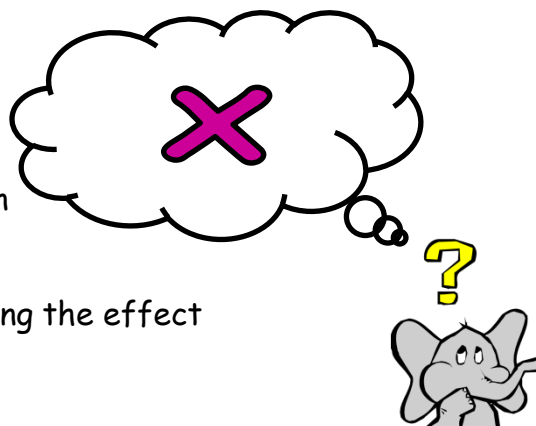


Progression in Teaching Multiplication

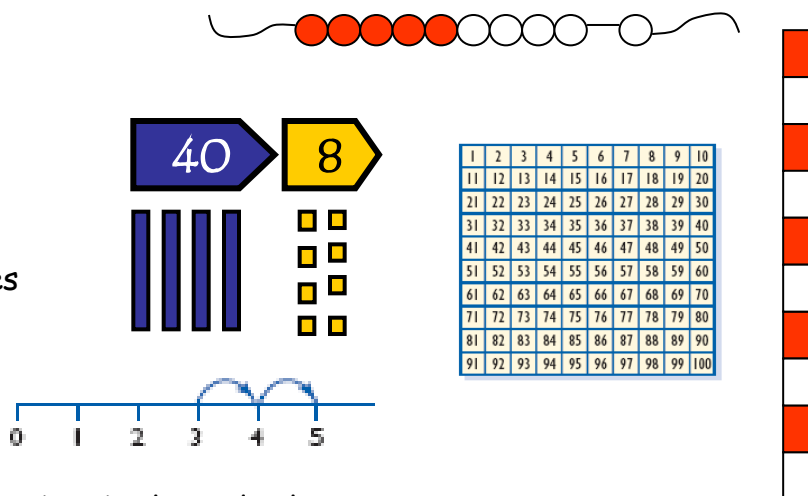
Mental Skills

- Recognise the size and position of numbers
- Count on in different steps 2s, 5s, 10s
- Double numbers to 10
- Recognise multiplication as repeated addition
- Quick recall of multiplication facts
- Use known facts to derive associated facts
- Multiplying by 10, 100, 1000 and understanding the effect
- Multiplying by multiples of 10



Models and Images

- Numicon
- Place value apparatus
- Arrays
- 100 squares
- Number tracks
- Numbered number lines
- Marked but unnumbered lines
- Empty number lines.
- Multiplication squares
- Counting stick
- Bead strings
- Models and Images charts
- ITPs - Multiplication grid, Number Dials, Multiplication Facts

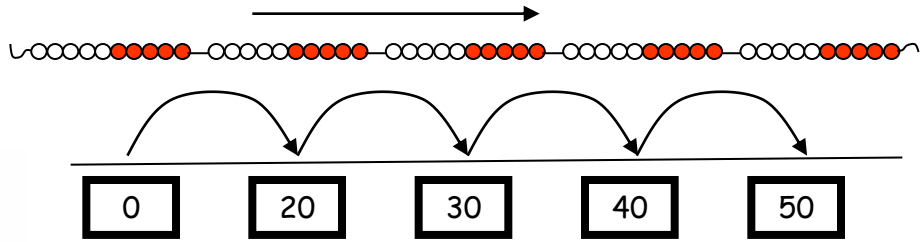


Vocabulary

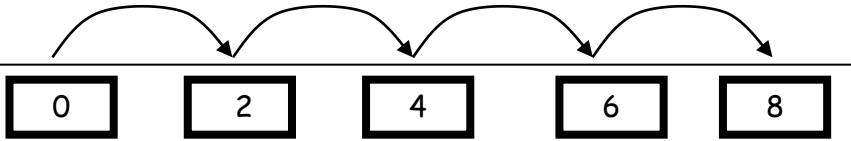
- Lots of
- Groups of
- Times
- Multiply
- Multiplication
- Multiple
- Product
- Once, twice, three times
- Array, row, column
- Double
- Repeated addition

multiplication **product**
once, twice, three times
double **groups of**
repeated addition **lots of**
array, row, column **multiply**
times **multiple**

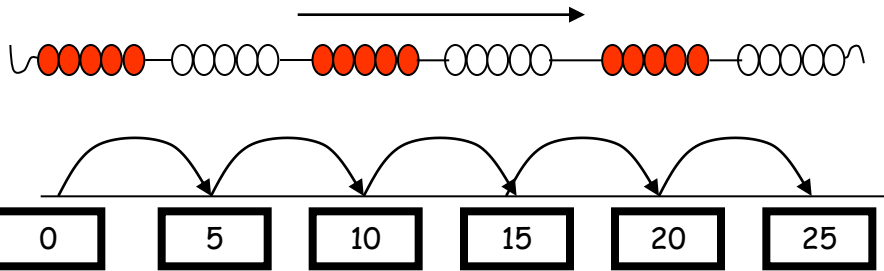
Count in tens from zero



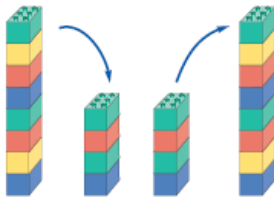
Count in twos from zero



Count in fives from zero



Know doubles and corresponding halves



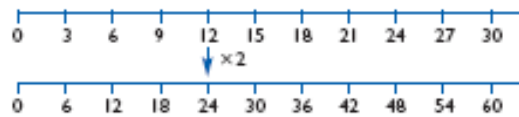
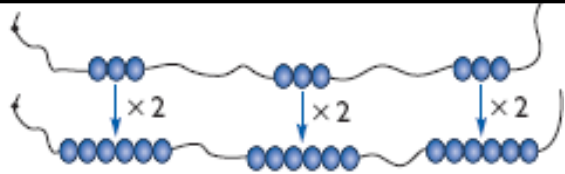
half of 8 is 4
 $8 \div 2 = 4$

double 4 is 8
 $4 \times 2 = 8$

Know multiplication tables to 10×10

Tables spider

Use known facts to work out new ones



$12 \times 2 = 24$

Twice as many

Understand that ...

$$24 \times 20 = 24 \times 2 \times 10$$

$$24 \times 50 = 24 \times 5 \times 10$$

Use factors to multiply

Understand multiplication as repeated addition


$$2 + 2 + 2 + 2$$

$$2 + 2 + 2 + 2 = 8$$

$$4 \times 2 = 8$$

2 multiplied by 4

4 lots of 2



$$2 \times 4$$



$$2 \times 4 = 8$$

$$4 \times 2 = 8$$



$$4 \times 2$$



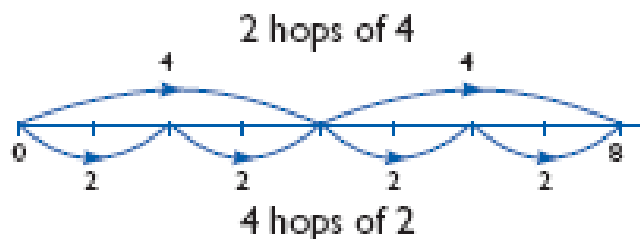
$$4 \times 2 = 8$$

$$2 \times 4 = 8$$

Understand multiplication as an array.

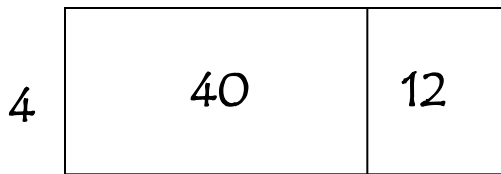
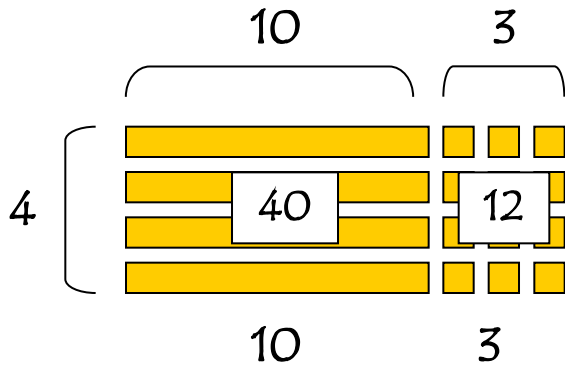
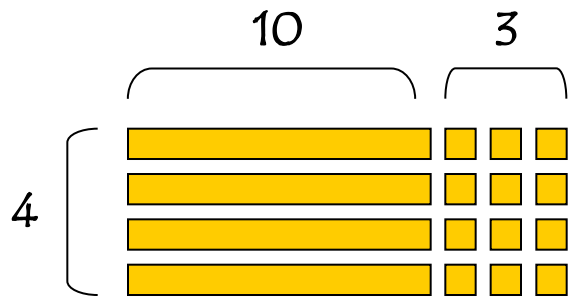
Numicon is great for this.

Understand how to represent arrays on a number line



Use place value apparatus to support the multiplication of $U \times TU$

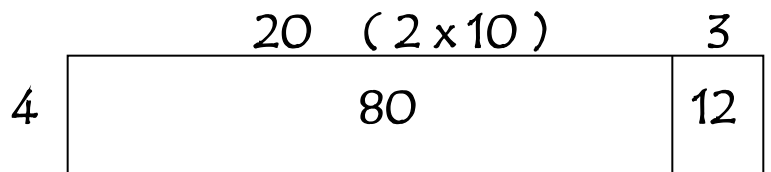
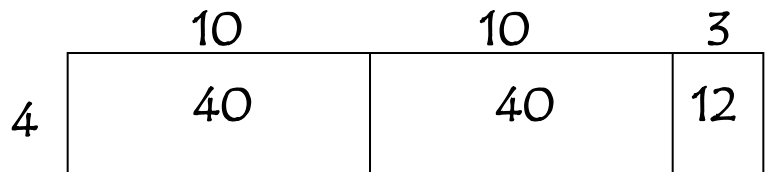
$$4 \times 13$$



$$40 + 12 = 52$$

Use place value apparatus to support the multiplication of $U \times TU$ alongside the grid method

$$4 \times 13$$



$$80 + 12 = 92$$

Use place value apparatus to represent the multiplication of $U \times TU$ alongside the grid method

$$4 \times 23$$

The grid method for multiplying TU x TU

$$14 \times 33$$

	30	3	
10	300	30	= 330 +
4	120	12	

$$= 132$$

$$\underline{\quad\quad}$$

$$462$$

300
120
30
+ 12
<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>
462

Multiplying TU x U
Ladder method / Expanded column multiplication

1 2 3
x 5
<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>
1 5 (3 x 5)
1 0 0 (20 x 5)
5 0 0 (100 x 5)
<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>
6 1 5

Short Multiplication TU x U

1 2 3
x 5
<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>
6 1 5
<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>
1 1

Long Multiplication for TU x TU

x	5 6	
	2 7	
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>	
	1 6 2	
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>	e
	4	
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>	
	1 3 5 0	
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>	e
	3	
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>	
	1 5 1 2	
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>	
	1	

x	5 6	
	2 7	
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>	
	1 6 2	
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>	4
	1 3 5 0	
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>	3
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>	
	1 5 1 2	
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/>	
	1	

6 x 7 = 42
6 x 2 (0) = 12
Place a zero to account for multiplying by tens
5 (0) x 7 = 35
5 x 2 (0) = 10
Use column addition to find total.

Once confident, exchanging/carrying row can be taken out.