Ormiston

Cliff Park Primary Academy

Parent workshop

Mathematics Mastery

Success for **all** pupils

Based on research and evidence

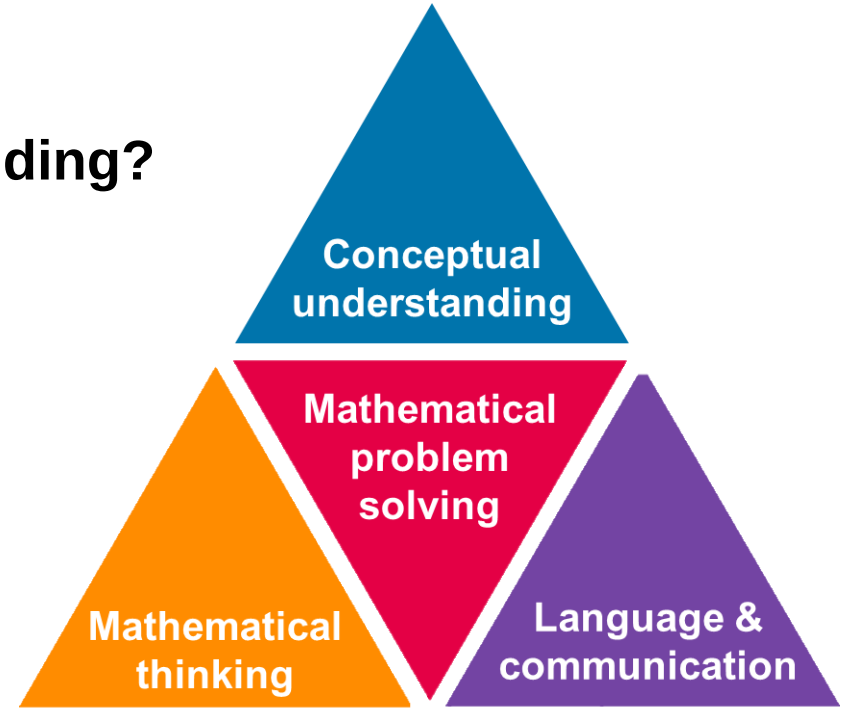
Problem solving is at the heart

Focus is on depth, not acceleration

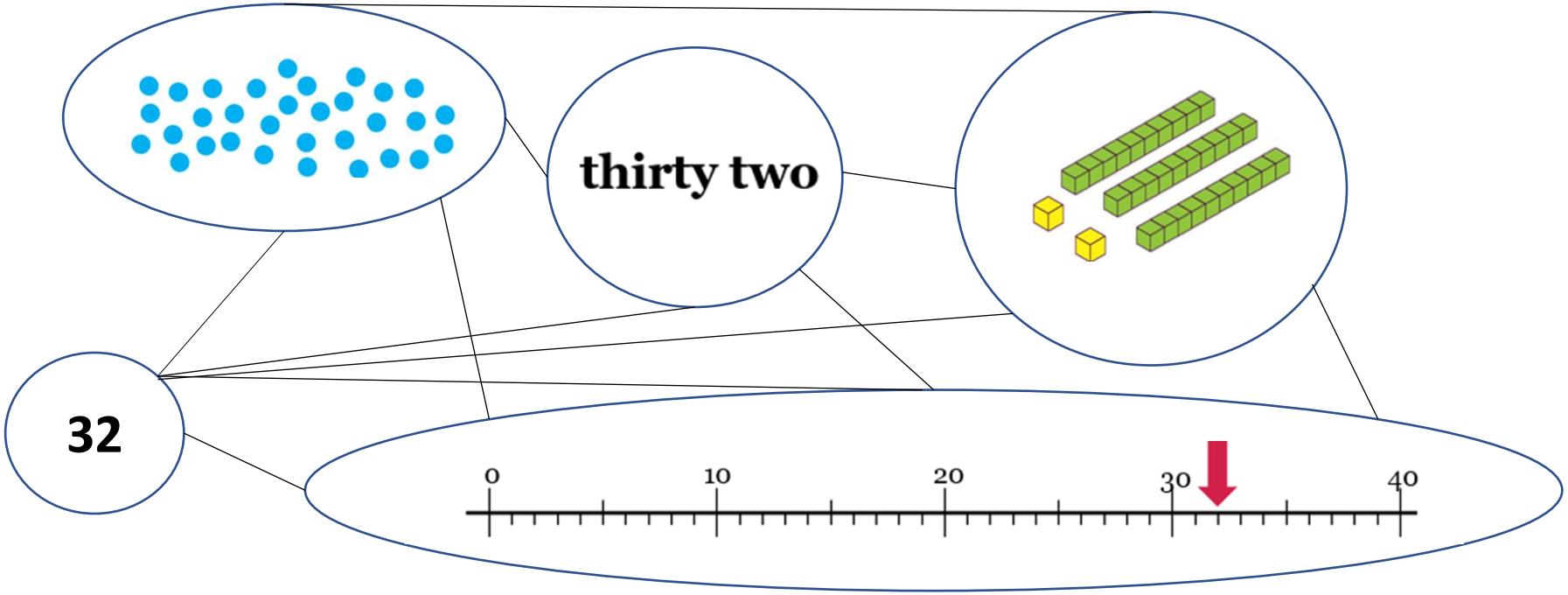
Aligned to National Curriculum

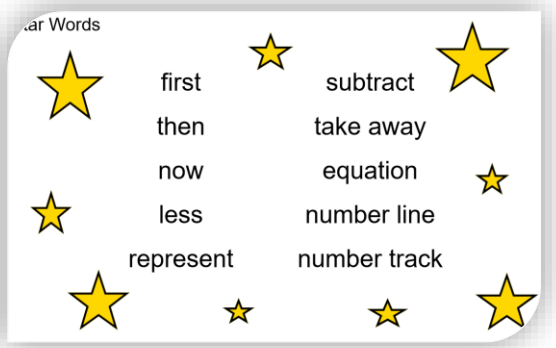
Focus on talk and reasoning about mathematics

What do we mean by depth?
How do we deepen understanding?

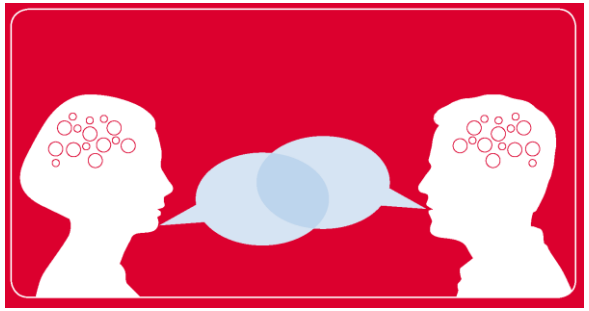


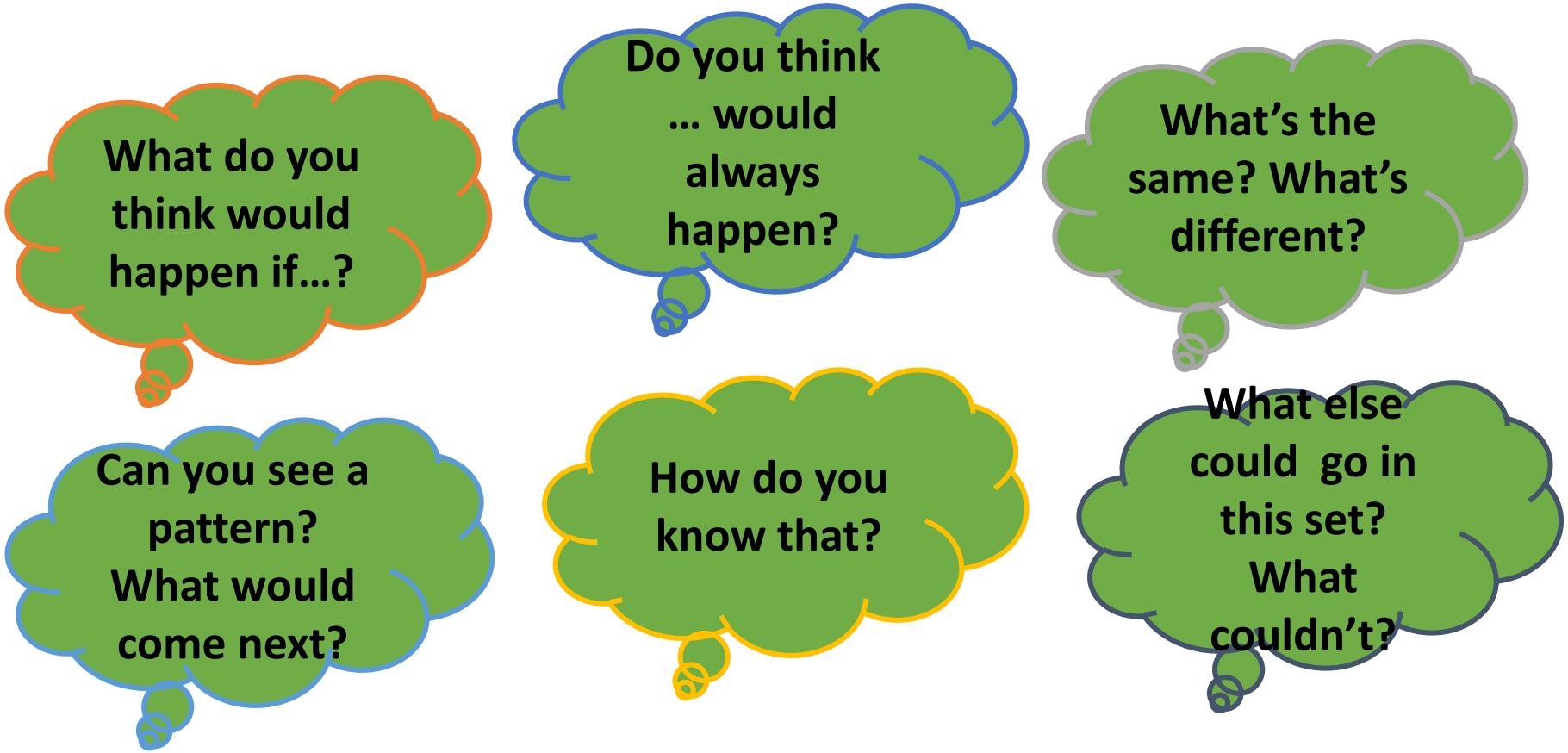
- Representing a concept in different ways
- Making connections between each way to deepen their understanding.





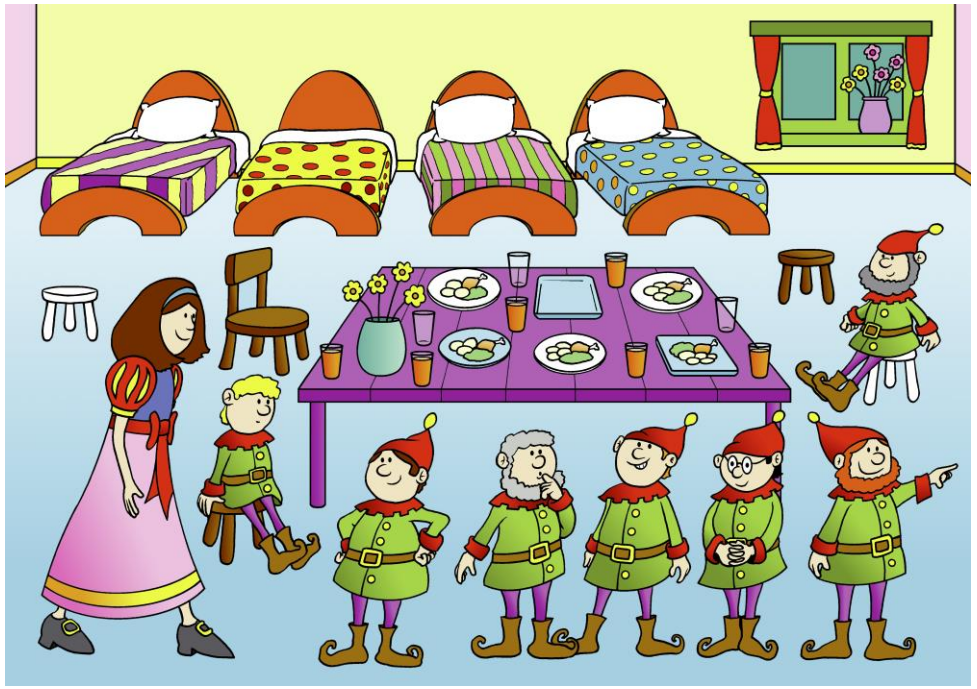
Can you say that in a full sentence, please?



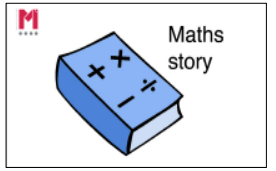

What do you think would happen if…?
Do you think … would always happen?
What's the same? What's different?
Can you see a pattern? What would come next?
How do you know that?
What else could go in this set? What couldn't?

- ✓ Talk to your children about everyday maths
- ✓ Play maths games with them
- ✓ Value mistakes as learning opportunities
- ✓ Recognise that there is more than one way to work things out
- ✓ Praise children for effort over outcome
- ✓ Avoid saying things like “I’m useless at maths”

Year 1



What maths can you see?



equation add addition plus is equal to part whole

Addition and subtraction within 10

- Represent and explain addition and subtraction
- Commutativity
- Addition and subtraction facts

Addition and subtraction within 20

- Represent and explain addition and subtraction strategies including 'Make Ten'
- Use known facts to add and subtract

Year 1

Addition and Subtraction

- Develop and use a range of mental calculation strategies
- Illustrate and explain formal written methods – column method

Year 3

Integer addition and subtraction

- Use rounding to estimate
- Use a range of mental calculation strategies to add and subtract integers
- Illustrate and explain the written method of column addition and subtraction
- Select efficient calculation strategies

UKS2

Year 1

- Addition facts to 10 by combining amounts
- Subtraction facts to 10 by partitioning
- Explore related facts in addition and subtraction
- Using number bonds to add within 20
- Using the ‘make ten’ strategy to add within 20

Year 2

Addition and subtraction of 2-digit numbers

1. Using number bonds in addition and subtraction
2. Adding and subtracting ones with a two-digit number
3. Adding and subtracting multiples of ten
4. Adding and subtracting tens with a two digit numbers
5. Adding and subtracting two 2-digit number
6. Adding three 1 digit numbers
7. Representing information in a bar model
8. Representing addition and subtraction word problems as a bar model

Year 3

- Value of each digit in 3-digit numbers
- Partition 3 digit numbers in different ways
- Order and compare 3-digit numbers
- Add and subtract 10 or 100
- Round numbers to the nearest 10 or 100

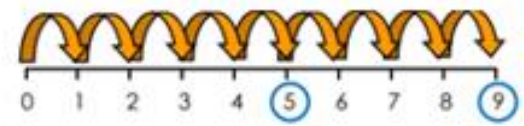
Number bonds

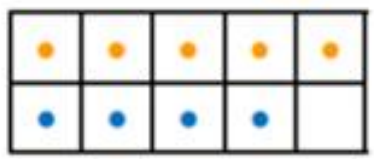
(Ten frame)

Numicon

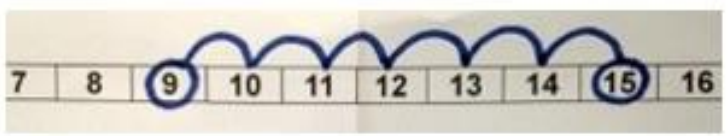
Use bonds of 10 to calculate bonds of 20

Count on from a given number





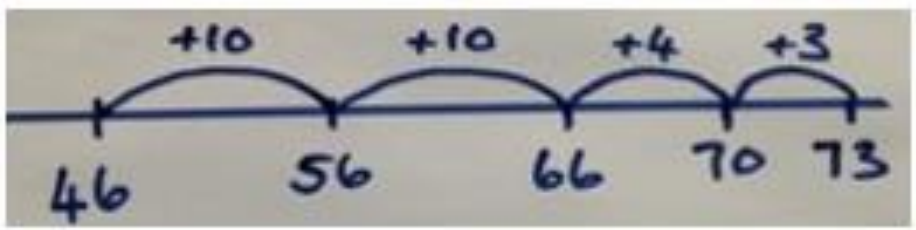
Count on, on number track, in 1s

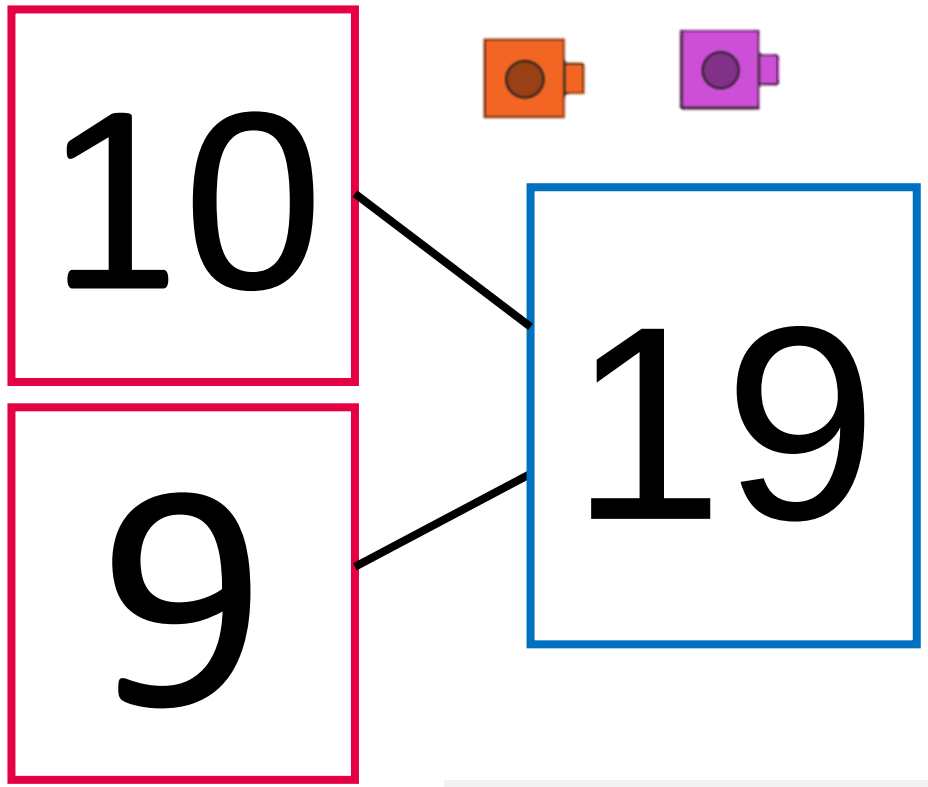


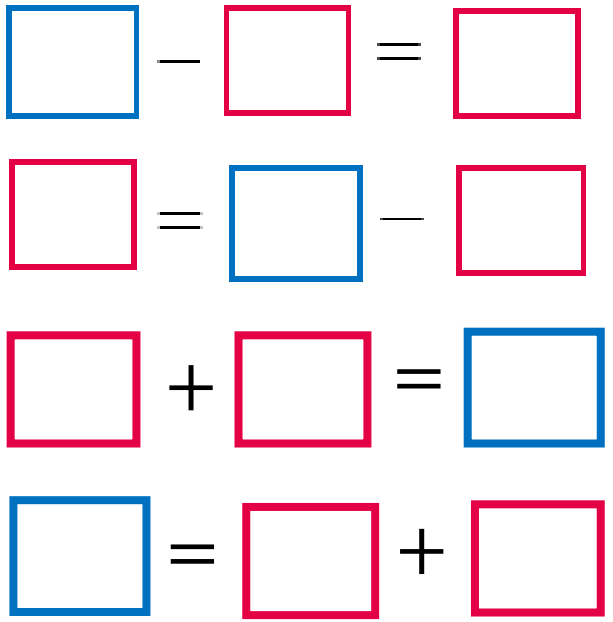
Number track / Number line – jumps of 1 then efficient jumps using number bonds

18 + 5 = 23

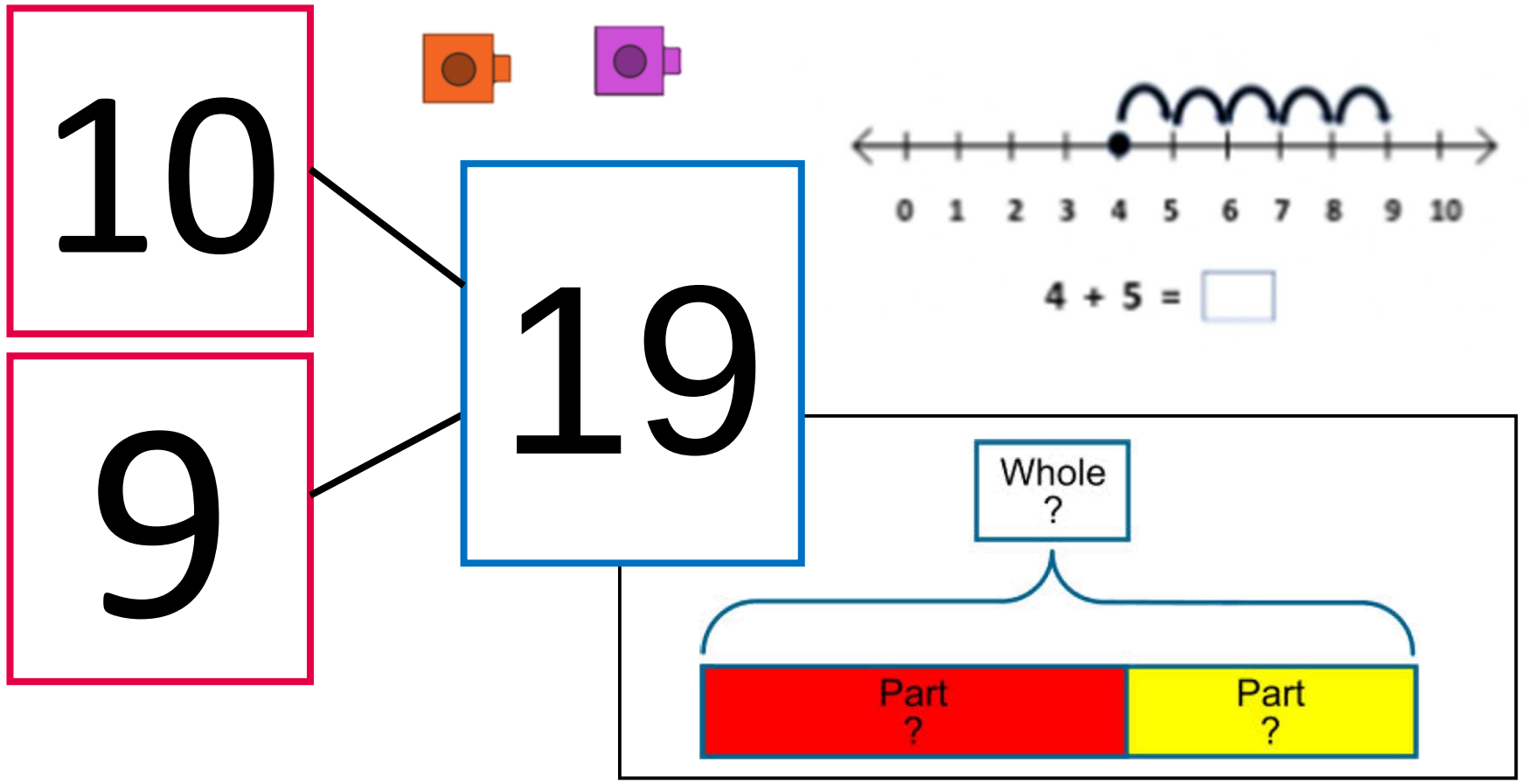
46 + 27 = 73 Count in tens then bridge.





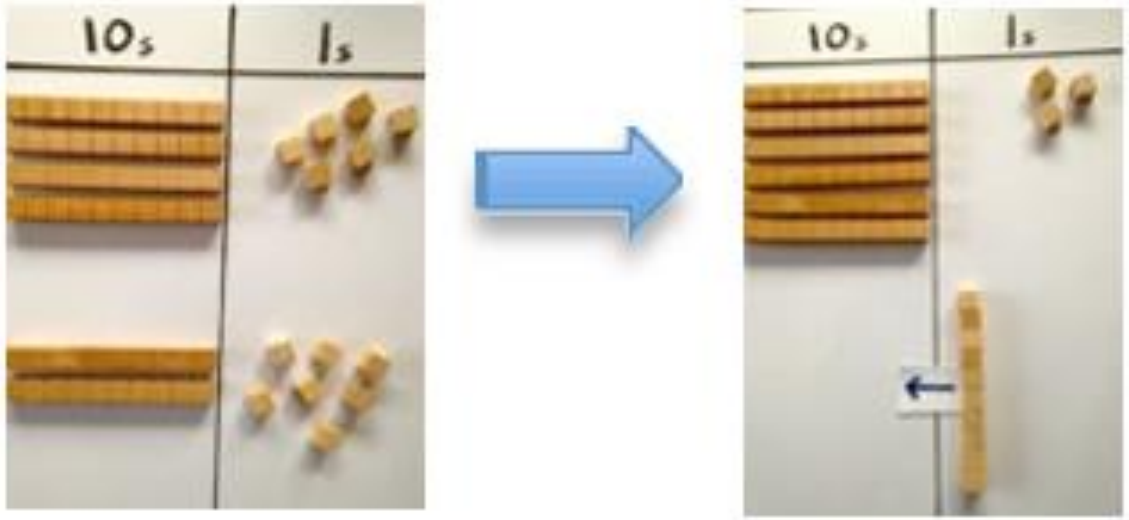


equation add addition plus is equal to part whole


10
9
19
0 1 2 3 4 5 6 7 8 9 10
4 + 5 =
Whole
?
Part
?
Part
?

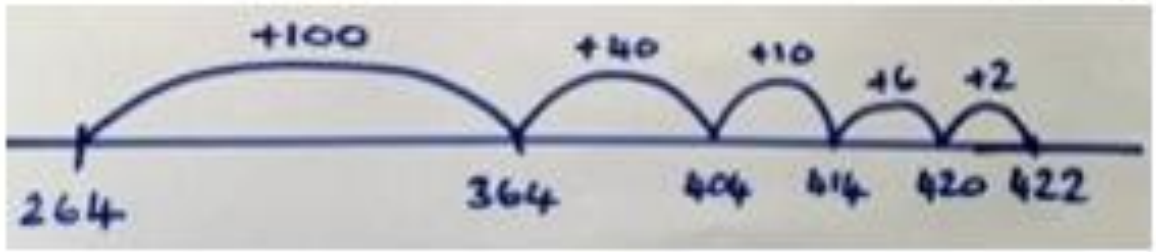
Partition and recombine

46 + 27 = 60 + 13 = 73



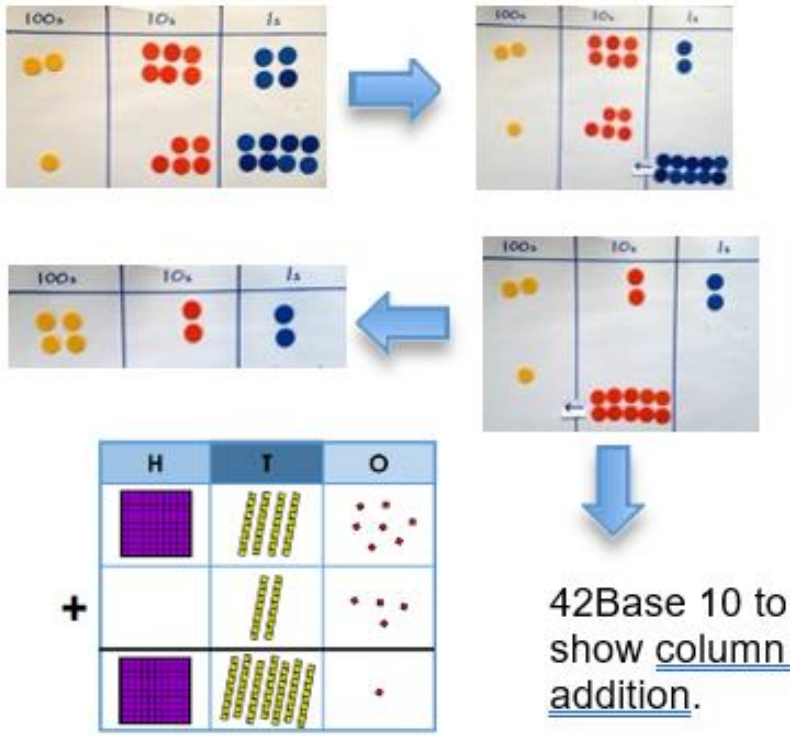
$$\begin{array}{r} 4\ 6 \\ +\ 2\ 7 \\ \hline 7\ 3 \\ \hline 1 \end{array}$$

Number line: 264 + 158 efficient jumps



40 + 80 = 120 using
4 + 8 = 12
So 400 + 800 = 1200
243 + 19 by +200 then -2 (Round and adjust)

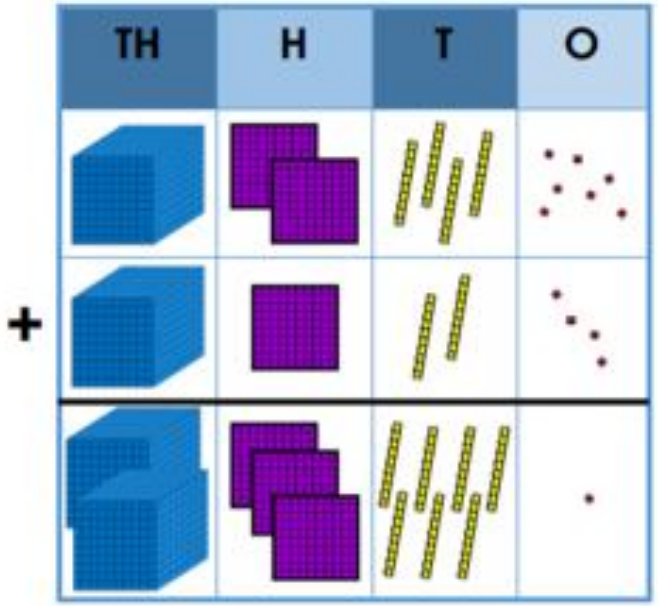
Place value counters, 100s, 10s, 1s
264 + 158



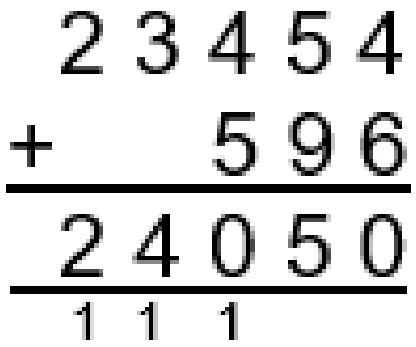
42Base 10 to show column addition.

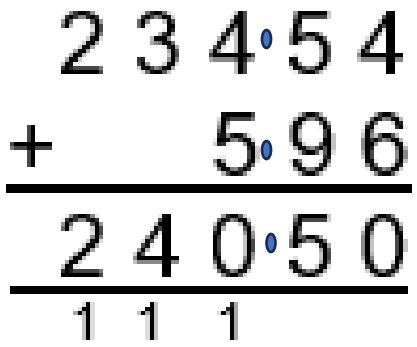
$$\begin{array}{r} 423 \\ +\ 88 \\ \hline 511 \\ \hline 1\ 1 \end{array}$$

Use base 10 to show column addition.



$$\begin{array}{r} 2458 \\ +\ 596 \\ \hline 3054 \\ \hline 111 \end{array}$$


23454
+ 596
24050
1 1 1


23454
+ 596
24050
1 1 1

Number bonds

(Ten frame)

Difference between
7 and 10

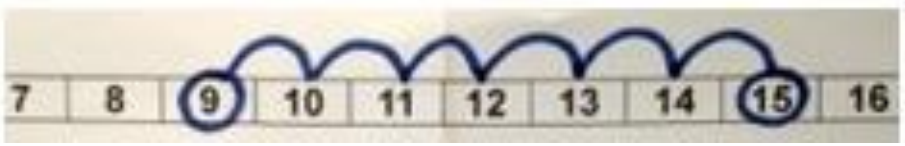
6 less than 10 is 4

Count out, then count how many are left.

7 – 4 = 3

Count back on a number track, then number line.

15 – 6 = 9



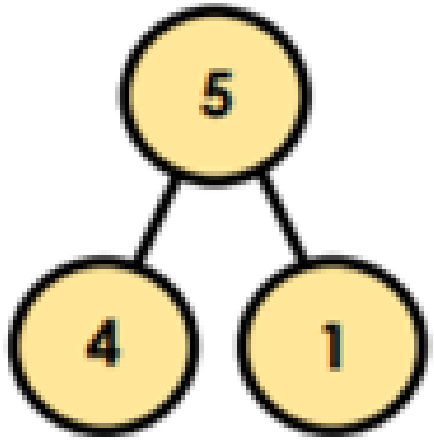
Fact families

4 + 1 = 5

1 + 4 = 5

5 - 4 = 1

5 - 1 = 4



5 = 4 + 1

5 = 1 + 4

4 = 5 - 1

1 = 5 + 4

Number track / Number line – jumps of 1 then efficient jumps using number bonds

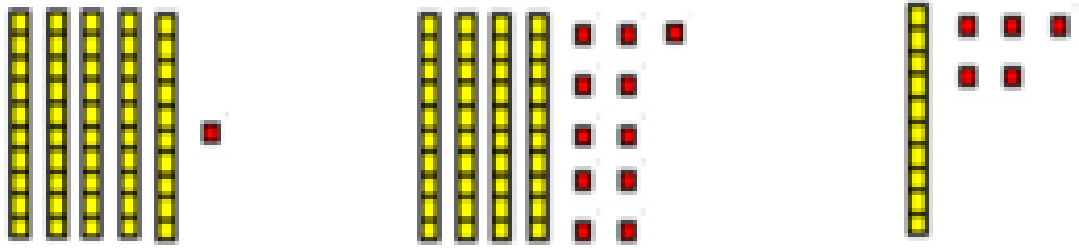
23 – 5 = 18

Using a number line, 73 – 46 = 26

Difference between 73 – 58 by counting up, 58 + _ = 73

Taking away and exchanging.

51 - 36 =



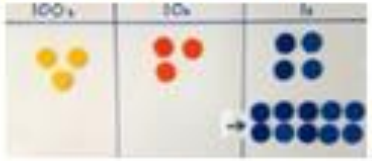
Represent ***Exchange*** ***Subtract***

$$\begin{array}{r} {\scriptstyle 6}\ {\scriptstyle 1} \\ \not{7}\,3 \\ -\ 4\,6 \\ \hline 2\,7 \end{array}$$

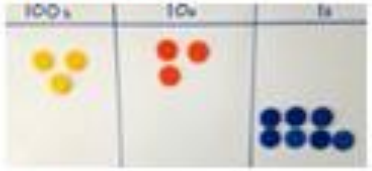
Taking away and exchanging using place value counters 344- 187=

344

There are not enough ones to subtract 7 from 4. So exchange a ten for 10 ones. See image below.



Now subtract the 7 ones. 14- 7= 7



There are not enough tens to subtract 8 tens from 4 tens, so exchange a hundred for 10 tens.

$$\begin{array}{r} {\scriptstyle 2\ \ 3\ 1} \\ \not{3}\not{4}4 \\ -\ 1\ 8\ 7 \\ \hline 1\ 5\ 7 \end{array}$$

The teacher presents a maths problem and then asks:

1. **Describe** the method/procedure you used
2. **Why** does the method work, what relationships are involved, what generalities or rules can we glean?
3. **What** is the answer? **How** do you know?

Questioning

This can be done simply by asking children to explain how they worked out a calculation or solved a problem, and to compare different methods.

Fluency Drive

Support your child with their:

-Number bonds;

-Multiplication and division facts;

-Inverses.

Thank you

Mathematics Mastery