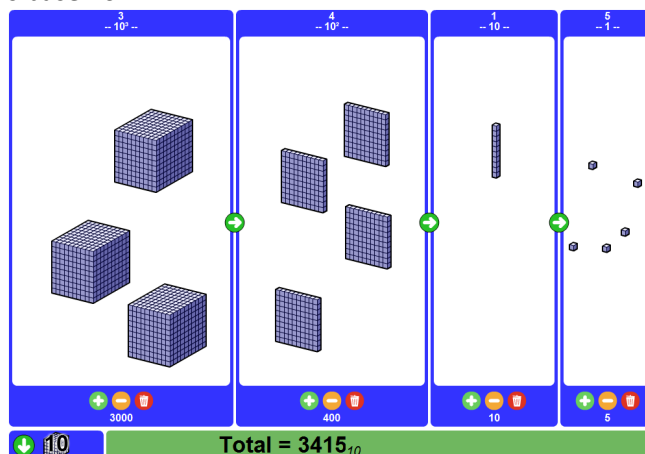


# Students' and Teachers' Notes for the “Bases” Learning Object

This learning object allows the user to make numbers in different bases using place value equipment. By default the equipment shows base 10.



The user can use the and buttons to add and remove blocks from each column. By clicking the rubbish bin button all the blocks in the column are cleared.

The number of blocks and the place value of each column is written above the column, for example 4, and  $10^2$ , and the total value of each column is written below, for example 400. At the bottom of the screen the total of the whole number is written.

Each column can hold more than 10 blocks. You can move the blocks around inside the column by clicking and dragging them.

The right arrow appears when there are one or more blocks in any of the three columns on the left. By clicking the right arrow you can see one of the blocks move to the border, break up into parts, and move to the column to the right. The numbers above and below each column change to match the blocks. The overall total does not change.

The left arrow appears when there are enough blocks in any of the three right hand columns to combine and move to the next column. By clicking the left arrow you can see the blocks move to the border, join together, and move to the column to the left. Again the numbers above and below the columns change to match the blocks.

By clicking on the arrows at the bottom left of the screen the base can be changed to any number from 2-10. The total of the whole number shown at the bottom of the screen is written in the base which the learning object is currently displaying. For example, in the image below the total is 1332<sub>5</sub>, which is equivalent to 57<sub>10</sub>.

