

Maths  
Workshop  
Year 3 and 4

# Aims of the workshop

- Highlight new developments within the new maths curriculum.
- Highlight the importance of ages and stages in calculation strategies.
- Highlight the importance of choosing and how to use the correct strategies for calculation.
- Highlight the importance for fluency and rapid recall.

# The New Maths Curriculum 2014

- The three main aims of the new curriculum for maths are:

**Fluency**- The ability to recall and apply fundamental knowledge rapidly and accurately.

**Reasoning**- the ability to explain their learning, justify and prove their line of enquiry to others.

**Solve Problems**- the ability to apply their learning to a variety of problems with increasing difficulty.

## **Lower Key Stage 2-**

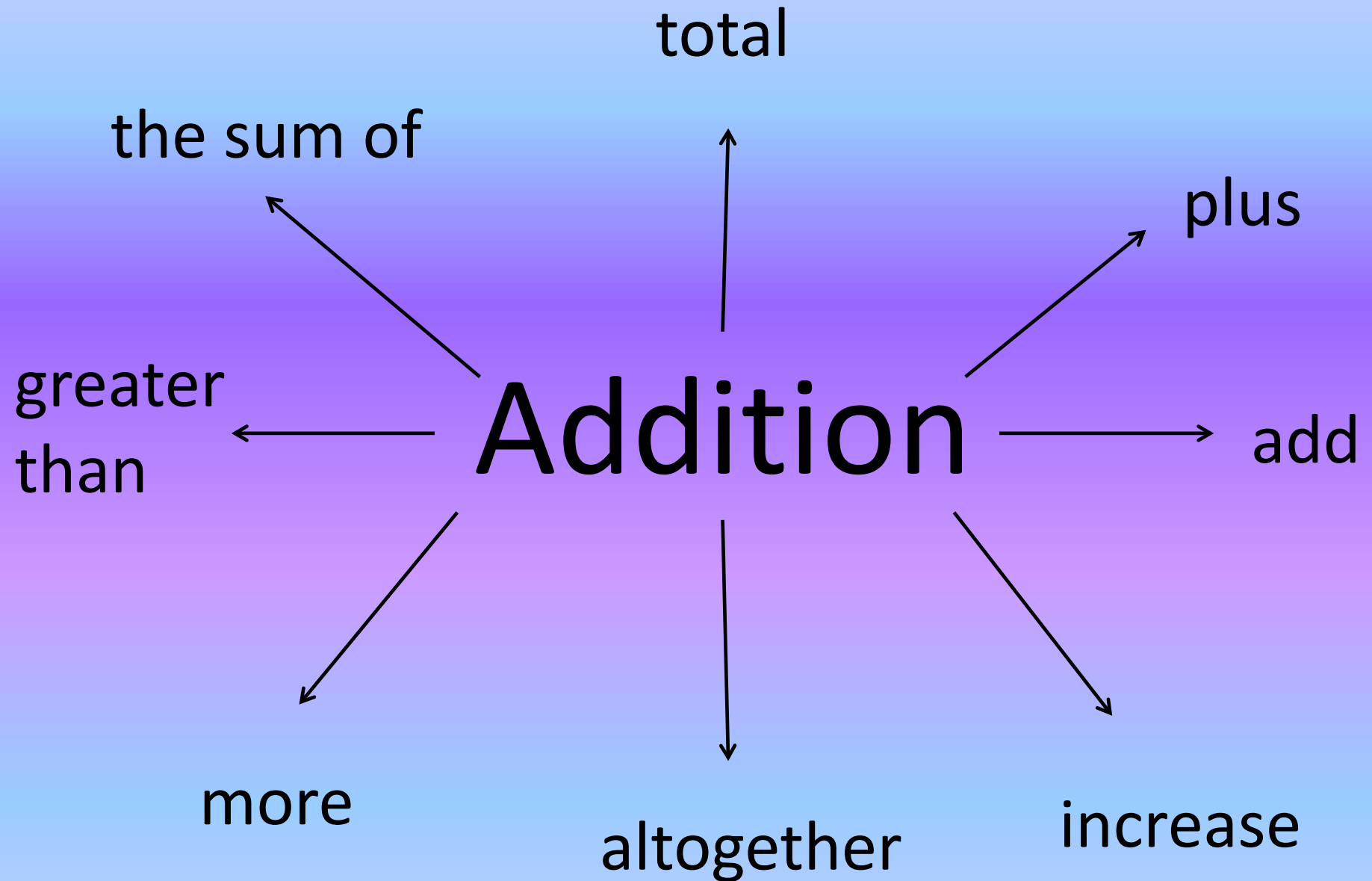
### **By the end of Year 3 children should:**

- Count in 4s and 8s from 0
- Read and write numbers to at least 1000 in numerals and words
- Use column method for addition and subtraction of up to 3 digit numbers
- Know their 3, 4, and 8 times tables
- Use fractions of numbers as well as fractions of shape
- Tell and write the time from an analogue clock including using Roman numerals
- Estimate and read time with increasing accuracy to the nearest minute
- Identify horizontal and vertical lines and pairs of perpendicular and parallel lines
- Know symmetrical and non-symmetrical polygons and polyhedral.

### **By the end of year 4 children should:**

- Know their times tables to 12 x 12
- Read Roman numerals to 100
- Use column method for numbers up to 4 digits for + and -
- Be able to interpret and present data on a line graph.

# Addition and Multiplication

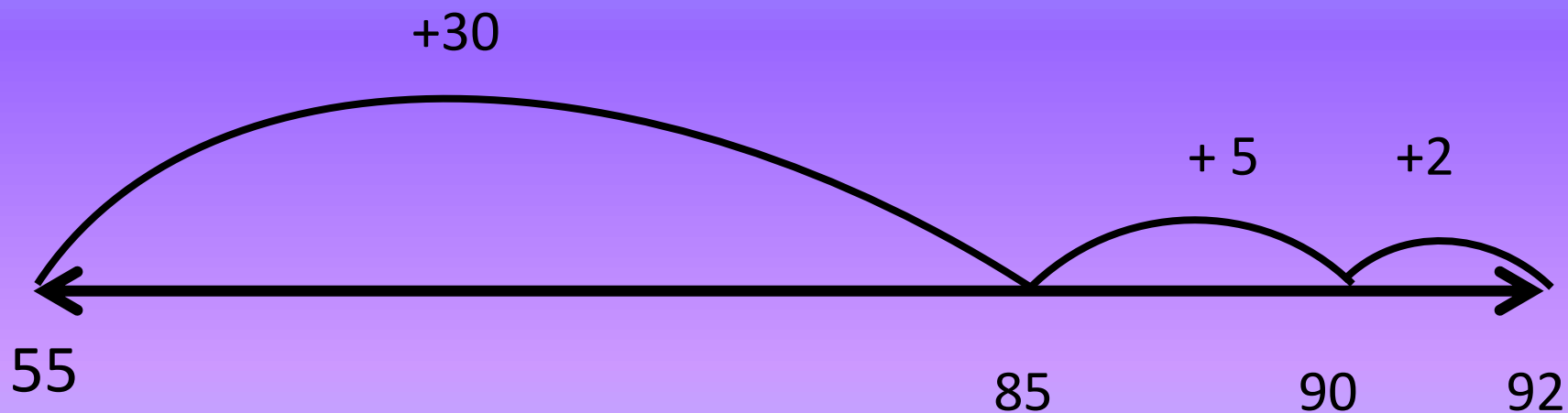


# Using number lines for addition



Number lines are often blank as children move up the school.

$$37 + 55 =$$





# Moving on from number lines

$$\begin{array}{r} 345 \\ + \underline{289} \\ \hline \end{array}$$
$$\begin{array}{r} 300 + 200 = 500 \\ 40 + 80 = 120 \\ 9 + 5 = \underline{14} \\ \hline 634 \end{array}$$

Understanding of the number system and addition.

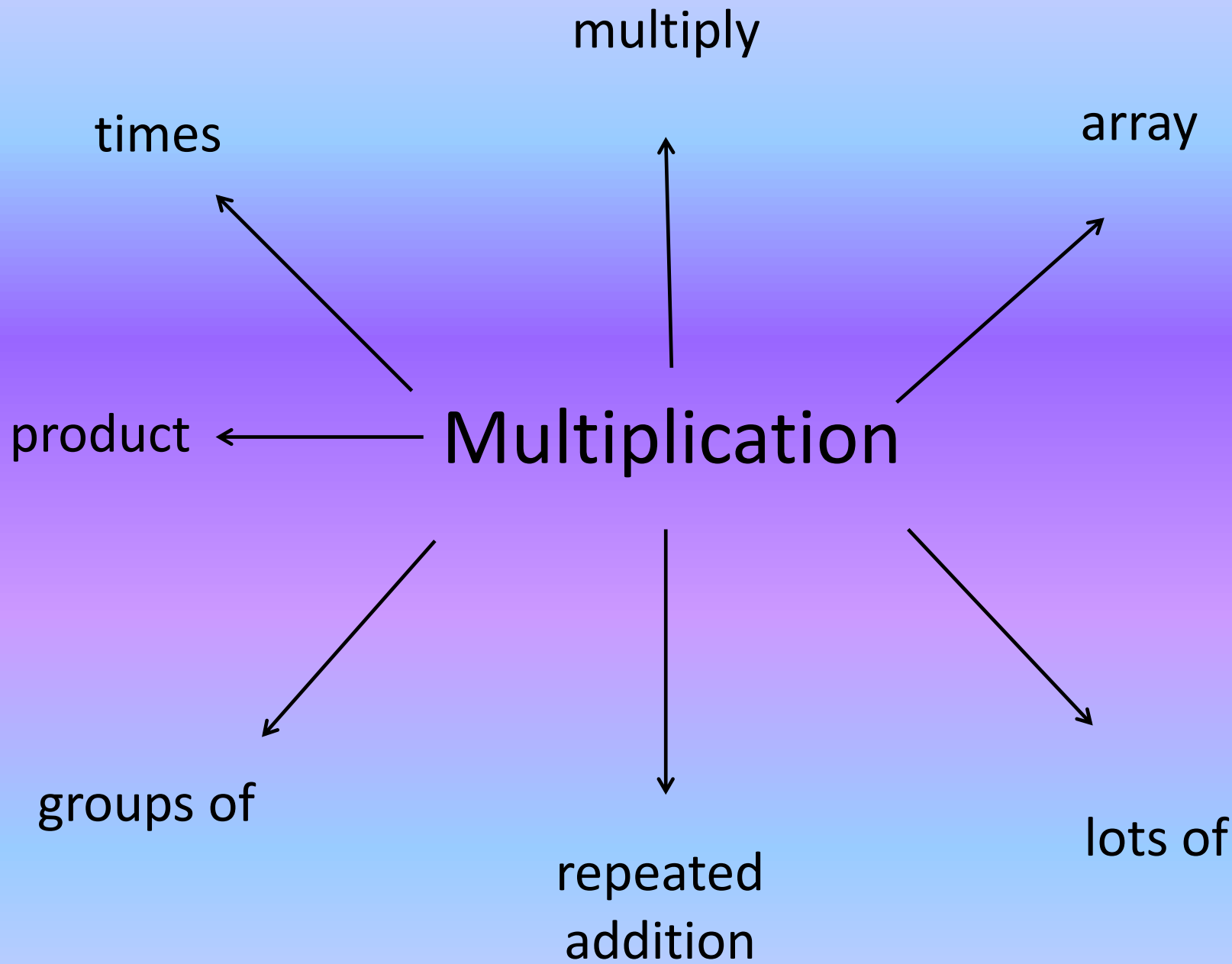
# Formal Written Method

$$\begin{array}{r} 345 \\ + 289 \\ \hline \end{array} + \begin{array}{r} 345 \\ + 289 \\ \hline 4 \end{array} + \begin{array}{r} 345 \\ + 289 \\ \hline 34 \end{array} + \begin{array}{r} 345 \\ + 289 \\ \hline 634 \end{array}$$

Below the horizontal lines of the four addition problems are the following carry values:

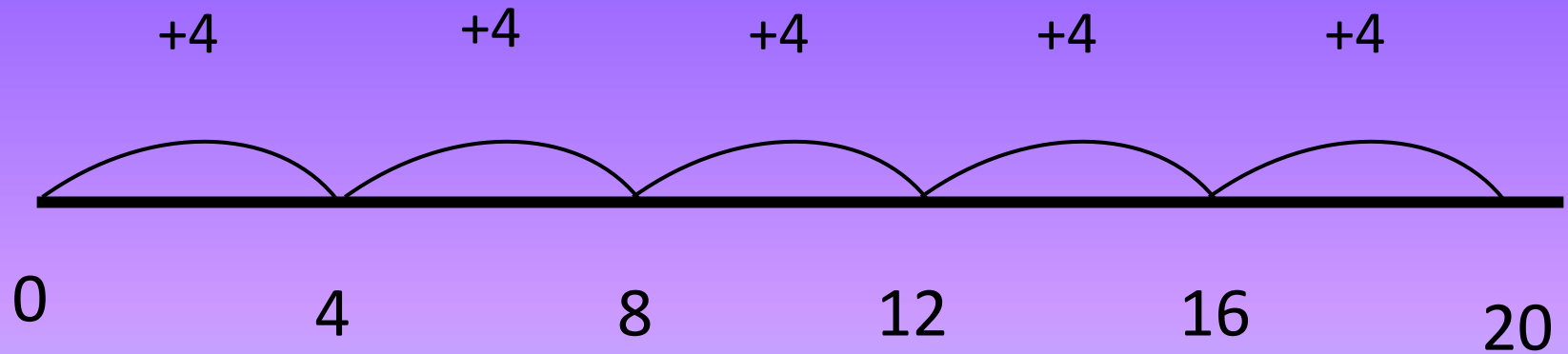
1                      11                      11

Using numbers up to 10,000

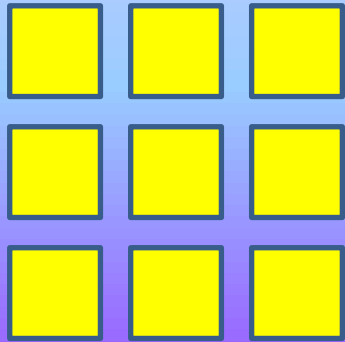


# Number lines for multiplications

$$5 \times 4 = 20$$

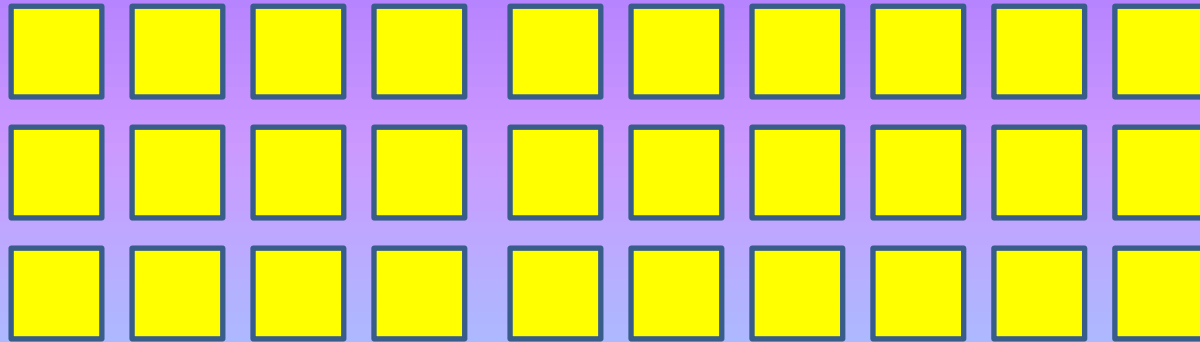


# Arrays

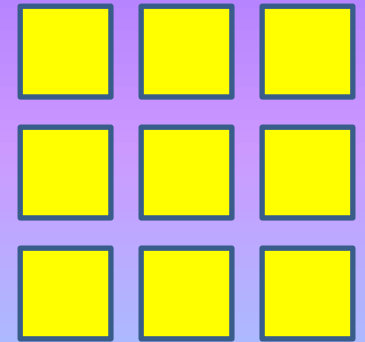


$$3 \times 3 = 9$$

$$10 \times 3 = 30$$



$$3 \times 3 = 9$$



$$13 \times 3 = 39$$

# Partitioning

$$47 \times 3 =$$

Break 47 in to 40 and 7.

$$40 \times 3 = 120$$

4 x 3 and increase the answer by 10 x.

$$7 \times 3 = 21$$

$$120 + 21 = 141$$

# Grid Method

$$14 \times 6 =$$

x	10	4	
6	60	24	= 84

# Grid Method

$$32 \times 12 =$$

x	30	2	
10	300	20	=320
2	60	4	=64

$$\begin{array}{r} 320 + \\ \underline{64} \\ 384 \end{array}$$



# Formal (short) multiplication

$$\begin{array}{r} 324 \\ \times 3 \\ \hline 972 \\ \hline 1 \end{array}$$

# Subtraction and Division

# Subtraction

```
graph TD; S[Subtraction] --> TA[take away]; S --> L[less]; S --> M[minus]; S --> C[counting up or back]; S --> LE[leave]; S --> D[difference between];
```

take away

less

minus

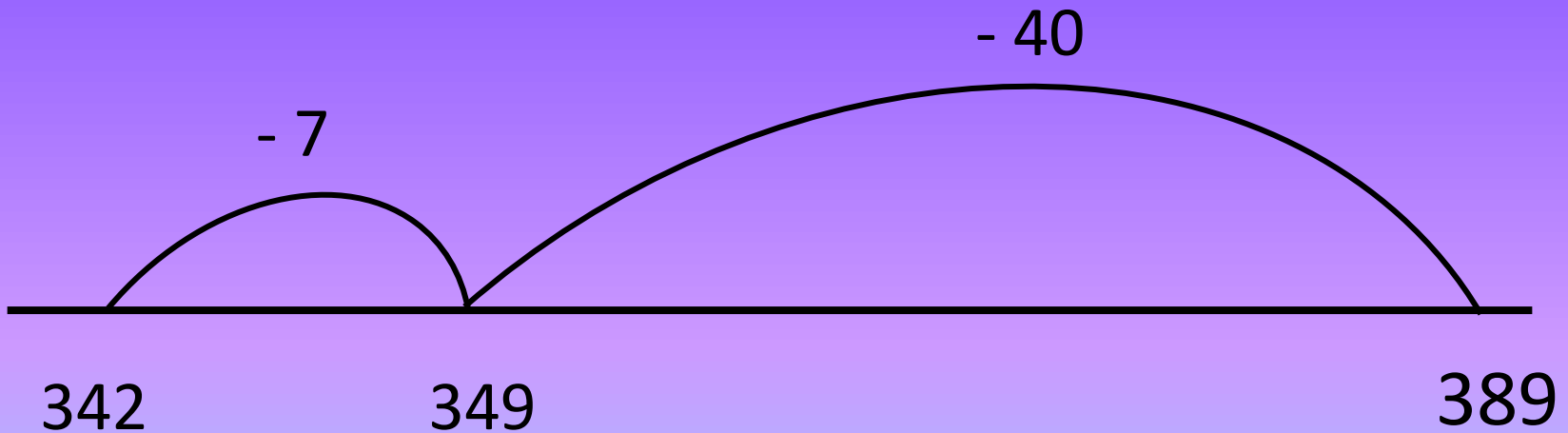
difference  
between

leave

counting up or  
back

# Subtraction on a number line

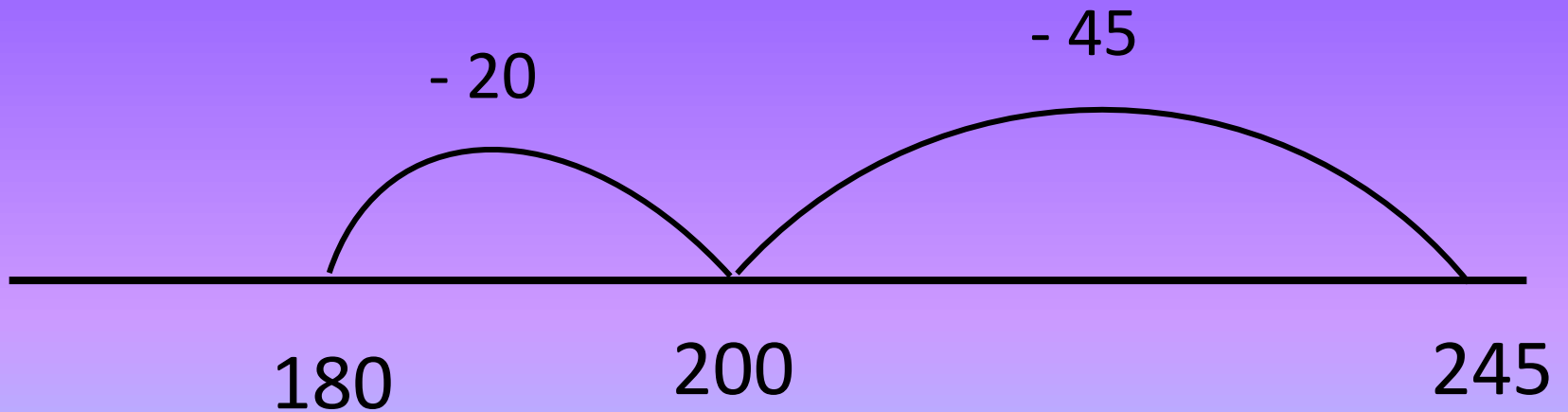
$$389 - 47 =$$



We use the counting back method when the numbers are far apart.

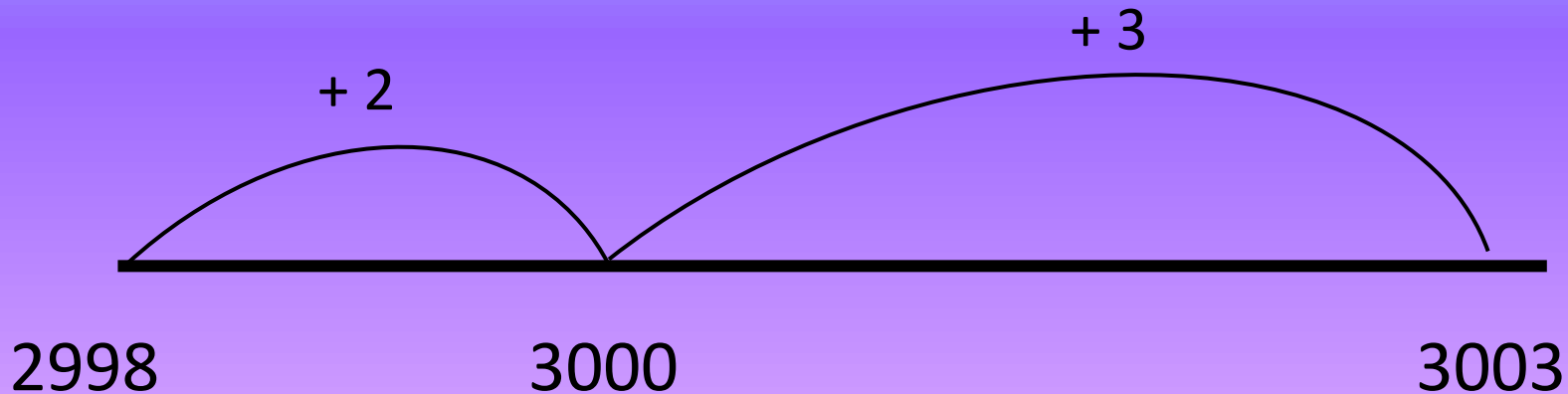
# Crossing tens

$$245 - 65 =$$



# Subtraction on a number line

$$3003 - 2998 =$$



$$3 + 2 = 5$$

We use the counting on method when the numbers are close together.

# Moving on from number lines.

## Using Partitioning

$$\begin{array}{r} 389 \\ - 245 \\ \hline \end{array}$$

$$300 - 200 = 100$$

$$80 - 40 = 40$$

$$9 - 5 = \underline{4}$$

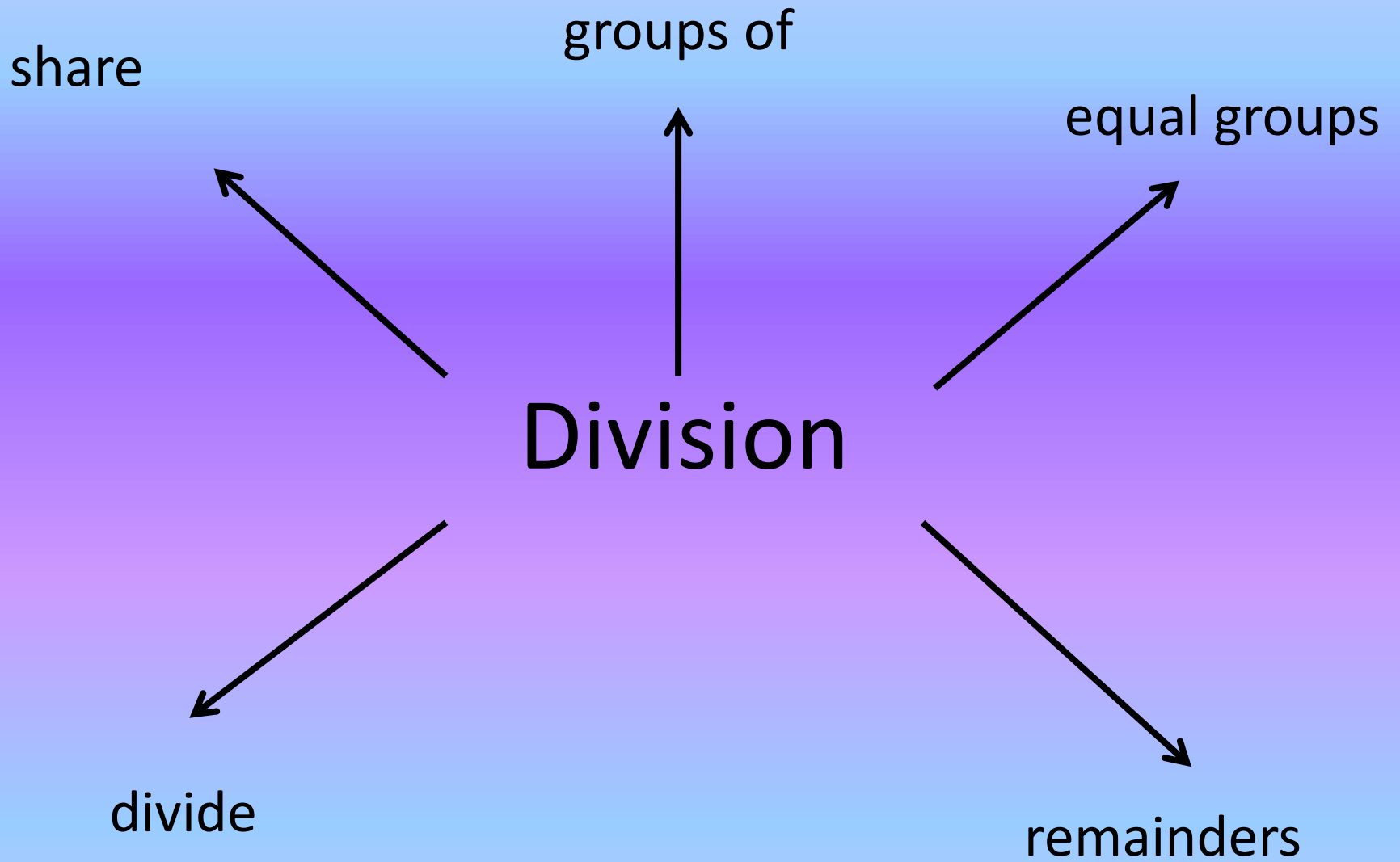
$$\underline{144}$$

## Column Method

$$\begin{array}{r} 389 \\ - 245 \\ \hline 144 \end{array}$$
$$\begin{array}{r} 665 \\ - 248 \\ \hline \end{array}$$
$$\begin{array}{r} 800 \\ - 242 \\ \hline \end{array}$$

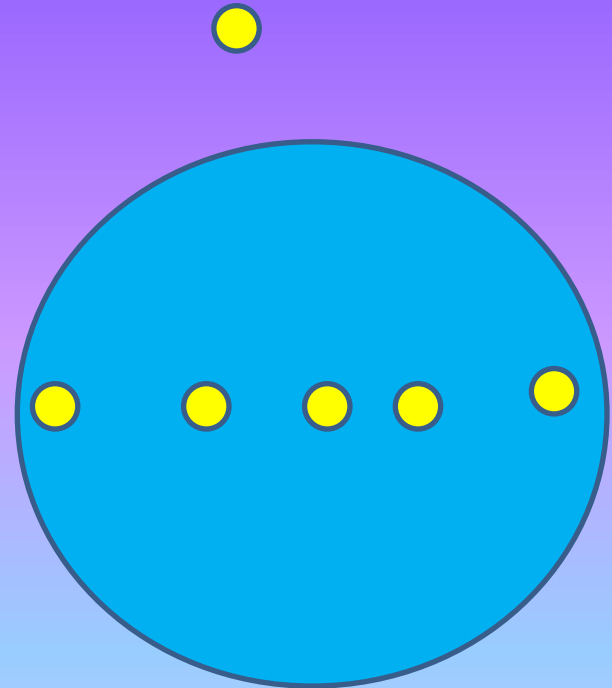
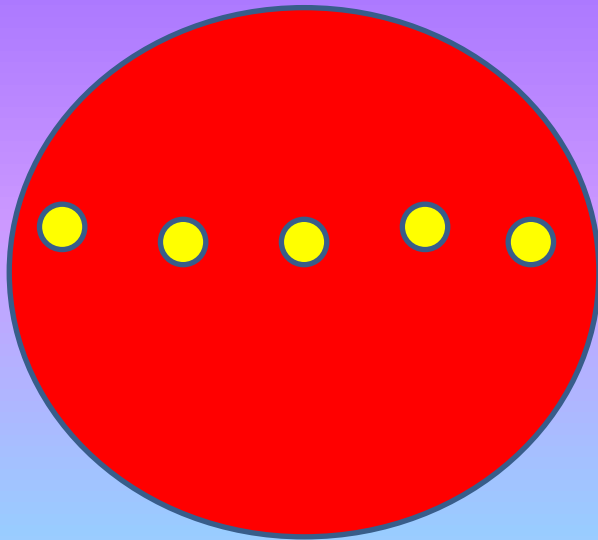
Using numbers up to 10,000





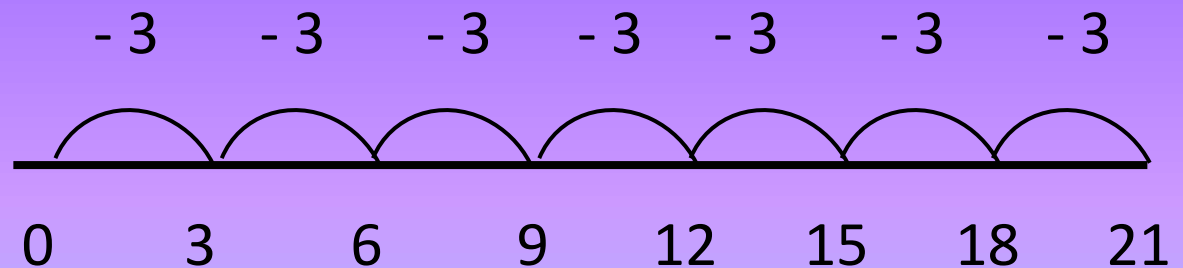
# Sharing with remainders

$$11 \div 2 = 5 \text{ r}1$$



# Repeated subtraction on a number line with no remainders

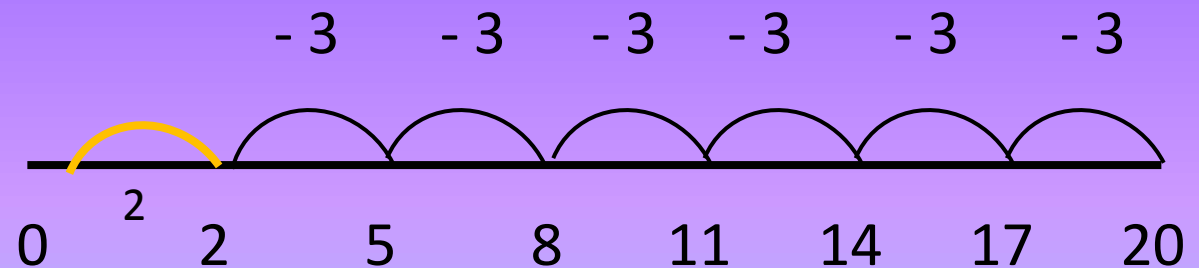
$$21 \div 3 =$$



How many groups of 3 have been taken away?

# Repeated subtraction on a number line with remainders

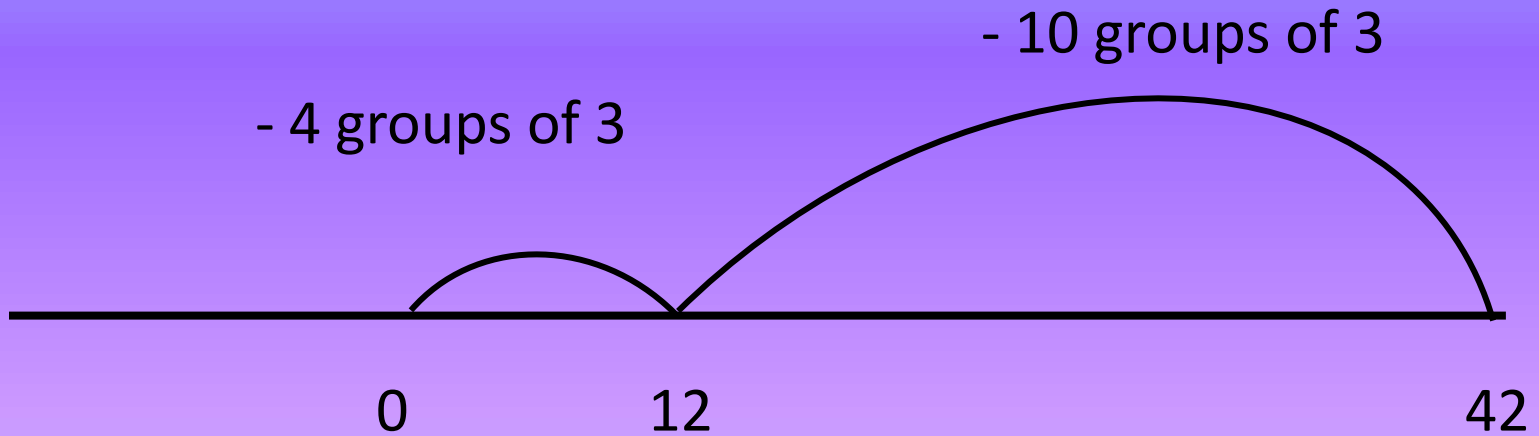
$$20 \div 3 = 6 \text{ r}2$$



How many groups of 3 have been taken away?

# Division using grouping

$$42 \div 3 = 14$$



How many groups have we taken away altogether?

## Division using 'chunking'

$$42 \div 3 = ?$$

$$10 \times 3 = 30$$

$$4 \times 3 = 12$$

14 groups of 3 equal 42

# 'Bus Stop' Method

$$\begin{array}{r} 14 \\ \hline 3 \overline{) 412} \end{array}$$

$$\begin{array}{r} 21 \\ \hline 23 \overline{) 483} \end{array}$$

Again, with numbers up to 10,000

# How can you support at home?

- My Maths <http://www.mymaths.co.uk/>
- BBC Bitesize [www.bbc.co.uk](http://www.bbc.co.uk)
- Number hunts around town; *house numbers, bus numbers etc.*
- Shopping
- Walking to school
- Ask open ended questions- “*What if...*”, “*Prove it!*”, “*How do you know?*”
- Cooking/ baking
- Number bonds – *at every opportunity*
- Times tables- *at every opportunity.*