

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. You could also set supplementary activities to extend practice and develop fluency in counting in steps of 2, 5 and 10.

Lesson 5 – Now that the children are familiar with the compensation property of addition and subtraction as a calculation strategy, they apply the same property to balance equations. The aim is for children to deepen their understanding of the relationship between the values of the addends and the sum.

Lesson 6 – Here the children explore and apply the compensation properties of addition and subtraction in a range of contexts and gain a deeper understanding of equivalence and the meaning of the equals sign. They look at how the part part whole diagram and a bar model can help to see the structure of the maths.

Lesson 7 – In this lesson equations are compared where the sums are not the same. The relationship is drawn attention to where if one of the addends is increased, and the other is kept the same, the sum increases by the same amount.

Lesson 8 - If one addend is increased or decreased, and the other is kept the same, the new sum must be found. Children are encouraged to apply what they know about the structure of the same sum and adjust the sum according to what has been added to or subtracted from one of the addends if the other is kept the same. This strategy is applied where it is easier than recalculating. It is extended to problems with larger numbers and decimal fractions.

Lesson 9 – The generalisation 'If one addend is changed by an amount and the other addend is kept the same, the sum changes by the same amount.' is then used to solve isolated calculations mentally by relating them to known facts, rather than automatically always using a written method first. For example, if I know $0.25 + 0.75 = 1$ then I know that $12.25 + 0.75 = 1 + 12$

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

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