

## Guidance for teachers – Upper KS2 Number, Addition and Subtraction

### Segment 1.29 Using equivalence and the compensation property to calculate

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 27** – Looking at either a decrease in the subtrahend or an increase in the subtrahend, examples are worked through in which only the change in the subtrahend is given (and not the new subtrahend) and children are encouraged to work out the change in the difference using reasoning rather than calculation.

**Lesson 28** – Using the relationship between the subtrahend and difference, children deepen their understanding of place value by subtracting multiples of 0.001, 0.01, 0.1, 10 etc. They also explore problems in which the new difference must be found and where the new difference is given, but the minuend or subtrahend is unknown.

**Lesson 29** – Children should have a secure understanding of the = symbol. This lesson focuses on how to balance equations when there is not an obvious relationship between the addition expressions on either side of this symbol, i.e. where the compensation property of same sum cannot be efficiently applied to find the missing value. Estimation is used as well as knowledge of place value.

**Lesson 30** – This lesson builds on the previous one where this time the expressions either side of the = symbol are subtraction expressions. Again, children are encouraged to estimate before considering the strategy to use to work out the missing value, where the compensation property of same difference cannot efficiently be applied.

These lessons have been planned from the NCETM Mastery PD Materials. Please access the original materials [here](#).

With thanks to Adrian Cannell (North West Three Maths Hub), Imogen Furlong (North West One Maths Hub), Gillian Knight (Bucks, Berks and Oxon Maths Hub) and Andrew Whitehead (London South West Maths Hub).