Guidance for teachers – Upper KS2 Fractions, Decimals, Percentages

Segment 3.10 Linking fractions, decimals and percentages

These short videos are intended to provide your pupils with interactive lessons whilst they are learning from home. You can choose how regularly you set them for your class. Some of the learning might be consolidation and practice which aids confidence and retrieval and helps build firm foundations for moving on to future areas of mathematics. It is important that pupils experience these in the suggested order. They have been designed to be a coherent sequence of learning which builds on previous understanding and exemplify a teaching for mastery approach.

General features of a teaching for mastery approach, which can be found within these lessons:

- ***Stem sentences*** which promote precise mathematical vocabulary and generalisations for all pupils
- ***Representations*** which are carefully chosen and can be concrete, iconic or abstract and that move between the three.
- ***Opportunities for deepening understanding for all pupils*** - using small steps of learning enables pupils to learn together and gain deep conceptual understanding.
- ***Independent practice and retrieval*** - you could ask the children to send you their practice activities so that you can check understanding.

Lesson 1 – This is the first lesson in a sequence of lessons which focus on fractions, decimals and percentages. Children will already have encountered both fractions and decimals. This first lesson is a recap of how tenths and hundredths can easily be written as decimals. Using representations, such as Dienes and number lines, connections are made between fractions and their decimal fraction equivalents, starting with a focus on one tenth and one hundredth.

Lesson 2 – Taking each fraction in turn, it is considered whether one can easily be split or divided into the number of parts as determined by the denominator. Ten tenths divided into two equal parts results in five tenths in each part which helps us to see that one half is equivalent to 0.5. When looking at one third, attention is drawn to the fact that there is always one unit of a power of ten that is left over which needs to be divided into three, so a recurring decimal is created.

Lesson 3 – The learning from the previous two lessons is now applied to non-unit fractions and their related decimal equivalents. Counting in fractional and decimal steps provides the opportunity to notice that values at the same point on a number line can be expressed in a variety of ways. The number line is then applied to scales (horizontally and vertically) in the context of measures, for example on a one litre measuring jug indicating that when it is half full this is equivalent to 0.5l.

Lesson 4 – Using the commutative law of multiplication, $\frac{1}{2}$ x 1,000 can mean one half of 1,000 but can also mean 1,000 halves as both give the same total. Different representations are used to support children to see how this law of multiplication can be understood in the context of fractions. Children then compare a fraction with a decimal, either converting them both to fractions or both to decimals. They are encouraged to use chains of reasoning to explain their thinking.

These lessons have been planned from the NCETM Mastery PD Materials. Please access the original materials here.

With thanks to Maria Chambers (Cheshire and Wirral Maths Hub), Natasha Harrison (Bucks, Berks and Oxon Maths Hub), Denise Heaton (Turing NW Maths Hub) and Joseph Kemp (Yorkshire and the Humber Maths Hub).