

Good Evening!

Please find a seat and have a go at the place value activities on your handouts (both of these tasks are taken from previous KS2 SATs papers).

A £135,300	B £119,125	C £130,500
D £131,500	E £91,500	

Put these houses in order of price starting with the **lowest price**.
One has been done for you.

lowest **B** _____ _____ _____

Here are four number cards.



Layla uses each card once to make a four-digit number.

She places:

- 4 in the tens column
- 2 so that it has a higher value than any of the other digits
- the remaining two digits so that 7 has the higher value.

Write a digit in each box to show Layla's number.

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Today's session:

Subject Knowledge: Place Value

Aims

- To explore the themes and key principles that underpin place value understanding
- To explore ways in which key principles of place value are modelled at WPPS
- To understand common misconceptions within place value understanding.

Outcomes

- Improved understanding of place value topic and the themes within it
- Strengthening of personal subject knowledge
- Improved confidence to support your child with their understanding of place value.

Progression of place value understanding KS1 – KS2

The National Curriculum

KS1 (Year 1&2)

*'...pupils develop confidence and mental fluency with whole numbers, counting and **place value**...'*

LKS2 (Year 3&4)

*'...pupils become increasingly fluent with whole numbers... including the **concept of place value**...'*

UKS2 (Year 5&6)

*'...extending their understanding of the number system and **place value** to include larger integers...'*

By the time children leave KS2, they need to have a solid understanding of the number system, including decimals, and the relationships within.

Themes covered today

- Some basics
- Understanding numbers and their digits
- Flexible thinking

Why are we able to understand and interpret this number?

346,895

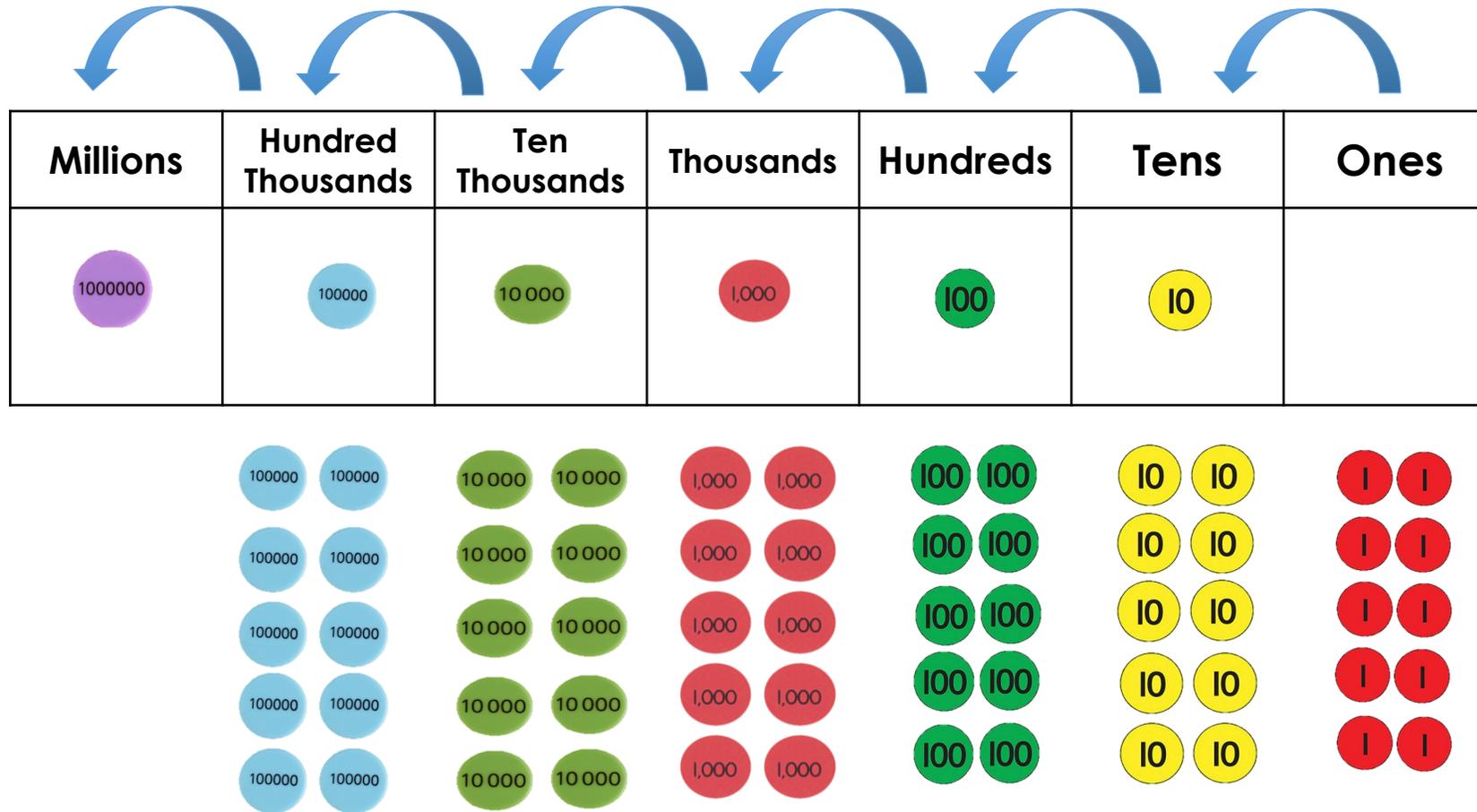
Three hundred and forty-six thousand,
eight hundred and ninety-five

PLACE VALUE

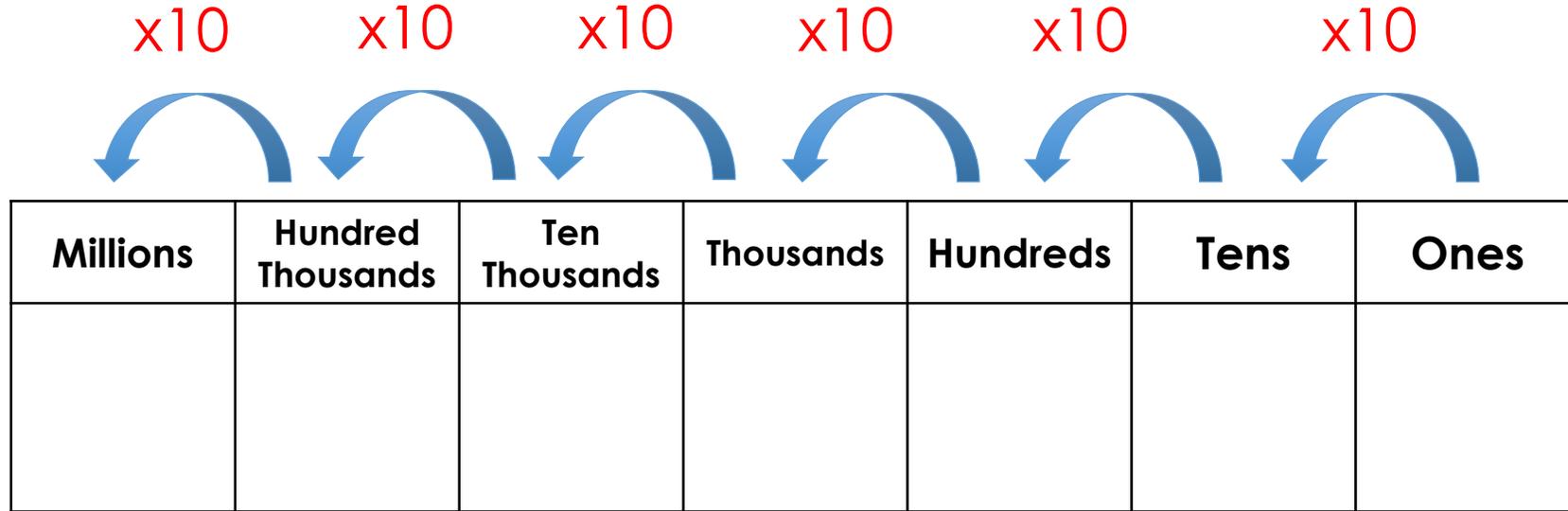
Some basics...



The **BASE 10 system** – each place value column is a power of 10 greater than the last

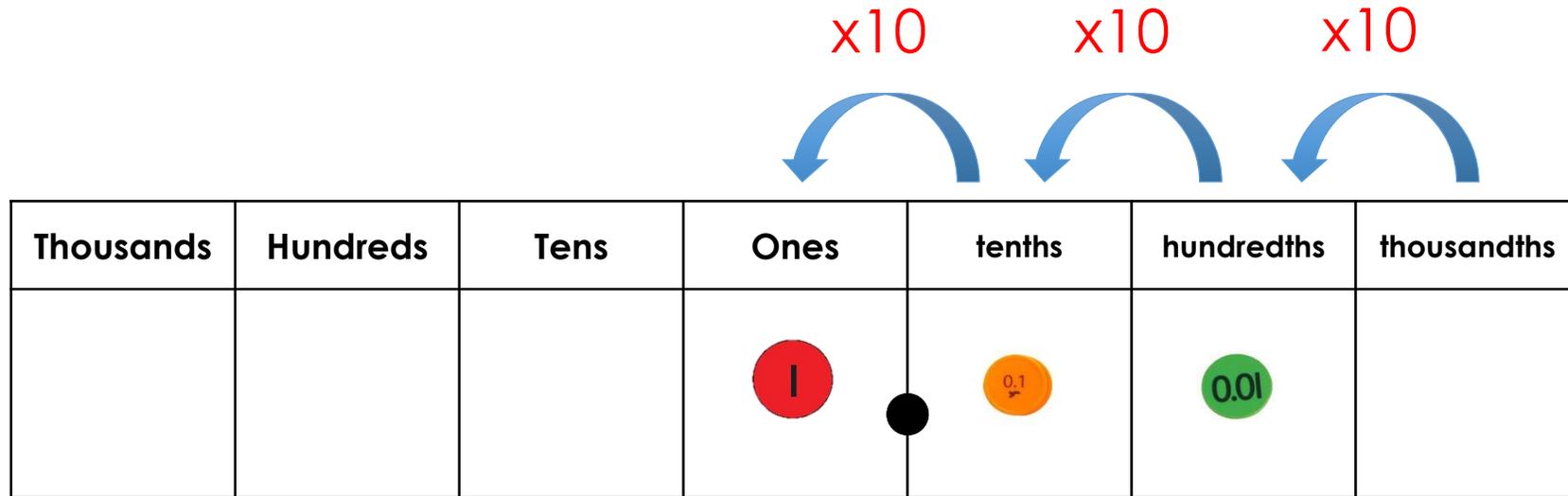


What is the relationship between the place value columns?

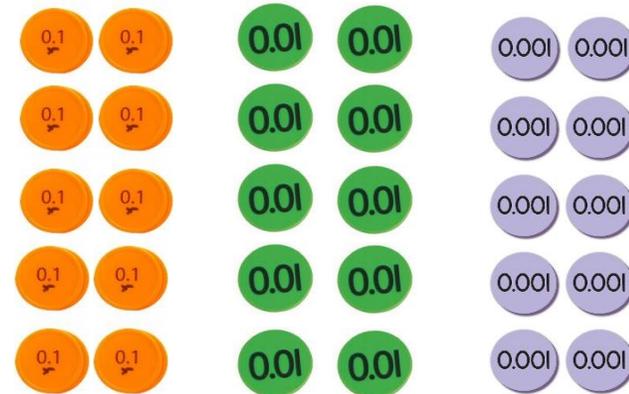


Value is increasing

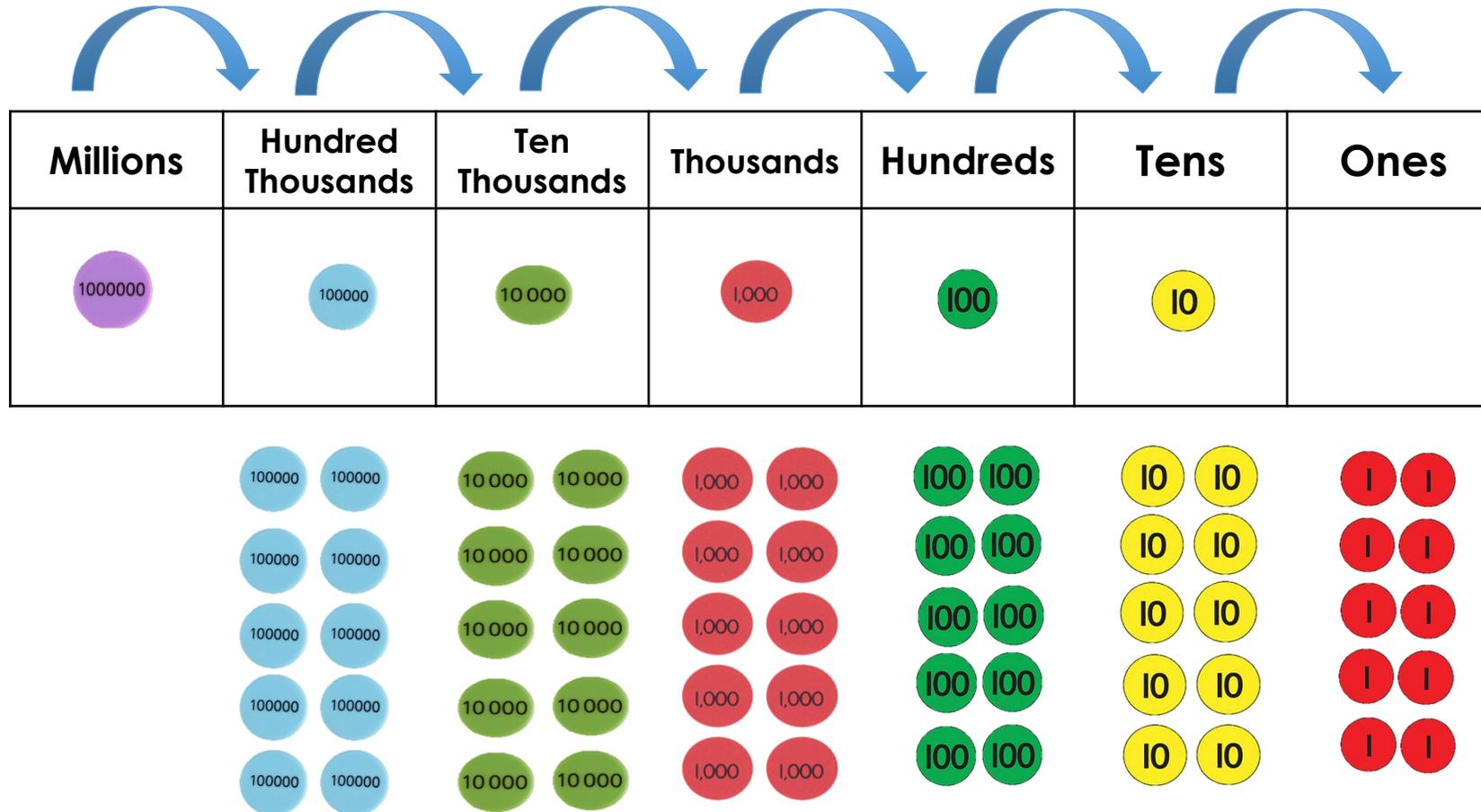
This principle applies to decimal understanding as well



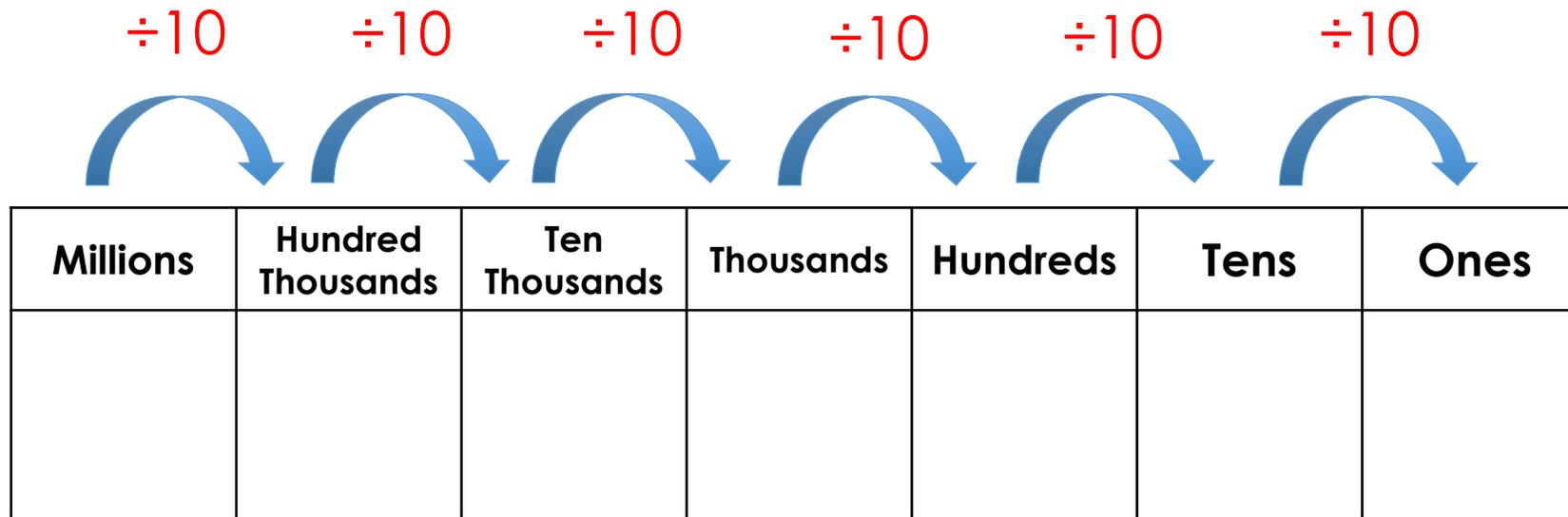
Value is increasing



The **BASE 10 system** – each place value column is a power of 10 fewer than the previous

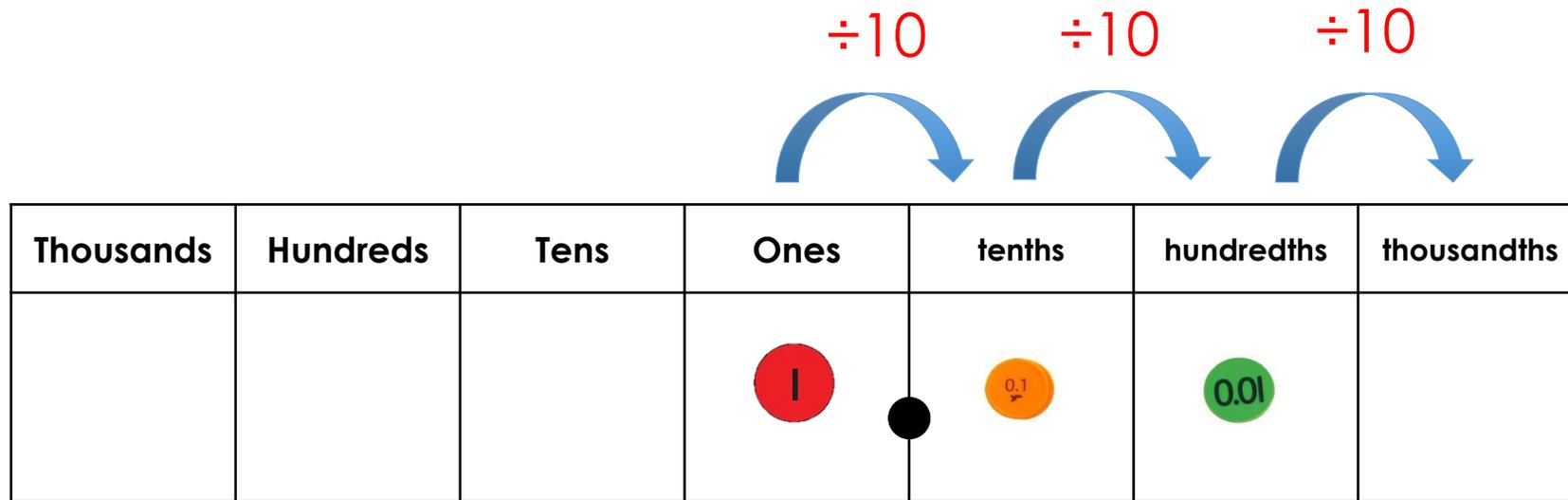


The inverse of this progression shows that each place value column decreases by a factor of 10

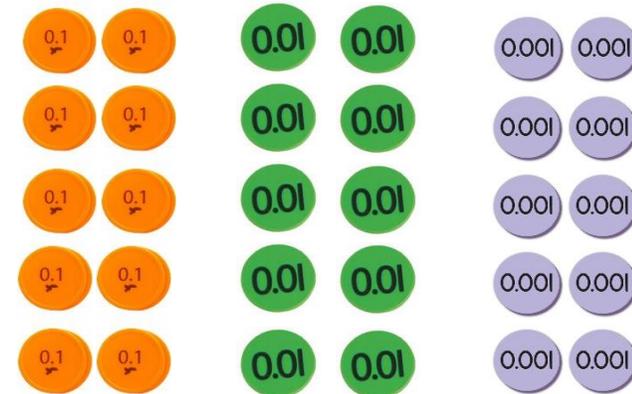


Value is decreasing

This principle applies to decimal understanding as well



Value is decreasing



Number vs. digit

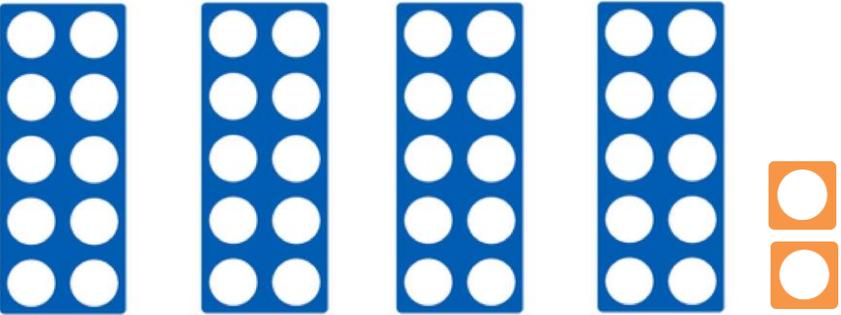
345

The number is: *Three hundred and forty five*

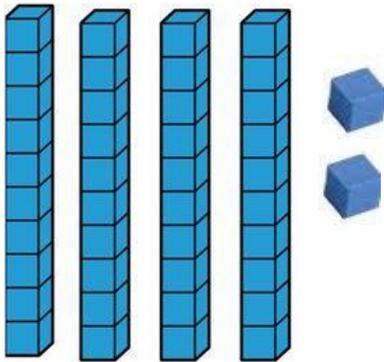
The digits are: *3, 4 and 5*

Representing numbers at WPPS

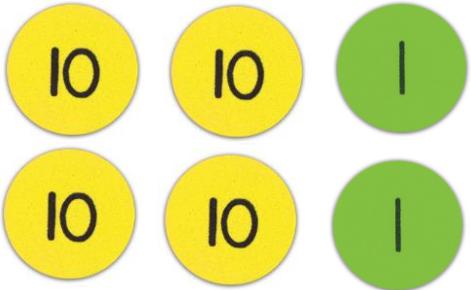
42



Numicon



Dienes

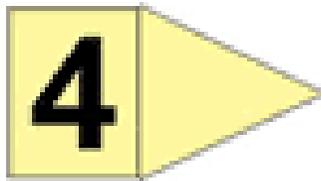
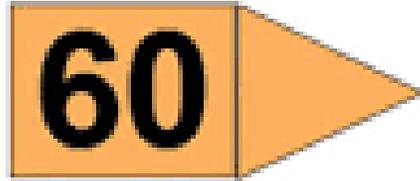
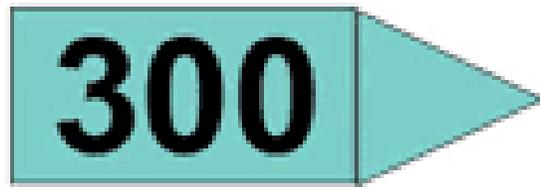


Place Value
counters

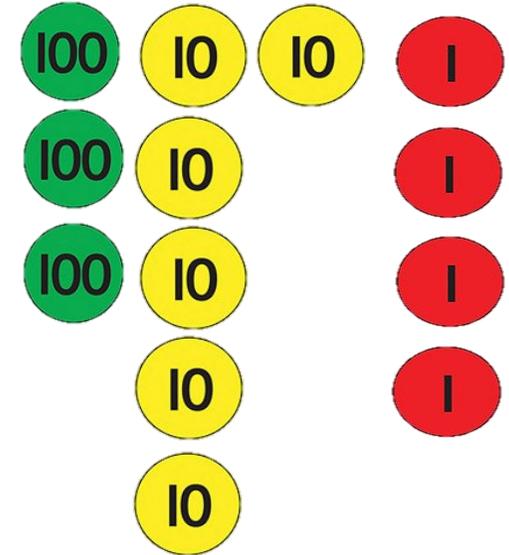
PLACE VALUE

Understanding numbers and their digits...



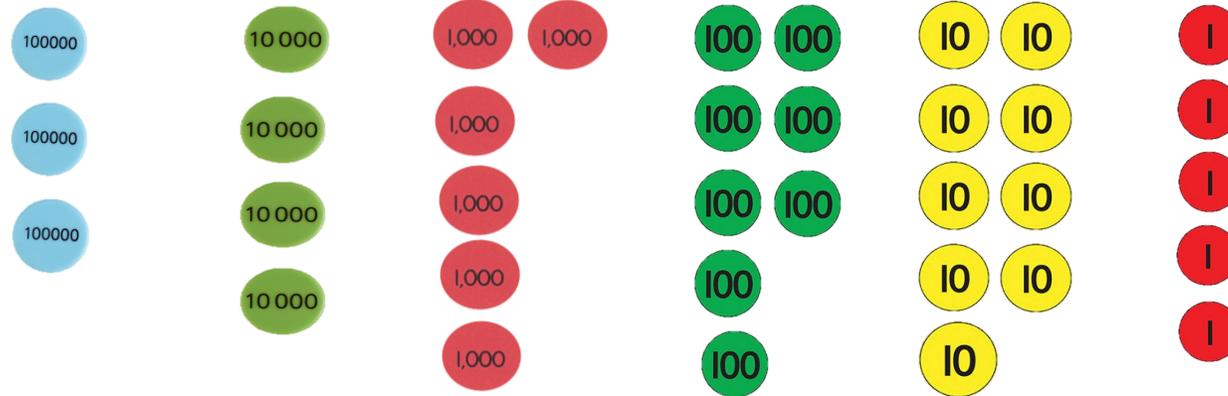


364



The 3 represents 300... because there are 3 hundreds
The 6 represents 60... because there are 6 tens
The 4 represents 4... because there are 4 ones

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
	3	4	6	8	9	5



There are 3 hundred thousands = 300,000

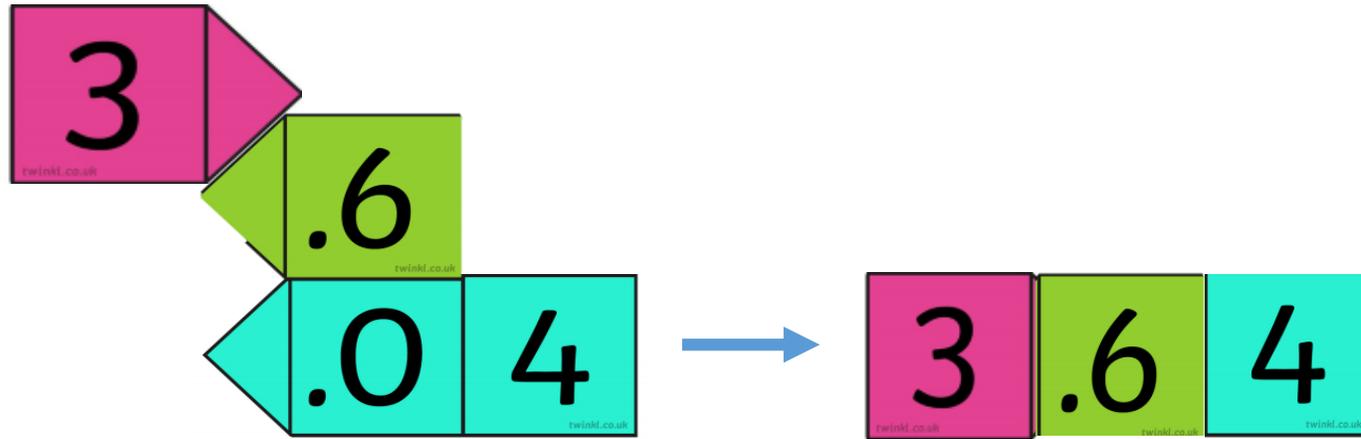
There are 4 ten thousands = 40,000

There are 6 thousands = 6000

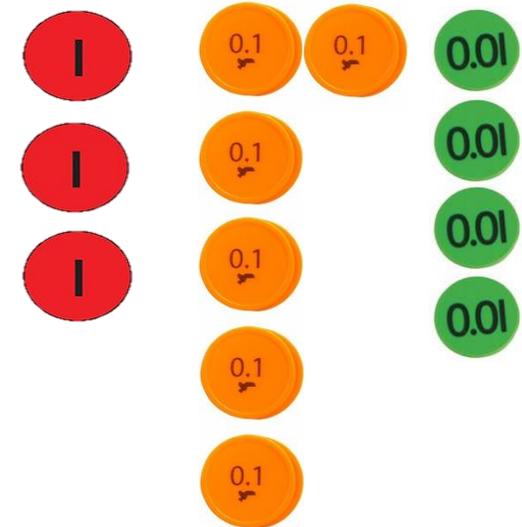
There are 8 hundreds = 800

There are 9 tens = 90

There are 5 ones = 5



3.64



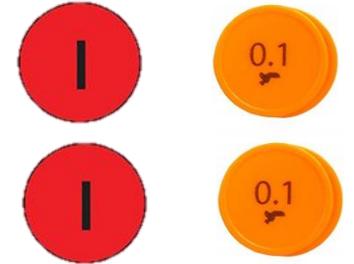
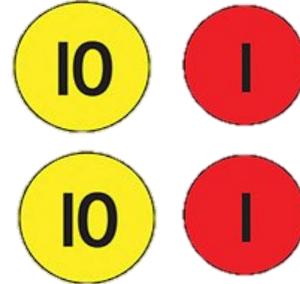
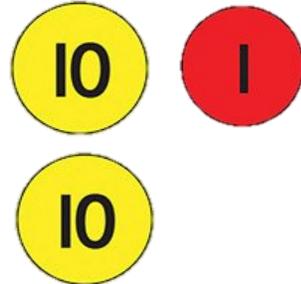
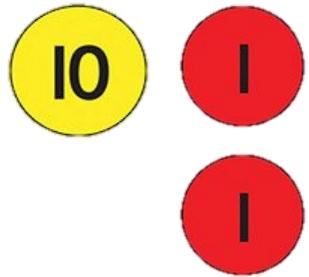
The 3 represents 3... because there are 3 ones
 The 6 represents 0.6... because there are 6 tenths
 The 4 represents 0.04... because there are 4 hundredths

12

21

22

2.2



What are the digits in these numbers worth?

The same digit in different numbers can represent different values dependant on its position in the place value system.

The same digit in the same number can represent different values dependant on its position in the place value system.

An empty set

058

A place holder in
our number system

What is zero?

208

0.58

Zero is the only integer
(whole number) that is
neither positive nor negative

-3 -2 -1 0 1 2 3

What is the same?
What is different?
Why is 0 important here?

302

320

Without the place holder?

32

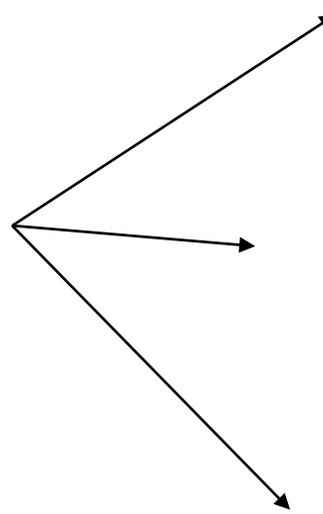
PLACE VALUE

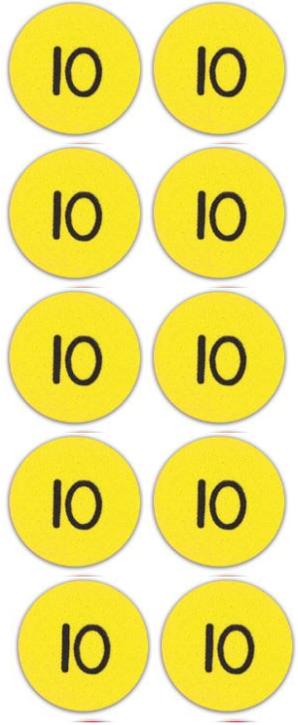
Flexible thinking...



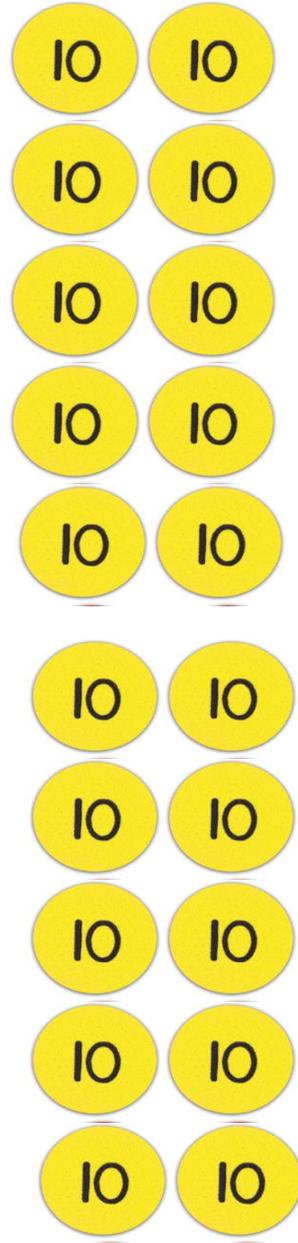
Match the number to the correct values

128

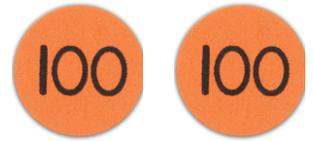
- 
- One hundred, twenty and 8
 - Ten tens, and twenty-eight ones
 - Twelve tens, and eight ones



= One hundred



= Two hundred

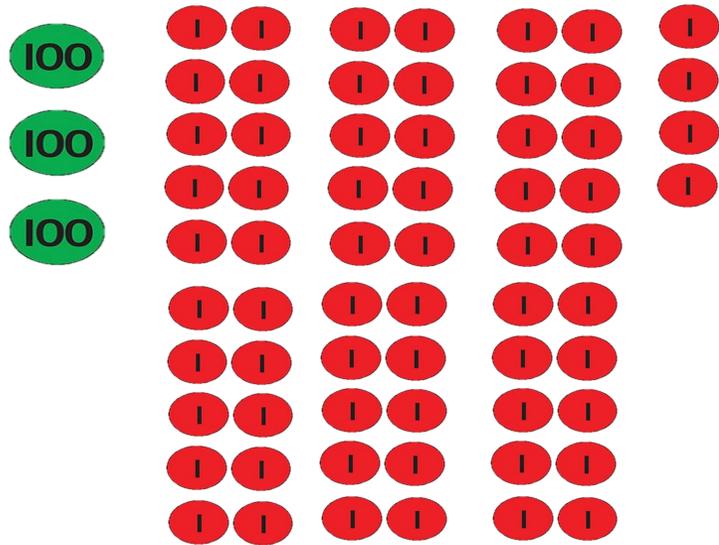


Partitioning a number can also focus on what a number can be made up of, which promotes flexible understanding of number.

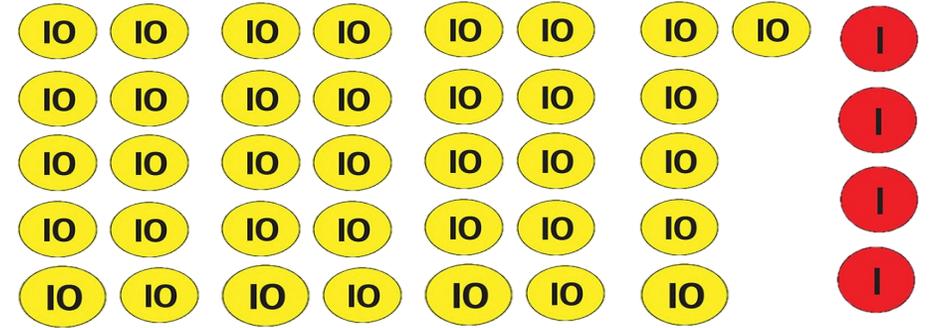
364

How many ways **could** this number be made?

Three hundreds and sixty four ones

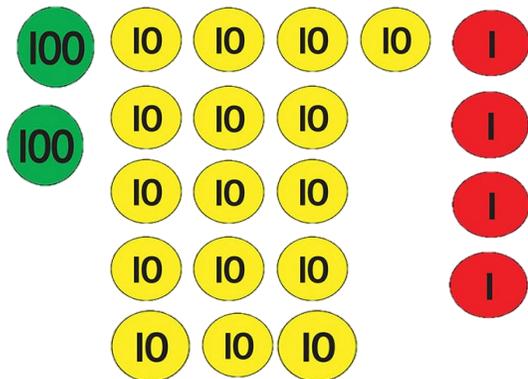


Thirty-six tens and four ones

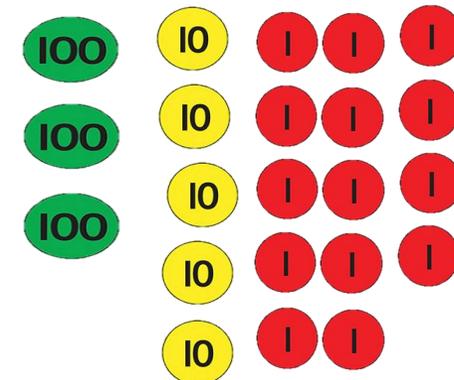


364

Two hundreds, sixteen tens and four ones



Three hundreds five tens and fourteen ones



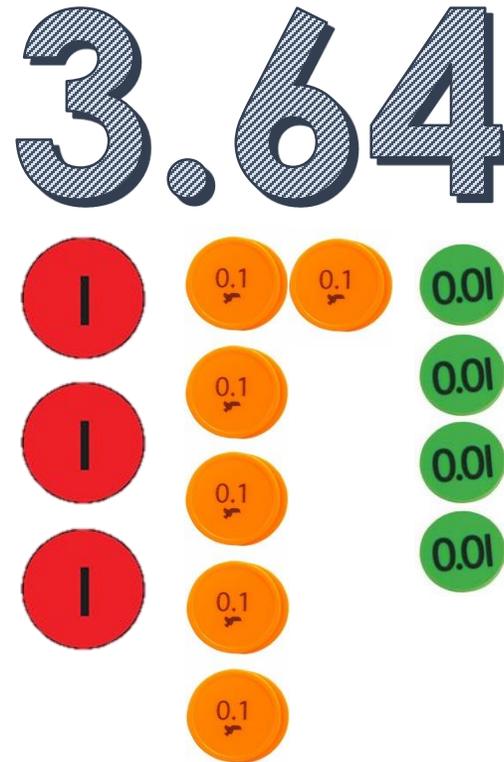
Why is flexible understanding of place value important here?

$$\begin{array}{r} \overset{8}{9} \overset{1}{6} \\ - 29 \\ \hline \\ \hline \end{array}$$

96 is:
9 tens and 6 ones

96 is also:
8 tens 16 ones

Flexible understanding of place value should be applied to decimal numbers as well.

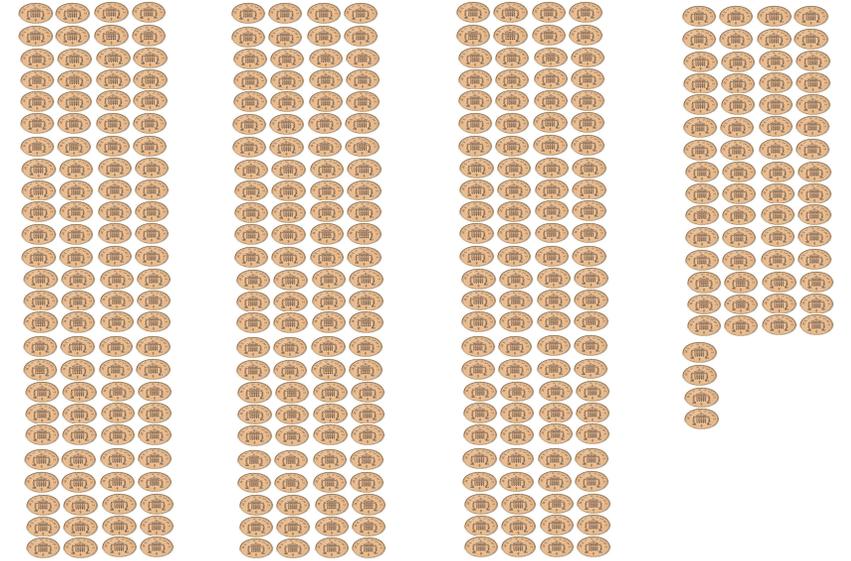


Three pounds, sixty pence and four pence.

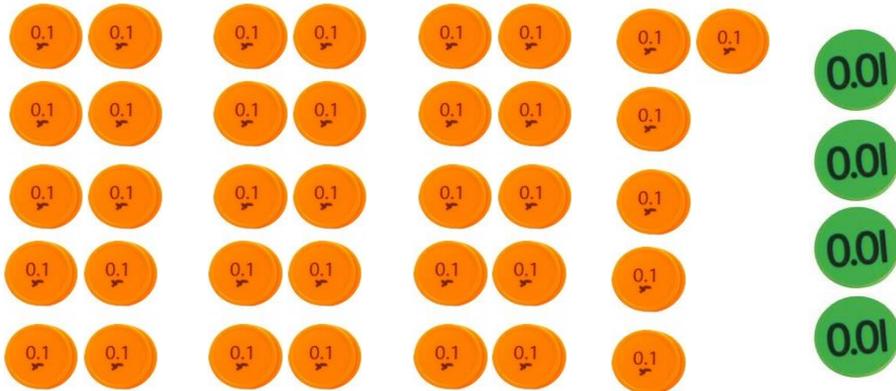


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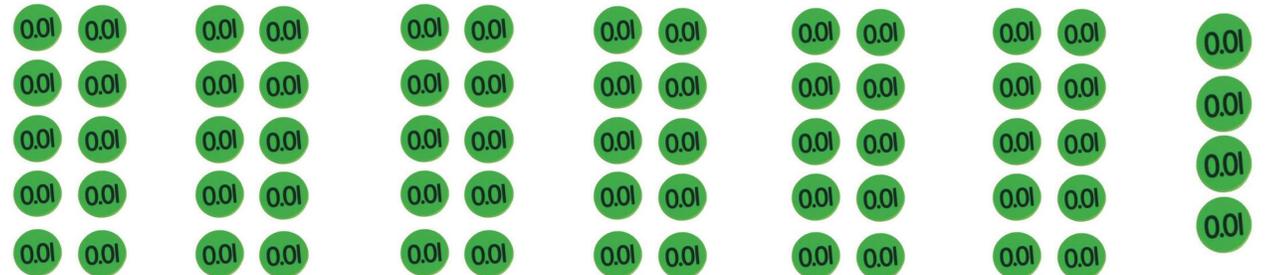
Three hundred and sixty four pence.



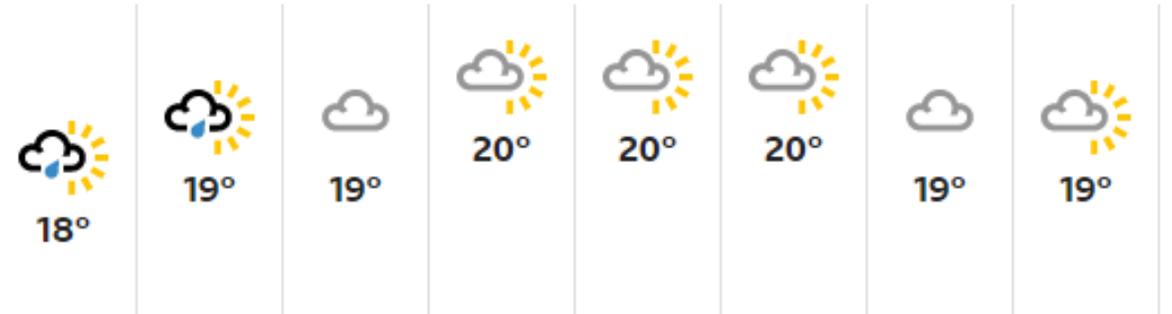
Thirty-six tenths and 4 hundredths



Three hundred and sixty four hundredths



Place value in real life



To recap the themes covered this session

- Some basics

The Base 10 System, numbers vs. digits

- Understanding numbers and their digits

Values of digits and how they change in the place value system, different values for the same digit, zero, decimal place value

- Flexible thinking

How place value and the Base 10 system can be applied to promote flexible thinking

Session Evaluation

Please complete the session evaluation 😊 as this will support development of further sessions.

There will be further workshops in the year:

- Addition/Subtraction
- Multiplication/Division
- Fractions
- Measures
- Shape