"/>	43-21 <input type="text"/>	79-20 <input type="text"/>
68-47 <input type="text"/>	66-16 <input type="text"/>	77-41 <input type="text"/>	77-22 <input type="text"/>	86-31 <input type="text"/>	89-44 <input type="text"/>
60-35 <input type="text"/>	57-22 <input type="text"/>	49-24 <input type="text"/>	56-12 <input type="text"/>	50-17 <input type="text"/>	83-41 <input type="text"/>
30-13 <input type="text"/>	37-16 <input type="text"/>	29-11 <input type="text"/>	68-35 <input type="text"/>	66-33 <input type="text"/>	73-15 <input type="text"/>
37-24 <input type="text"/>	49-21 <input type="text"/>	48-16 <input type="text"/>	39-13 <input type="text"/>	44-23 <input type="text"/>	40-15 <input type="text"/>

11

$87 - 40 = \boxed{\phantom{00}}$



12

$50 - \boxed{\phantom{00}} = 20$



27 Sita has **50** raisins.

She gives **23** to Ben.

She gives **15** to Amy.



How many raisins does Sita have left?

Show  
your  
working

raisins

# Multiplication

(repeated addition)



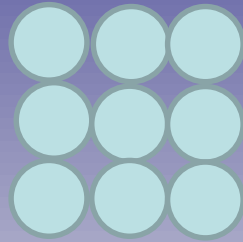
$$5 + 5 + 5 + 5 = 20$$



$$2 + 2 + 2 = 6$$

# Multiplication

(drawing and using arrays)



$$3 + 3 + 3 = 9$$

$$3 \text{ "lots of" } 3 = 9$$

$$3 \times 3 = 9$$



$$5 + 5 + 5 = 15$$

$$3 \text{ "lots of" } 5 = 15$$

$$3 \times 5 = 15$$

# Multiplication

(mental recall)

$$\begin{array}{l} 1 \times 2 = 2 \\ 2 \times 2 = 4 \\ 3 \times 2 = 6 \\ 4 \times 2 = 8 \\ 5 \times 2 = 10 \\ 6 \times 2 = 12 \\ 7 \times 2 = 14 \\ 8 \times 2 = 16 \\ 9 \times 2 = 18 \\ 10 \times 2 = 20 \end{array}$$

Once the children can count confidently in 2s, 5s and 10s and we begin teaching multiplication.

If children can count 2, 4, 6, 8, 10, 12... then they can work out  $6 \times 2$ !

Start by using the phrase...  
what is 6 'lots of' 2?

Move on to...  
What is 6 'times' 2?

# Multiplication

\*Apply what you know & try this problem\*

Joy picks 4 flowers a day on Monday, Tuesday, Wednesday and Thursday. How many flowers does she have?



5 cats have 4 kittens each. How many kittens are there in total?



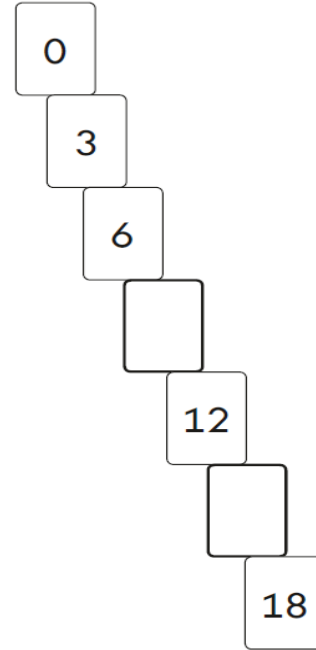


13

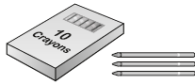
$8 \times 10 = \boxed{\phantom{00}}$

14

$2 \times 0 = \boxed{\phantom{00}}$

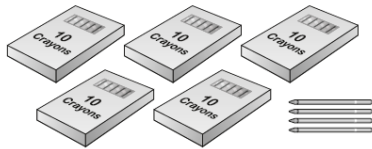
10 Write the **two** missing numbers in this pattern.

13 Ben has 13 crayons.

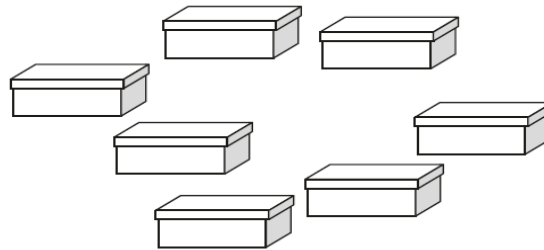


Here are Abdul's crayons.

How many crayons does Abdul have?


 crayons

7

Sita puts **2** shoes in each of these boxes.

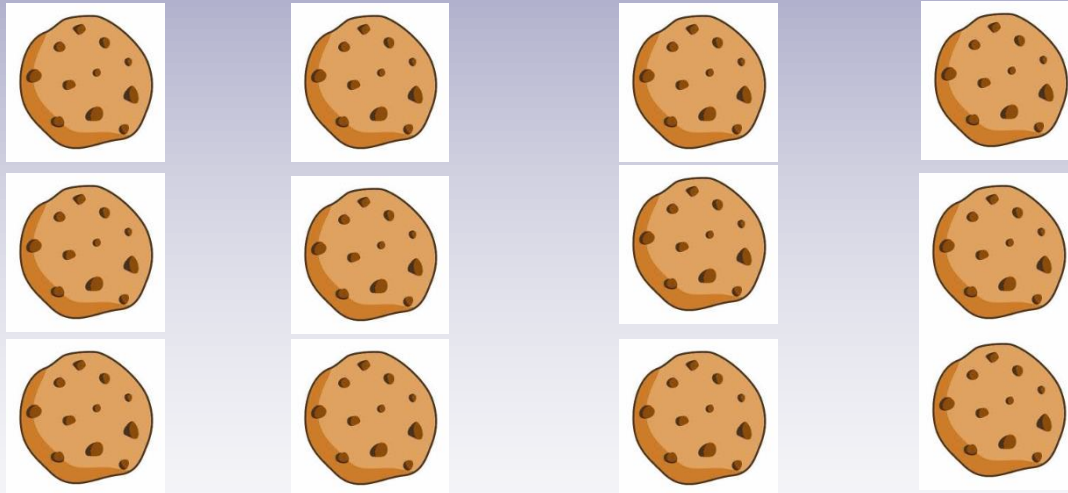
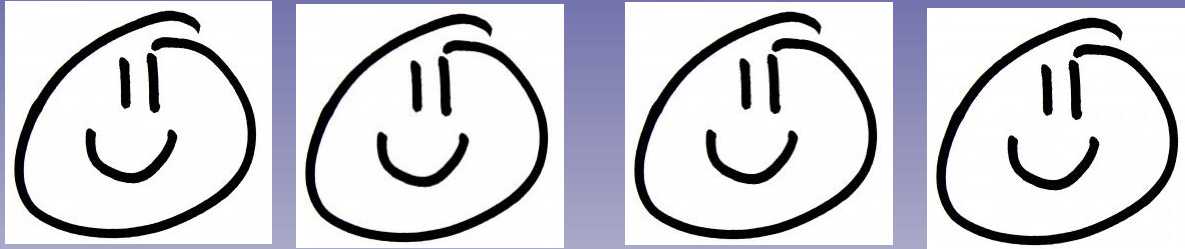
How many shoes are there altogether?

 shoes

# Division

(as sharing)

Share 12 cookies between 4 people...



$$12 \div 4 = 3$$

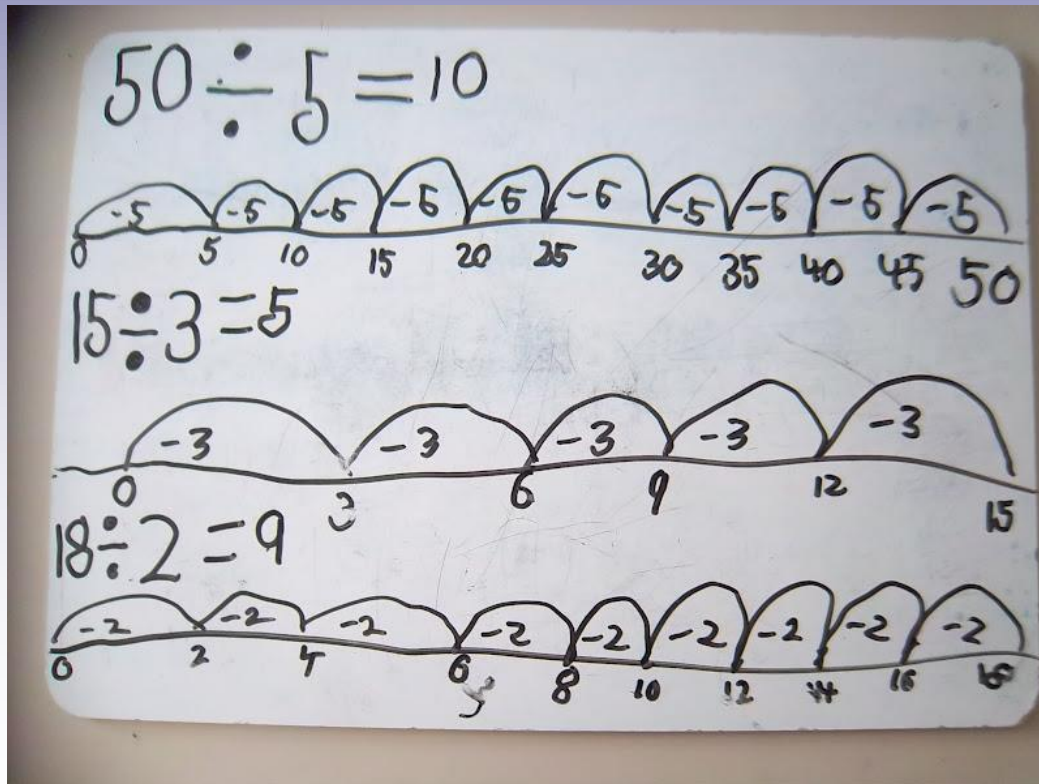
# Division

(repeated subtraction)

$$50 \div 5 =$$

$$50 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5$$

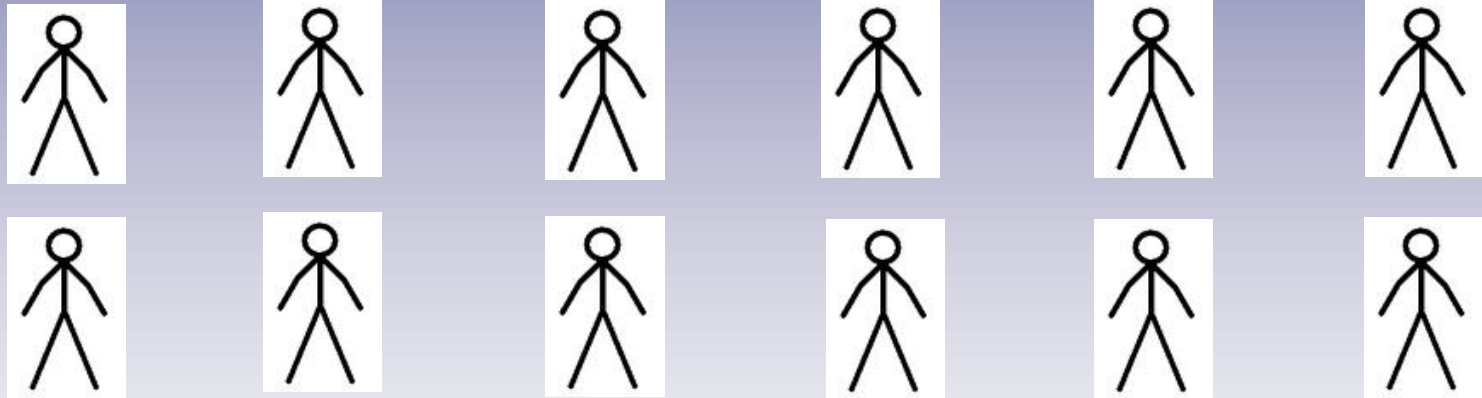
How many jumps?



# Division

(as grouping)

Put 12 people into 6 groups...



$$12 \div 6 = 2$$

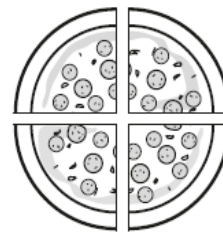
17

$$35 \div 5 = \boxed{\phantom{00}}$$



18

$$\frac{1}{4} \text{ of } 20 = \boxed{\phantom{00}}$$



Sita cuts a pizza into four equal slices.

She eats one slice.

What fraction of the pizza does she eat?

Amy makes **20** cakes.

She shares the cakes between **5** plates.

Tick the calculation that shows how many cakes are on each plate.



Tick **one**.

$$20 + 5 = 25 \quad \boxed{\phantom{00}}$$

$$20 - 5 = 15 \quad \boxed{\phantom{00}}$$

$$20 \div 5 = 4 \quad \boxed{\phantom{00}}$$

$$20 \times 5 = 100 \quad \boxed{\phantom{00}}$$

# Summary



- We teach the children the different mathematical strategies and allow them to become confident.
- We use whiteboards and a range of different resources to help their learning.
- Once confident with a strategy we then ask them to apply it through problem solving activities and games.
- Applying the skills learnt to different situations is the bit they find difficult .

# MULTIPLICATION

## Stage 1

Pictures and symbols

There are 3 sweets in one bag.  
How many sweets are there in 5 bags?

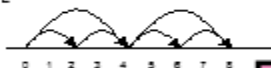


## Stage 2

Arrays and repeated addition

•••• 4 x 2 or 4 + 4

$$2 \times 4 \\ 2 + 2 + 2 + 2$$



## Stage 3

Number lines

E.g.  $6 \times 3$



Partitioning

E.g.  $15 \times 2 = 30$

$$\begin{array}{r} 10 \\ + 5 \\ \hline 20 + 10 = 30 \end{array}$$

## Stage 4

Grid method

E.g.  $36 \times 2 = 70$

$$\begin{array}{r} 30 \\ \times 2 \\ \hline 60 \\ 10 \\ \hline 70 \end{array}$$

E.g.  $123 \times 3 = 369$

$$\begin{array}{r} 100 \\ \times 3 \\ \hline 300 \\ 20 \\ \times 3 \\ \hline 60 \\ 3 \\ \times 3 \\ \hline 9 \\ \hline 300 \\ 60 \\ 9 \\ \hline 369 \end{array}$$

## Stage 5

Grid method

$72 \times 38$

$$\begin{array}{r} 70 \\ \times 30 \\ \hline 2100 \\ 60 \\ \times 8 \\ \hline 560 \\ 16 \\ \hline 576 \\ \hline 2736 \end{array}$$

## Stage 6

Short and long multiplication

$$\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \\ 21 \\ \hline 2394 \\ 21 \\ \hline 2394 \\ 21 \\ \hline 2394 \\ 21 \\ \hline 2394 \\ 21 \end{array}$$

# DIVISION

## Stage 1

**Pictures** 12 children get into teams of 4 to play a game. How many teams are there?



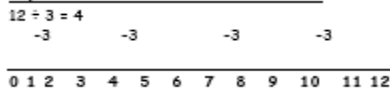
## Stage 2

**Sharing** 6 sweets are shared between 2 people.

How many do they have each? ( $6 \div 2$ )



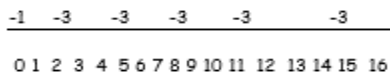
**Repeated subtraction on a number line**



## Stage 3

Division with remainders

$16 \div 3 = 5 \text{ r}1$



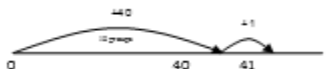
## Stage 4

$30 \div 6$  can be modelled as:

**Grouping** - groups of 6 taken away and the number of groups counted e.g.



$41 \div 4 = 10 \text{ r}1$



## Stage 5

Use **chunking** for division.

$$\begin{array}{r} 8 \overline{) 146} \\ \underline{-80} \\ 66 \\ \underline{-60} \\ 6 \\ \underline{-6} \\ 0 \end{array}$$

(8 x 10) Total all the 'chunks' of 8 to find the answer.

(8 x 5)

(8 x 3)

Answer:  $18 \text{ r}2$

## Stage 6

Short and long division

$$496 \div 11 \text{ becomes } 432 \div 15$$

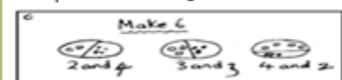
$$\begin{array}{r} 45 \text{ r}1 \\ 11 \overline{) 496} \\ \underline{-44} \\ 56 \\ \underline{-55} \\ 16 \\ \underline{-15} \\ 1 \end{array}$$

$$\begin{array}{r} 28 \\ 15 \overline{) 432} \\ \underline{-30} \\ 132 \\ \underline{-120} \\ 12 \end{array}$$

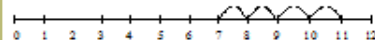
$12/15$  or  $28 \text{ } 4/5$

# A D D I T I O N

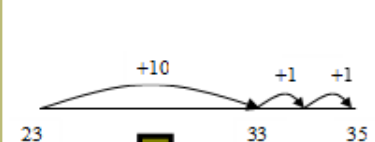
**Stage 1**  
Draw pictures and images



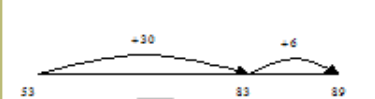
**Stage 2**  
Use of number lines to count on in ones from the bigger number.  
 $7 + 4 = 11$



**Stage 3**  
 $23 + 12 = 23 + 10 + 1 + 1$



**Stage 4**  
Partition into tens and units.  
 $53 + 36 = 89$



**Stage 5**  
 $83 + 42 = 125$       Progress to:  
80 + 3                      83  
+ 40 + 2                  +42  
 $120 + 5 = 125$               5  
                                    120  
                                    125

**Stage 6**  
Formal written methods

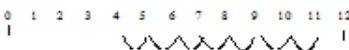
358      Extend to numbers with any  
+ 73      number of digits and  
431      decimals with 1 and 2  
: :      decimal places.

# S U B T R A C T I O N

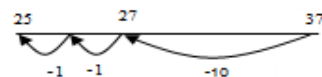
**Stage 1**  
Draw pictures to represent numbers



**Stage 2**  
Use of number line to count back in ones.  
 $11 - 7 = 4$

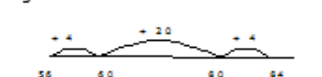


**Stage 3**  
Counting back in tens and units.  
 $37 - 12 = 37 - 10 - 1 - 1$



Progressing to taking larger jumps with the units.

**Stage 4**  
Counting on from the smaller number to the larger number  $84 - 56 = 28$



**Stage 5**  
 $89 - 57 = 32$       Progress to:  
 $80 + 9$                       89  
 $- 50 + 7$                       32  
                                    30 + 2 = 32      Progress to:

$71 = 70 + 1 = 60 + 11$   
 $-46 = 40 + 6 = 40 + 6$   
                                    20 + 5      Progress to:

$754 - 86 = 700 + 40 + 14$   
                                    80 + 6  
                                    600 + 140 + 14  
                                    80 + 6  
                                    600 + 60 + 8 = 668

**Stage 6**  
Decomposition  
 $92 = 352$   
 $- 38 = -178$   
54                      174  
Progress to using decomposition with decimals.





# How to help your child

Making math's practical by using real materials.  
Try some of these at home with your child.



Using food



Using coins



Using measuring cups



When cooking

Online games can engage children in their learning. Try some of these websites





# How to help your child

[www.ictgames.com](http://www.ictgames.com)

[http://www.bbc.co.uk/schools/teachers/keys\\_tage1/topics/numeracy.shtml](http://www.bbc.co.uk/schools/teachers/keys_tage1/topics/numeracy.shtml)

<http://www.bbc.co.uk/bitesize/ks1/maths/>

<http://www.crickweb.co.uk/ks1numeracy.html>

<http://www.happypuzzle.co.uk/maths-games-ks1.aspx>

Any Questions?

