# Helping your child with the new Curriculum:
# 3-6 Representing numbers using place value (Stage 2) & Representing Numbers (Stage 3) Glossary

This week the glossary will be focussing on representing numbers using place value for Stage 2 and Representing Numbers for Stage 3.

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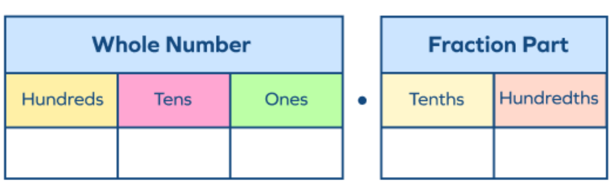
| **Place value system** | The place value system has 4 properties: positional, base-ten, additive and multiplicative.<br>The value of a digit is determined by its position in a number relative to the ones (or units) place. For example:<br>● in the number 924, the 4 denotes 4 ones, the 2 denotes 2 tens or 20 ones, and the 9 denotes 9 hundreds, 90 tens or 900 ones. |
| **Standard place value** | Standard place value/form is splitting numbers into the individual values of each digit in a number.<br>**Example**<br>485: 400 + 80 + 5. 4 hundreds, 8 tens, 5 ones. |
| **Non-standard place value/ forms** | Non-standard place value/form is breaking numbers in ways that don't use the place value of each the digit<br>**Example:**<br>Such as 67 000 as  or 670 hundred. |
| **digit** | Digits are the single numbers used to represent values in math. 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 are used in different combinations and repetitions to represent all the values in math. Any of the ten numbers from 0 to 9 can be represented by a symbol known as a digit. |
| **zero** | The introduction of zero into our number system has its own history (Joseph 2008).<br>Zero is a symbol, a number, a magnitude and a place holder in a positional number system.<br>Zeros in numerals can have two different roles:<br>● to name the number<br>● as place holders to parse the number into its component parts. |
| **Internal zero** | Internal zeros in whole numbers can be described as syntactic zeros. They represent a null quantity for a specific power of ten.<br>Internal zeros are more difficult to interpret than lexical zeros eg 1002 is more difficult to interpret than 1000.<br>Students need opportunities to learn to read and name the component parts of numbers with internal zeros. Without clear guidance on reading numerals students may incorrectly read 1001 as 'one hundred and one', 'one hundred and ten' or 'ten hundred and ten' (Moura et al. 2021). |
| **ones** | Ones in maths represents the place value of the rightmost digit in any number.<br>**For example,**<br>37 has 7 ones. |
| **tens**<br>**hundreds**<br>**thousands** |  |
| **regroup** | In mathematics, regrouping can be defined as the process of making groups of tens when carrying out operations like addition and subtraction with two-digit numbers or larger. To regroup means to rearrange groups in place value to carry out an operation.<br>Here's how we regroup ones and tens to add 248 and 75. |

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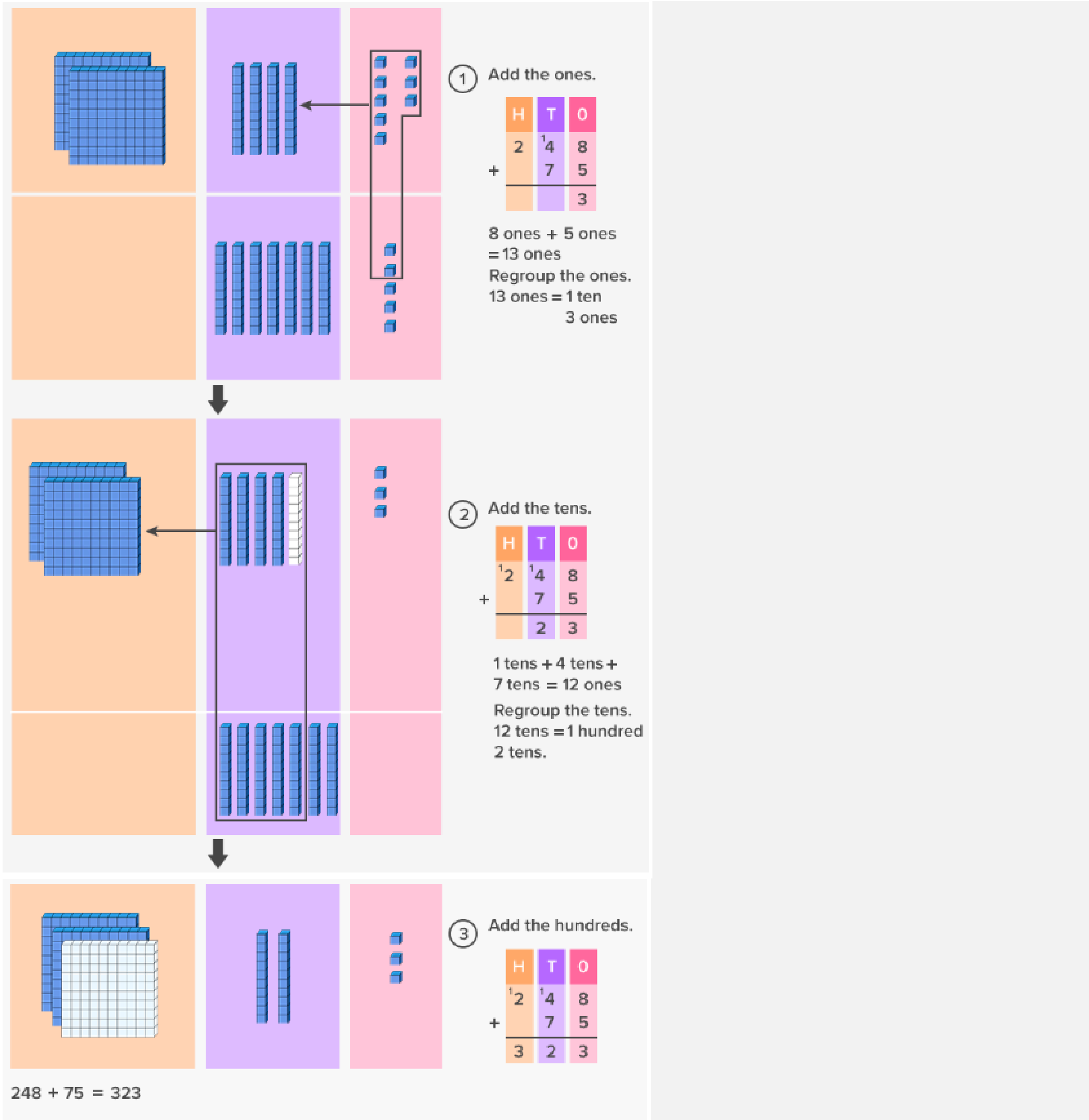
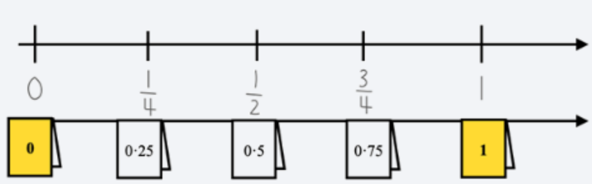
| | <br> |
| **Number line** | In mathematics, a number line can be defined as a pictorial representation of numbers on a straight line. The numbers on a number line are placed sequentially at equal distances along its length. It can be extended infinitely in any direction and is usually represented horizontally.<br>The numbers on a number line increase as one moves from left to right and decrease on moving from right to left.<br>**Example(s):**<br>Use a number line to show that $\frac{1}{2}$ is the same as 0.5, $\frac{1}{4}$ is the same as 0.25, $\frac{3}{4}$ is the same as 0.75<br><br> |
| **Number expander** | Number expanders can assist students to understand place value and renaming numbers into |

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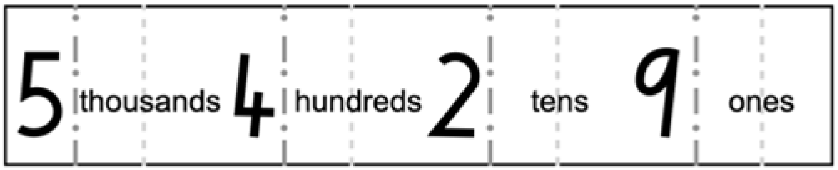
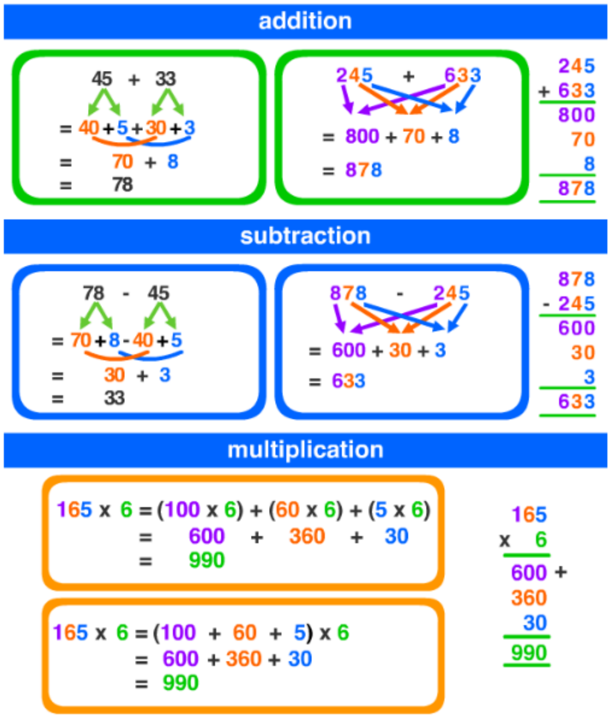
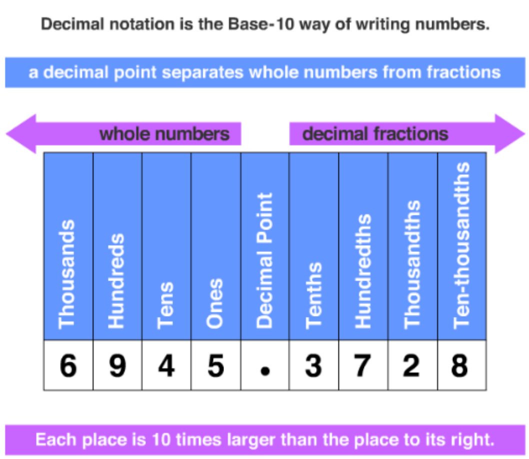
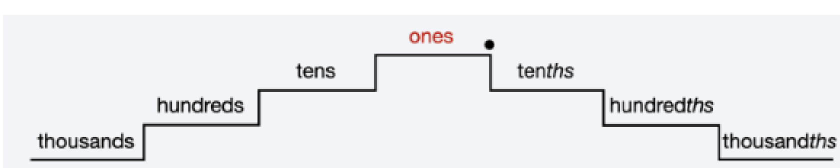
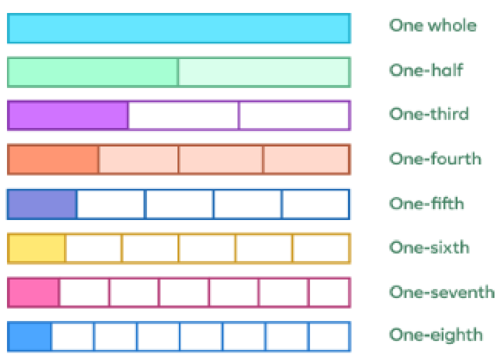
| | non-standard forms.  |
| **partition** | A strategy that splits (partitions) numbers into smaller addends, factors or place values to make calculations easier.  |
| **Decimal notation** |   |
| **Decimal point** |  **A Decimal Point can be defined as a point or a dot which is used to separate a whole number from the fractional part of a number. It is also known as Decimal Mark.** The symbol of decimal point is (.). We use decimals in our daily life as well. For example: If the cost of a shirt is $10 and 50 cents, we can write it as $10.50. |
| **tenths** | The first place immediately to the right of the decimal point is the tenths place. The term "tenths" in math is also used for describing decimal fractions with a denominator of 10. Tenths are decimals with only one decimal digit. |

<table>
<tr><td>hundredths</td><td>The hundredth place is the second place after the decimal in the decimal place value system. The decimal place value system for the whole part of a decimal number is the same as the whole number value system. However, we get the fractional part of the decimal number as we move toward the right after the ones place.</td></tr>
<tr><td>thousandths</td><td>Thousandths is the third place after the decimal point. The decimals that have three decimal digits are also referred to as thousandths.<br>Examples of thousandths: 0.005, 1.345, 56.789</td></tr>
<tr><td>Fraction strips</td><td>In math, a fraction strip can be defined as a visual representation of fractions that helps in comparing fractions and carrying out operations with fractions.<br>Fraction strips are a part-to-whole representational model.<br>Each part of a fraction bar represents one unit out of a whole. This is why it is known as a part-to-whole representation.<br>
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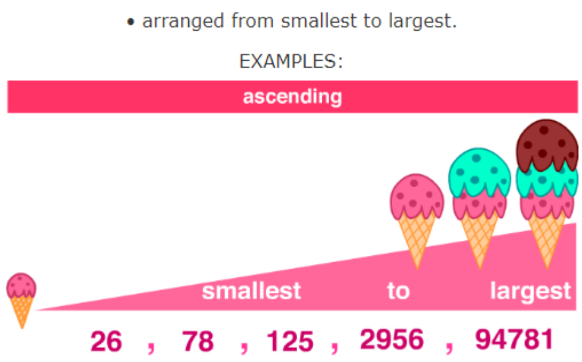
<tr><td>Ascending</td><td>
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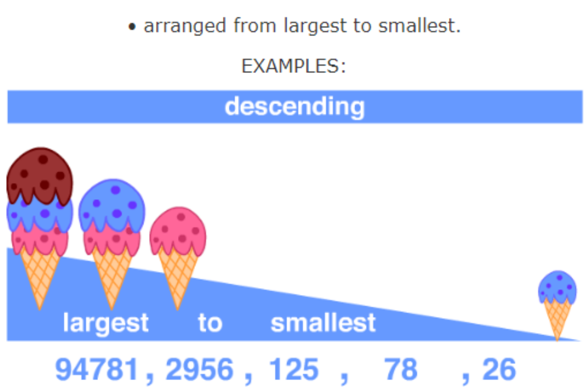
<tr><td>descending</td><td>
</td></tr>
<tr><td>Expanded notation</td><td>Expanded form is a way to express a number as the sum of the place values of its digits.<br>In the expanded form, we break up a number according to the place value of digits and expand it to show the value of each digit. For example, the expanded form of 943 is given below.</td></tr>
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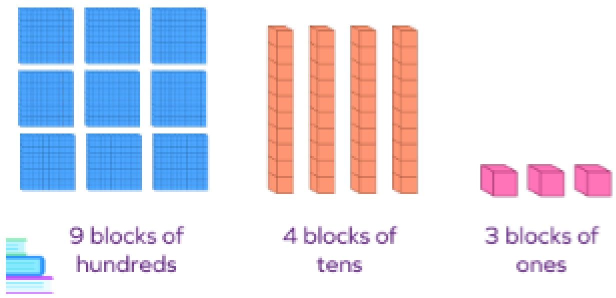
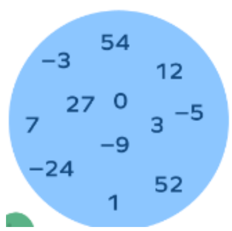
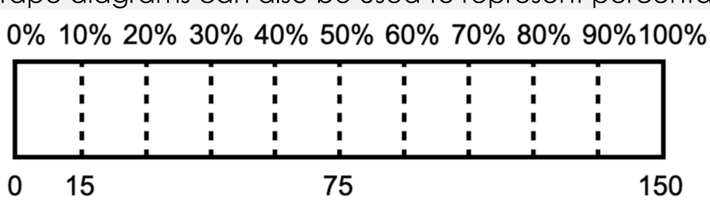
| | <br>943 = 9 hundreds, 4 ten and 3 ones.<br>943 = 900 + 40 + 3 |
| **Benchmark fractions** | A benchmark fraction is a fraction that is used as a reference point. It is a commonly used or familiar fraction that acts as an anchor point in comparisons. When estimating, we often make use of benchmark values such as one-half (50%, 0.5) or one-quarter (25%, 0.25).<br>In Stage 3 Represents numbers, we extend the benchmark fraction values to include one-tenth (10%, 0.1). Although one-tenth is difficult to estimate as a measurement, it has been included because of its utility in working with the metric system and our base-10 number system.<br>It is important that students develop a robust understanding of the equivalent representations of benchmark values (Fuchs et al. 2017).<br>Students should know that 0.5 = and 0.5 is not . |
| **integer** | An integer is a Latin word that means “whole” or “intact.” Hence, integers include all whole numbers and negative numbers without fractions and decimals.<br>We can define integers as numbers that can be written without a fractional component. They can be positive, negative, or zero.<br> |
| **Negative number** | Any number less than zero and is written with a minus sign.<br>The idea of negative numbers has existed for at least 1400 years. Brahmagupta expressed negative numbers as debt in India in about 620 CE. He also developed a series of rules for working with ‘fortunes’ (positive numbers) and ‘debts’ (negative numbers). These rules included: ‘A fortune subtracted from zero is a debt’, as well as ‘A debt subtracted from zero is a fortune’. Students learn to operate with negative numbers in Stage 4. |
| **Positive number** | A number greater than zero. |
| **Per cent** | The word 'cent' is derived from the Latin word *centum*, meaning 'one hundred'. 'Per centum', the Latin origin of per cent means ‘by the hundred'. |
| **Tape diagram** | Our base-10 number system makes it easy to find 10% of a quantity. For example, 10% of 150 is 15, so 20% of 150 is 2 lots of 15, 30% is 3 lots of 15 and so on.<br>Tape diagrams can also be used to represent percentages as a proportion of the total amount.<br> |