A lesson using the Slavonic Abacus

The article 'Using the Slavonic Abacus in the Classroom' gives a brief introduction to some of the theory that underlies an approach to mathematics education that may be supported by the use of the Slavonic Abacus, especially with visual and kinaesthetic learners. The more detailed notes given below may be used to plan one or more lessons using the Slavonic Abacus (available from xes.org.uk) to establish and practise some key concepts relating to Number and Place Value.

Lesson Aims

- Establish a concrete, visual model of numbers up to 10, with numbers between 6 and 10 being composed of 5 +.

- Understand complements to ten.

- Establish a concrete, visual model of numbers of tens up to 100, with numbers between 60 and 100 being composed of 50 +.

- Understand complements to 100 in tens.

- Establish a concrete, visual model of 2-digit numbers composed of tens and units.

- Understand complements to 100.

Demonstrations on the Slavonic Abacus

Numbers to 5

Use the top row of a large Slavonic abacus to show numbers between 1 and 5.   Move all the beads in a single movement, not one at a time.

Without counting, pupils call out each number as you show it on the abacus.

Between numbers, lift and tilt the abacus to move the beads back to the 'unmoved' (zero) position.

For example…

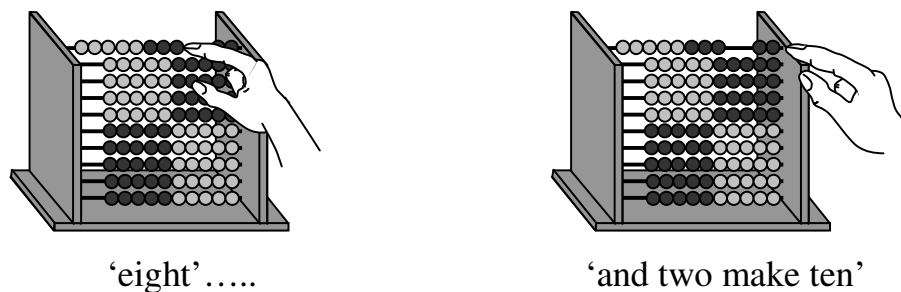'two'…..   *tilt*   'four'
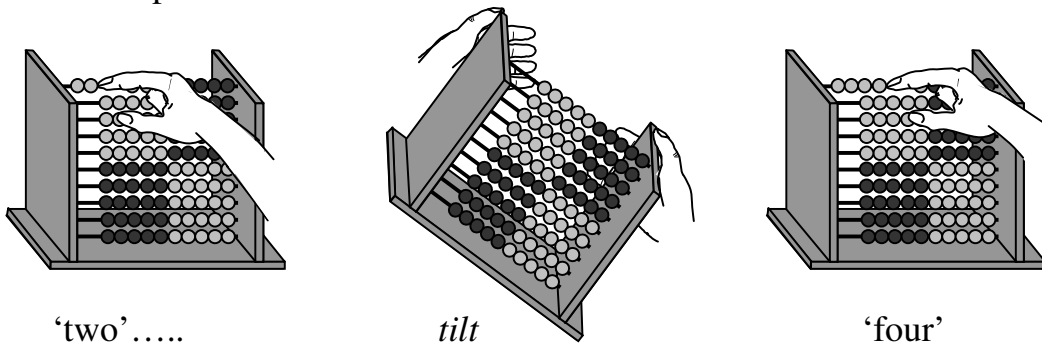
Single-digit numbers and their complements to 10

Use the top row of a large Slavonic abacus to show any single-digit number.

Point first to the number, and then to its complement to 10.
Without counting, pupils call out the number, and then they call its complement to 10.

For example…

'eight'…..   'and two make ten'

Numbers of 10s and their complements to 100

Explain that each row on the abacus has *ten* beads.

Since we can see how many rows have been moved, we can see a number of tens at a glance, *without* counting.

Use the Slavonic Abacus to show a number of tens, being careful to move all the rows of *ten* in one movement.
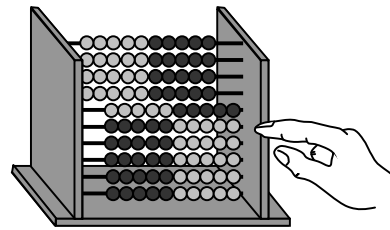
Point first to the number, and then to its complement to 100.

Without counting, pupils call out the number, and then they call its complement to 100.

For example…
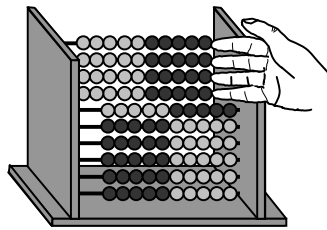
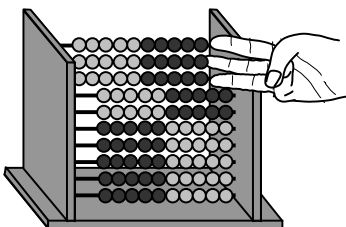'forty'…..   'and sixty make a hundred'

Two-digit numbers and their complements to 100

Use the Slavonic Abacus to show a two-digit number, being careful to move all the rows of *ten* in one movement.
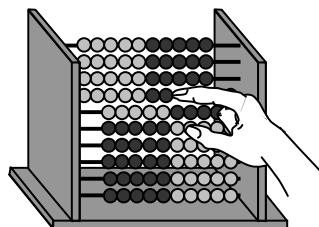
Point first to the number, and then to its complement to 100.

Without counting, pupils call out the number, and then they call its complement to 100.
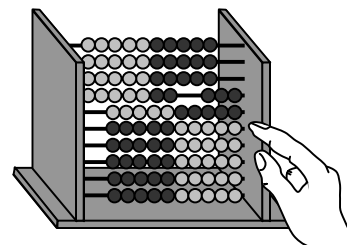
For example…

'thirty-'…..   '…..seven….'   'and sixty-three make a hundred'

These activities may form part of a single lesson for older pupils, or they may be spread out over a longer period with more opportunities to practise recognising first single-digit numbers, then numbers of tens, then two-digit numbers. The idea of complements to ten or a hundred may be introduced later if this is more appropriate to your pupils. The key point, at whatever level they are working, is that the pupils (and you) should learn to just see the numbers of beads being shown on the Slavonic Abacus, without counting.

This work may be reinforced with the Pupil Sheets. Pupils will need access either to a real or to the electronic Slavonic Abacus, both available from xavier.bangor.ac.uk.

The first of the Pupils Sheets presents exercises using both numbers and money. Money offers a useful alternative concrete model of two-digit numbers and complements to 100, with which many pupils (particularly in secondary school) are likely to be familiar. The coins shown on the Pupil Sheet are in sterling, but graphics for other decimal currencies may be substituted.

*Many more ideas for working with visual and kinaesthetic learners in the mathematics classroom may be found in the book **Teaching Maths to Pupils with Different Learning Styles**, by Tandi Clausen-May (London: Paul Chapman Publishing, 2005, ISBN 1-41290-359-9).*

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