

## 2. Place Value

If you want your child to succeed in Mathematics and want something that can be done at home to help them in the early years of schooling, then what is detailed below is one of the most important things they can practise at home to improve.

Place Value is referring to the idea that 1 is not necessarily one or 2 is not necessarily two etc.

With the number 14, the 1 does not mean 1, it represents one 10.

A lack of understanding of these concepts often leads to misconceptions in the future and difficulty accessing all of the curriculum in future years.

Many of us who went to school before the 2000's, were taught these concepts in very different ways to which they are taught today. Hopefully, this will help explain how things are taught nowadays.

### What does a number mean?

To be able to work flexibly with numbers is an important aim of mathematical education. Key to this is understanding the Place Value system.

When counting collections of items, it is important to understand that when you count 10 or more, it is recorded slightly differently to a single-digit number. Knowledge of the column system in mathematics is vital.

Billions			Millions			Thousands					
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones

If students can understand that 10 ones are equal to 1 ten and ten tens are equal to 1 hundred, then this is going to help them considerably.

From the table you can see the repetitive element of the Place Value system.

Students will focus on two-digit numbers in year 1 and three-digit numbers in Year 2, before steadily increasing in later years to thousands and beyond as well as the decimal system, once they are ready.

### Expanded Form

When reading and writing numbers, students need to understand what each digit actually represents.

#### Example 354

This number, as we know, is three hundred and fifty four.

Students also need to understand that the 3 means 300, the 5 means fifty and the 4 means 4. So there are 3 hundreds, 5 tens and 4 ones.

They also need to understand that there are 35 tens and 4 ones or 354 ones, as these are other ways these can be described.

275 in expanded form is  $200 + 70 + 5$

## The order numbers are taught

Once students understand the numbers 0-10, they move on to numbers from 11 to 100. They are not taught in numerical order and this comes down to the English language. Eleven and twelve, don't fit into the pattern of many of our numbers when in word form.

We begin with the numbers 60, 70, 80 and 90 because of how they are written and what they mean. Sixty is made up of old English Six-Ty, meaning six tens. This is a logical way to introduce these numbers to students so that they can make links to the Place Value system.

From here, we work on 20, 30, 40 and 50 as the same language is not as clear.

Finally we finish with the teens.

Another reason we teach two-digit numbers in that order is linked to how we read (left to right). Sixty when, read left to right, has the six before the ty and that is how it looks in numerical form, 60.

However, sixteen means six and ten, but when read left to right it also sounds like the 6 is written first, whereas we know the 1 is before the 6.

By teaching in this order we use a logical approach through language to help develop understanding of number before attempting the numbers that don't fit the rule of language.

## Activities / Games at home

There are many activities and games that can be played at home. Games are a great way to learn number facts as they often do not feel like you are learning.

- Use playing cards or Uno, turn over two cards and create a two-digit number. Write that number in expanded form. This can also be done with three-digit numbers or beyond, however, only after a student has a solid understanding of smaller numbers.
- Lay the cards out upside down, in a grid in the same way you play 'Memory'. Each player selects two cards and makes a two-digit number of their choice. The person with the largest number wins. Play several rounds or pick a target number to be closest to, instead of aiming for the highest number.
- Play Place Value Yahtzee. The example below is for a 3-digit number focus, but can easily be adapted. (Use 2 dice for 2-digit numbers, 3 dice for 3-digit numbers etc.).

Category	3-digit number
A number with 3 in the hundreds place	
A number with 5 in the ones place	
A number with 2 in the tens place	
A number whose tens and hundreds digits add up to 6	
A number whose hundreds and ones digits add up to 9	
A number whose digits add up to 11	
A number with two of the same digits	
WILD! Any number can be written here	
If you cannot fill in one of the categories, put an 'X' next to it. At the end of the game, compare your number to your opponent's number. Whoever has the largest number gets 1 point.	

- There are many other games that can be played. You can even make up your own!
- There are many Place Value games online which can be used to support/practise, but shouldn't be used as the sole method of practising.

Have fun!