Multiplication and Division Progression Policy

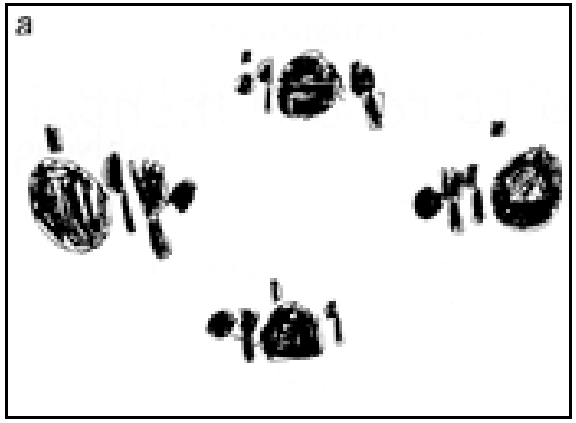
Early Multiplication

- I can count in 2s, 5s and 10s

10 20 30 40

4 x 10 = <u>40</u>

- I can place objects in equal sized groups

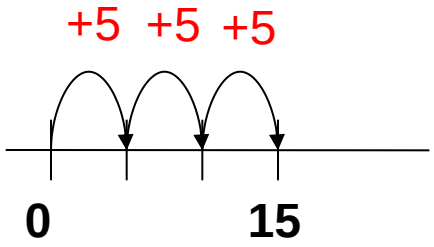


4 x 5 = <u>20</u>
4 groups of 5 = <u>20</u>

Early Multiplication

- I can link multiplication to repeated addition

3 lots of 5 = 5 + 5 + 5

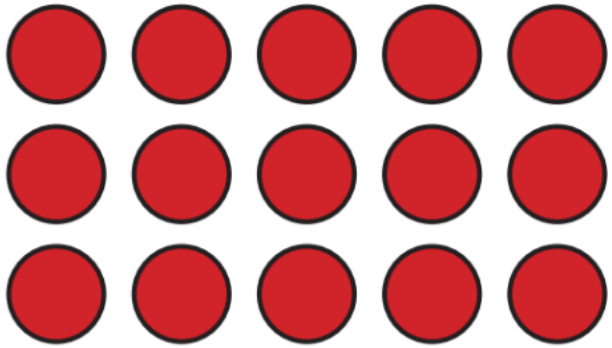


3 x 5 = 15

Use the counting on number line

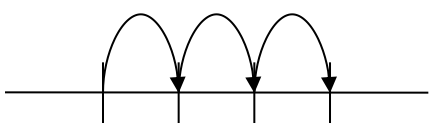
Early Multiplication

- I can make arrays to show multiplication

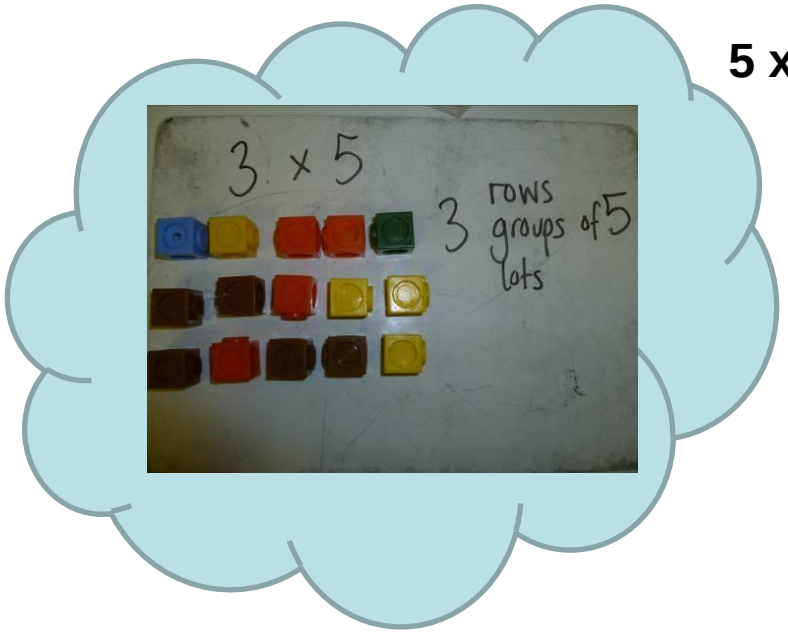


3 x 5 = 5 + 5 + 5

+5 +5 +5

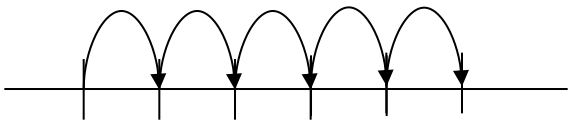


3 x 5 = 15



5 x 3 = 3 + 3 + 3 + 3 + 3

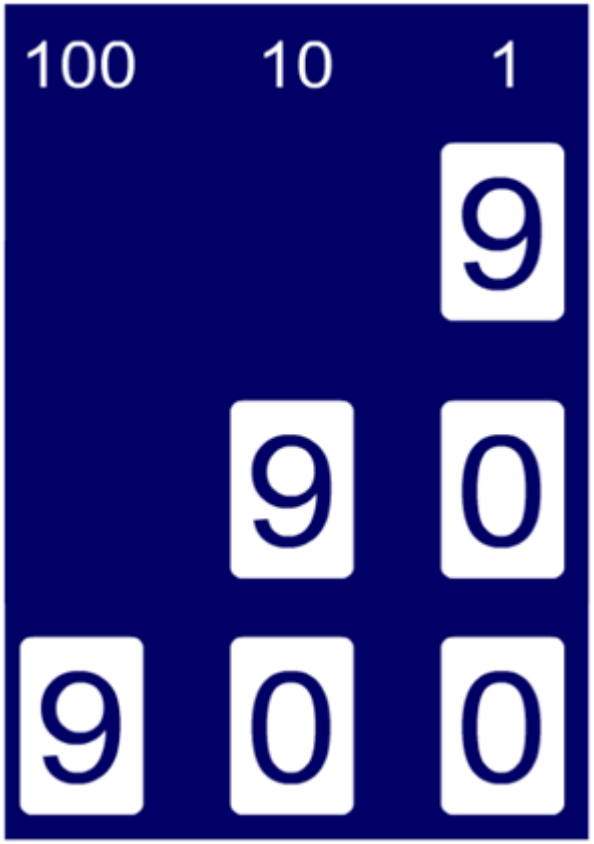
+3 +3 +3 +3 +3



5 x 3 = 15

Multiplying by 10 and 100

- I can multiply numbers by 10 and 100 using a place value grid



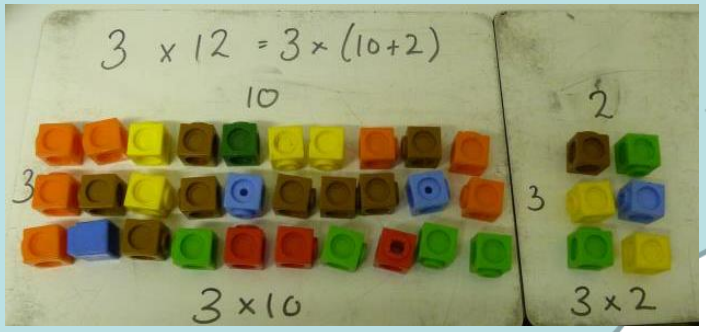
9 x 10 = 90

9 x 100 = 900

Moving Forward

- I can partition numbers to simplify multiplication.

$3 \times \mathbf{12} = 3 \times \mathbf{10} + 3 \times \mathbf{2}$

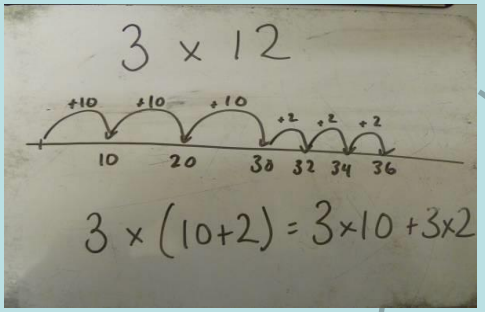


3 x 10 = 30

3 x 2 = 6

30 + 6 = 36

You can also show this on a number line



Moving Forward

- I can use a written method for multiplication.

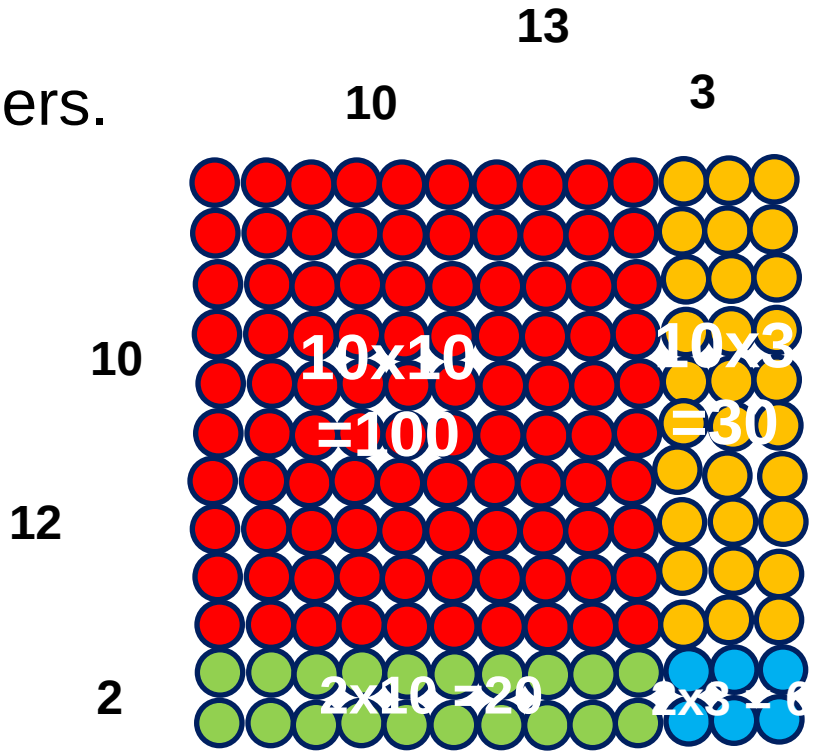
3 x 12 = 3 x 10 = 30
+ 3 x 2 = 6

30 + 6 = 36

- I can multiply 2 digit numbers.

13 x 12 = 13 x 10 = 130
+ 13 x 2 = 26

Your knowledge of times tables up to 10 x 10 and multiplying by 10 needs to be secure now!



Moving Forward

- I can use a written method for multiplication.

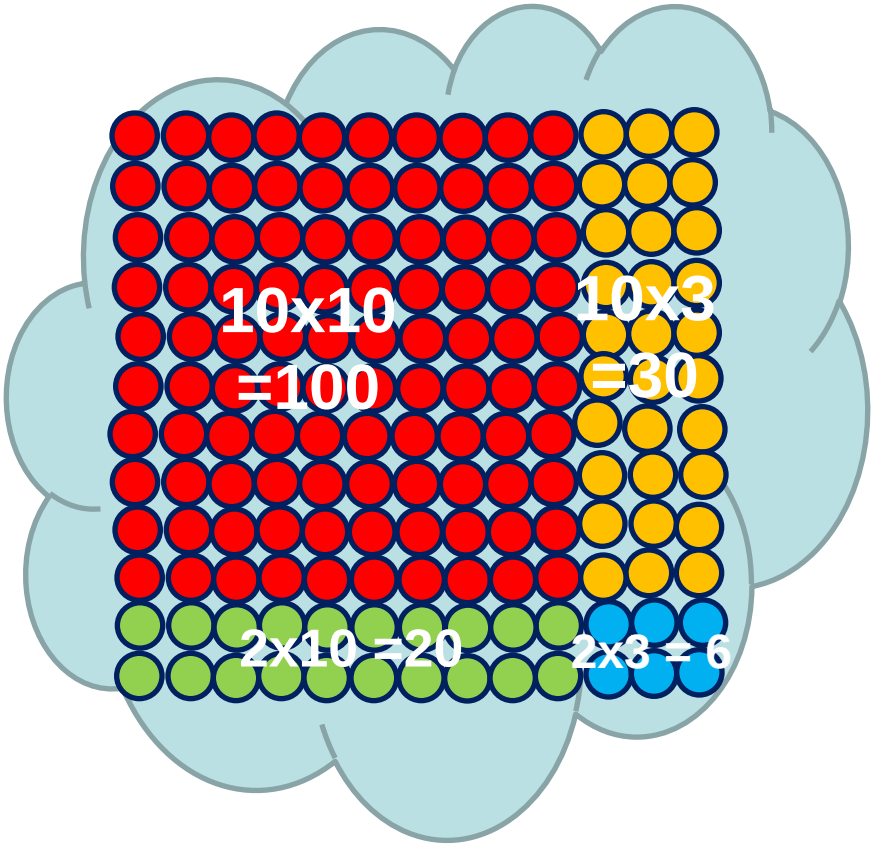
13 x 12

x	10	2
10	100	20
3	30	6

EBI…

13 x 10 = 130
13 x 2 = 26

120 + 36 = 156



Extending the Grid Method

- I can use the grid method to solve larger multiplication problems.

14 x 56

You must be secure with multiplying by multiples of 10 (e.g. 10 x 5 = 50, 10 x 50 = 500)

Estimate before carrying out a calculation, so you recognise if you make a mistake.

x	50	6
10	500	60
4	200	24

Estimate!
10 x 60 = 600

500
200
60
+24
784

500 + 200 + 60 + 24 = 784

Multiplying Decimals

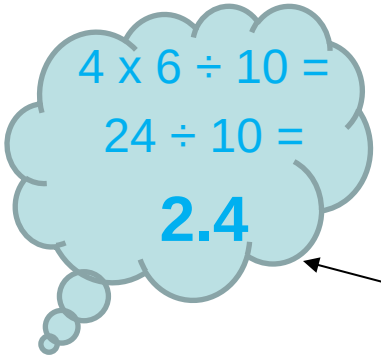
- I can use know facts to solve decimal multiplication

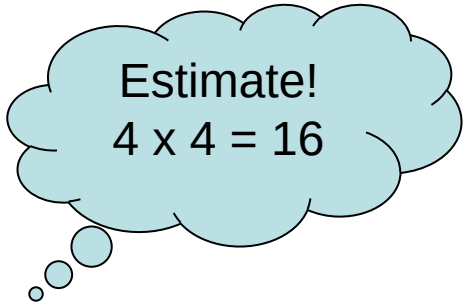
4 x 3.6

4 x 3 = 12

4 x 0.6 = 2.4

12 + 2.4 = 14.4



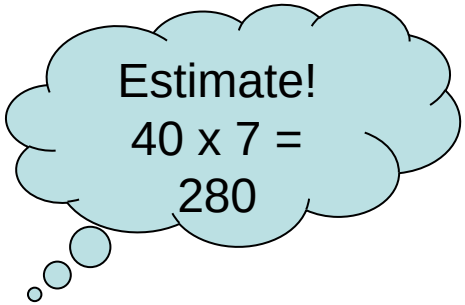


You must be secure at dividing by 10.

Moving Towards the Compact Multiplication Method

- I can use expanded multiplication

38 x 7



38
x 7

56 (8 x 7)
+ 210 (30 x 7)

266

Compact Multiplication Method

24 X 37

Estimate!
20 x 40 =
800

	2	4
X	3	7
1	6	8
7	2	0
8	8	8

(24 x 7)

(24 x 30)

Use what you know to do this!
(7 x 4) + (7 x 20)

24 x 3 x 10

Using what you know…

To know my times tables, all I really need to know is 1 x and 10 x…

1 x 6 = 6
2 x 6 = 12 (double 1 x 6)
3 x 6 = 18 (1 x 6 + 2 x 6)
4 x 6 = 24 (double 2 x 6)
5 x 6 = 30 (half of 10 x 6)
6 x 6 = 36 (5 x 6 + 1 x 6 OR double 3 x 6)
7 x 6 = 42 (5 x 6 + 2 x 6)
8 x 6 = 48 (double 4 x 6)
9 x 6 = 54 (10 x 6 – 1 x 6)
10 x 6 = 60

1 x 16 =
2 x 16 =
3 x 16 =
4 x 16 =
5 x 16 =
6 x 16 =
7 x 16 =
8 x 16 =
9 x 16 =
10 x 16 =

If I know…
3 x 24 then I know 30 x 24

If I know…
2 x 24 then I know 4 x 24

34 x 24 =
30 x 24 + 4 x 24

Early Division - Sharing

- I can share items into equal groups

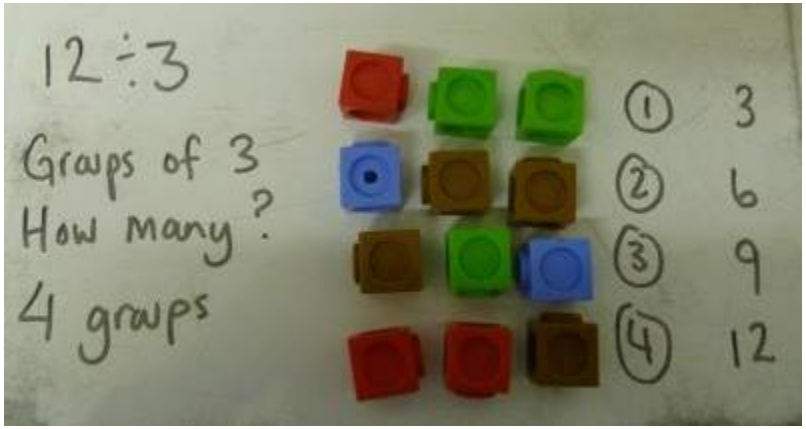
12 items are shared into 3 equal groups
How many in each group?

12 ÷ 3 = 4
12 shared into 3 groups is **4**

÷ can mean
shared into groups of …
or shared into … groups

Early Division - Grouping

- I can group objects in a structured way



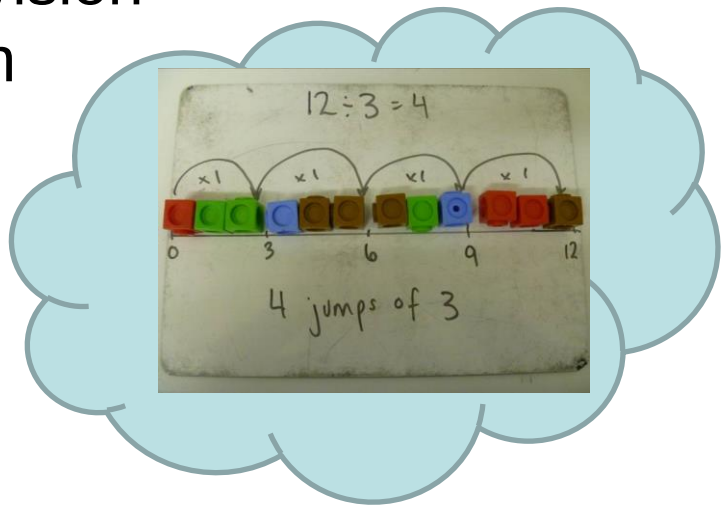
Can you spot the array?

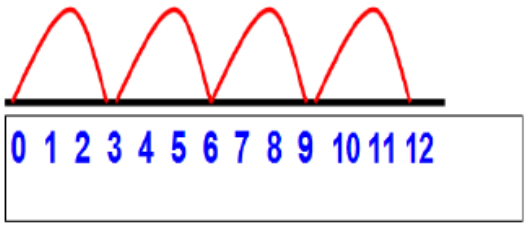
It is really important you think about grouping in a structured way, instead of piles, as this will help with moving to written methods.

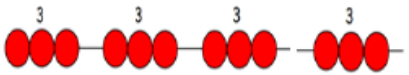
Division on the Number Line

- I can understand division as repeated addition

12 ÷ 3 =





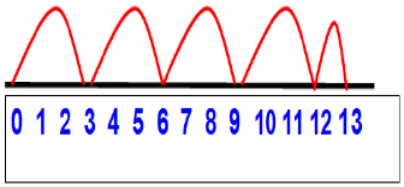


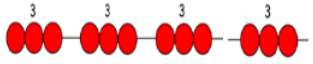
12 ÷ 3 = 4

Link to know facts:
3 x 4 = 12

Move on to -
repeated addition with remainders

13 ÷ 3 =





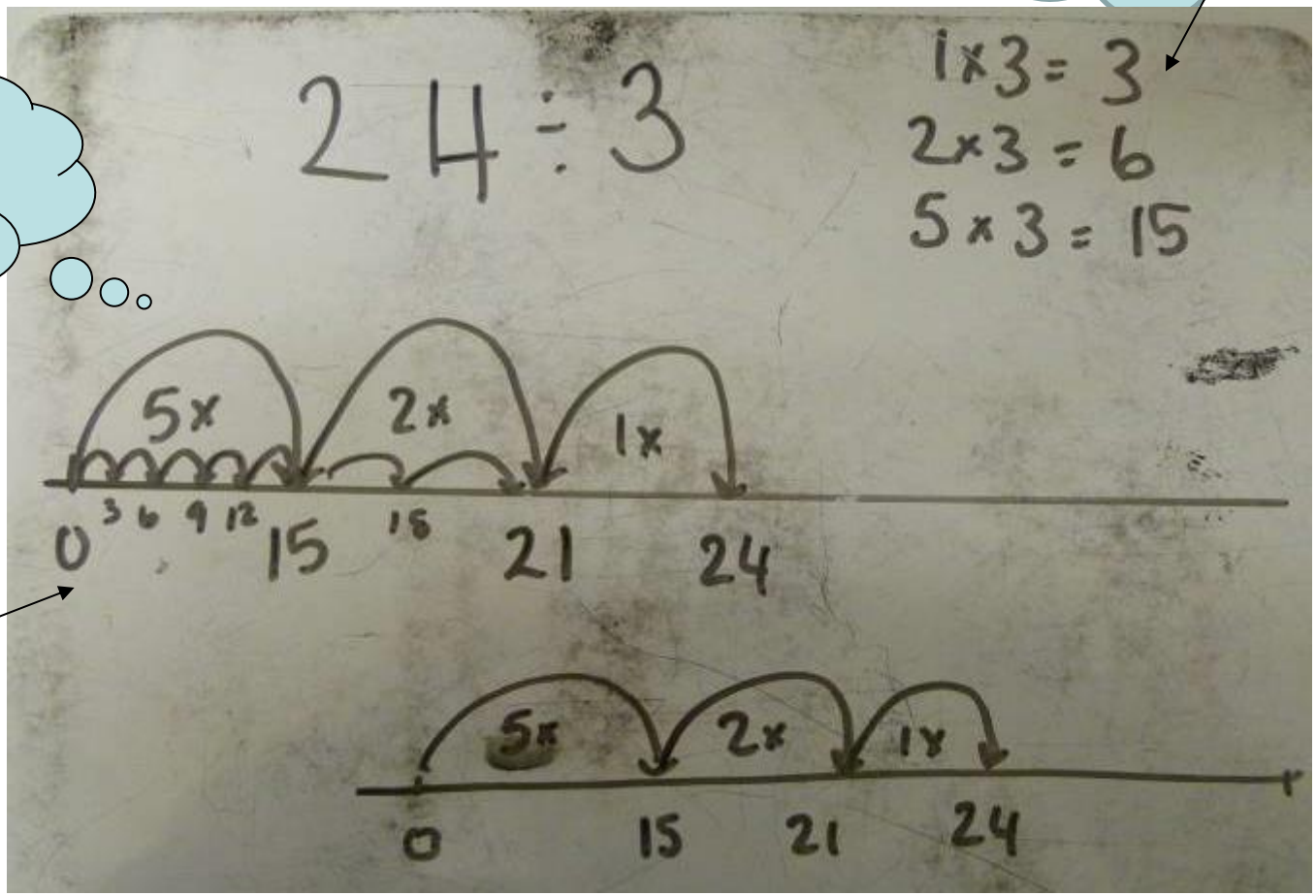
12 ÷3 = 4 r 1

Becoming More Efficient…

- I can group the divisor to help divide larger numbers

Beginning to build a menu of known facts.

Estimate! Less than 10, because 3 x 10 = 30



Instead of single jumps of 3, I can use my times tables to help me since I know what 5 groups of 3 equals.

5 jumps + 2 jumps + 1 jump = 8 jumps

Division Using a Menu

You need to know your 1, 2, 5 times tables and also know how to build a menu of known facts to help become efficient at written division.

Single 1x
Double 2x
Medium 5x
Large 10x
X-Large 20x
Mega 50x
Super Size 100x

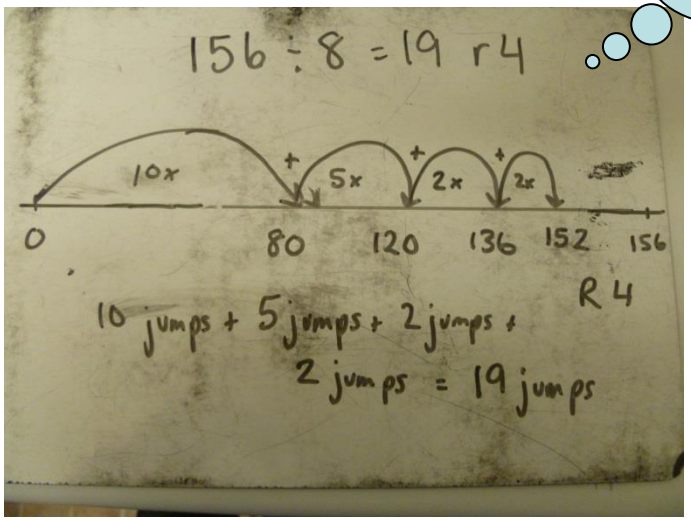
A ‘Menu’ can then be built for any number, helping to ‘see’ the larger jumps to be more efficient.

20 x 8 = 160, so less than 20.

156 ÷ 8

Single 1x 8 = 8
Double 2x 8 = 16
Medium 5x 8 = 40
Large 10x 8 = 80
X-Large 20x 8 = 160
Mega 50x 8 = 400
Super Size 100x 8 = 800

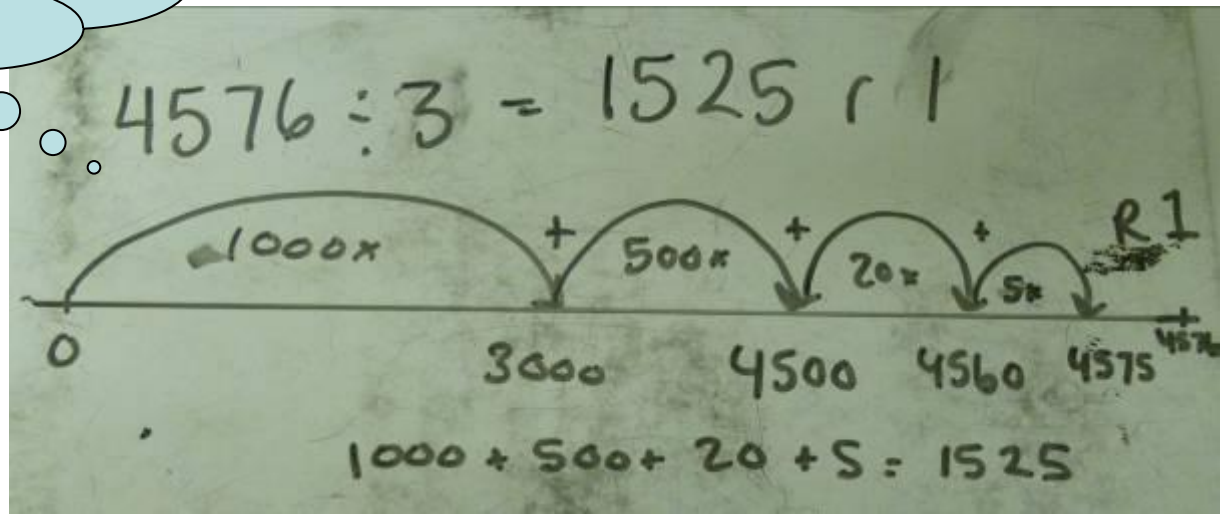
Use of knowledge of multiplying by 10



Using a Menu For Any Number

As you progress, you can build menus for any number, including decimals. You can adapt your menus as numbers get larger to include jumps of 200, 500, 1000 etc.

More than 1000, less than 2000 since 1000 x 3 = 3000 and 2000 x 3 = 6000.



Single 1x 3 = 3
Double 2x 3 = 6
Medium 5x 3 = 15
Large 10x 3 = 30
X-Large 20x 3 = 60
Mega 50x 3 = 150
Super Size 100x 3 = 300
Gigantic 200x 3 = 600
Enormous 500x 3 = 1500
Huge 1000x 3 = 3000

Moving Towards Compact Methods

- I can divide a number by subtracting multiples of the divisor

965 ÷ 5

Estimate!
200 x 5 =
1000, so less
than 200.

100 x 5 = 500
465 left..
90 x 5 = 450
15 left…
3 x 5 = 15

965 ÷ 5 = 193

EBI…

1000 – 965 = 35
(number bonds) so
that's 7 groups of 5 less
than 200 groups of 5.
193 groups of 5 will
make 965

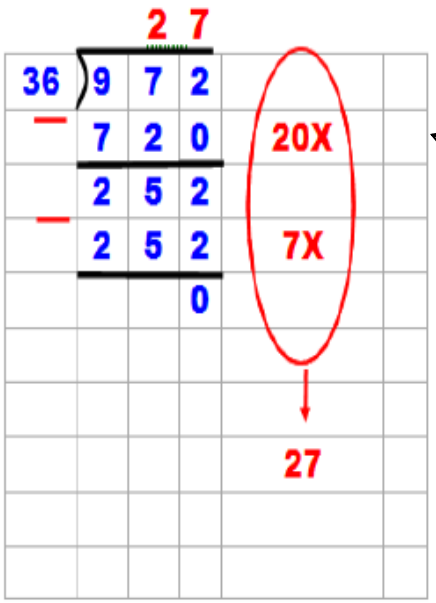
```
  193
5 | 965
  - 500
    465
  - 450
     15
```

Moving Towards Compact Methods

- I can divide a number by subtracting multiples of a larger divisor

972 ÷ 36 =

Estimate!
40 x 25 =
1000, so more
than 25.



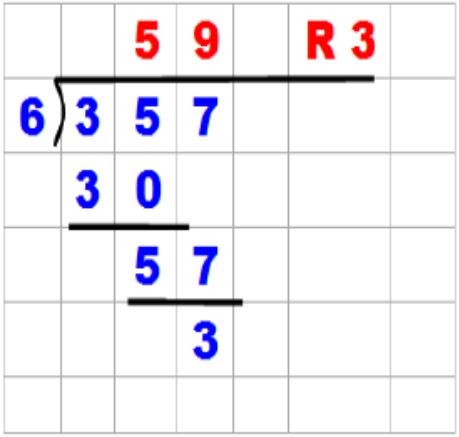
Use your menu to subtract the highest tens multiple of the divisor first

972 ÷ 36 = 27

A Semi-Compact Method

- I can use a semi-compact division method

357 ÷ 6 =

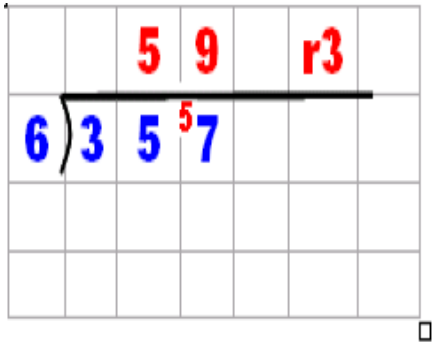


357 ÷ 6 = 59 r 3

The Compact Method

- I can use a compact division method

357 ÷ 6 =

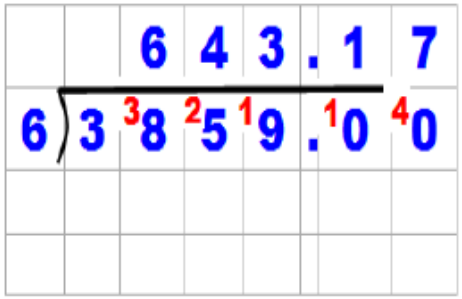


357 ÷ 6 = 59 r3

The Compact Method including Remainder as a Decimal

- I can use a compact division method

3859 ÷ 6 =



3859 ÷ 6 = 643.17

(to 2 dp)