

## Concrete objects (Children's mathematics)

*Bugs have six legs each. How many legs are there on three bugs?*

*You have six cookies and want to share them equally with two friends. How many cookies does each friend get?*

Children use many different strategies to solve problems like these. Children may count or skip count to get an answer, or use manipulatives to aid in counting, or draw a picture. At this stage, let them use whatever strategy they can, and let them learn from each other.

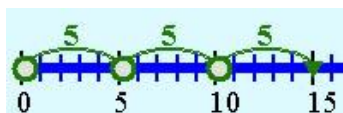
**Place value:** Use bundles of 10's and some ones in simple multiplication problems to learn place value:

*Each box of crayons has 10 crayons in it. Karen has 3 boxes of crayons and 4 extra crayons. How many is this? Write this number.*

**Distributive property:** Use base ten blocks to model  $16 \times 12$ , showing the distributive property ( $16 \times 10 + 16 \times 2$ ;  $10 \times 10 + 6 \times 10 + 10 \times 2 + 6 \times 2$ ) by regrouping the blocks.

## Pictures (Graphic representations)

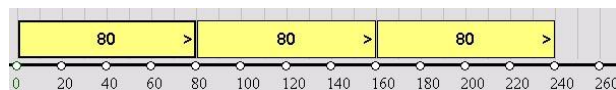
Skip counting on the number line:



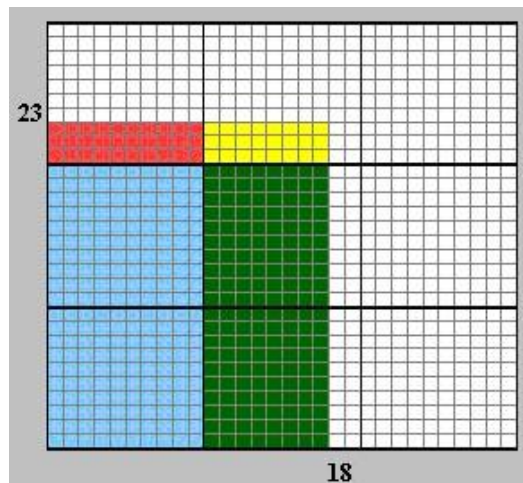
### Multi-digit multiplication:

Multiplying by 10's and 100's: Use number line bars, have students generate the pattern:

If  $8 \times 3$  is 24, what's  $80 \times 3$ ? What simple procedure can we use to do these quickly?



### Distributive property using area model:



## Symbols (Symbolic representations)

### Distributive property:

$$23 \times 18 = 20(10 + 8) + 3(10 + 8)$$

### The partial product method:

18 x	10	8	
23			
20	200	160	360
3	30	24	54
			414

$$\begin{array}{r} 23 \\ \times 18 \\ \hline 24 \\ 160 \\ \hline 200 \\ 30 \\ \hline 414 \end{array}$$

### Other methods:

Lattice method (also involves regrouping but no "little numbers" in the multiplication stage)

