# The process of addition in Year 3
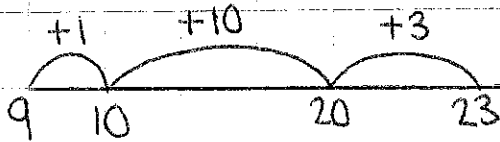
## 1. Addition by partitioning

$$65 + \underline{35} = 100$$
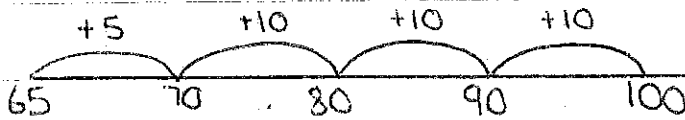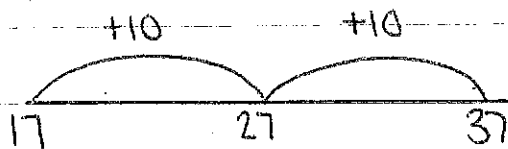


$$9 + 13 + 1 = \underline{23}$$

(number bond to 10 added first)



$$17 + 20 = \underline{37}$$

add on multiples of 10 rather than starting with the bigger number.



## 2. Addition of 2 digit numbers using partitioning

$$54 + 37 = \underline{91}$$

$$50 + 30 = 80$$
$$4 + 7 = 11$$
$$\overline{80 + 11 = 91}$$

arrow cards and dienes to support

3. Addition of 3 digit numbers using partitioning

$$435 + 236 = \underline{671}$$

$$400 + 200 = 600$$
$$30 + 30 = 60$$
$$\underline{5 + 6 = 11}$$
$$600 + 60 + 11 = 671$$

4. Addition using the expanded column method

```
  365        300   60   5
+ 122      + 100   20   2
-----      -------------------
             400   80   7 = 487
```

5. Addition using the column method

```
  4 6 6
+ 2 3 8
---------
  1 1      → Save it space
---------
  7 0 4
```
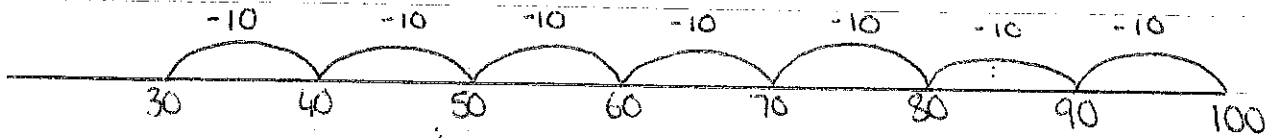
# The process of subtraction in Year 3

## 1. Number bonds to 100

$$100 - \underline{70} = 30$$

Count back to answer and total the jumps to find missing number



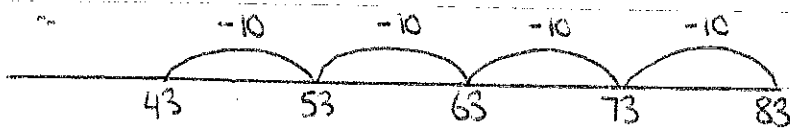## 2. Using number fact knowledge

$$9 - 2 = 7$$
so $19 - 2 = 17$

$$29 - 2 = 27$$
$$39 - 2 = 37$$
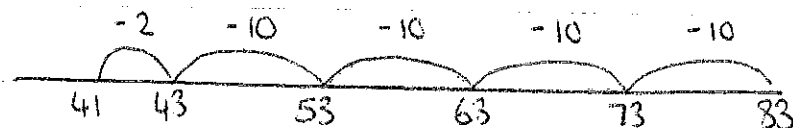
## 3. Subtracting 2 digit numbers
### a) multiples of 10

$$83 - 40 = \underline{43}$$



### b) other 2 digit numbers

$$83 - 42 = \underline{41}$$
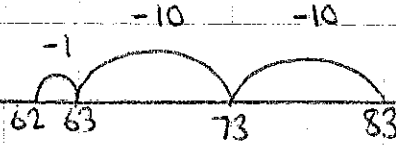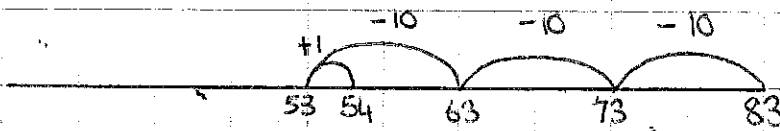
## 4. Subtracting near multiples of 10

$$83 - 21 = \underline{62}$$

Subtract multiples of 10 first and then subtract 1 more
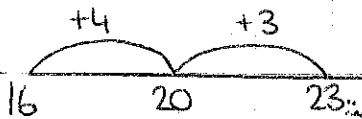


$$83 - 29 = \underline{54}$$

Round to 30, subtract first and then add 1 more back on.
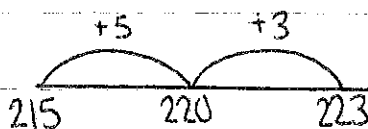


## 5. Subtracting by counting up.

$$23 - 16 = \underline{7}$$

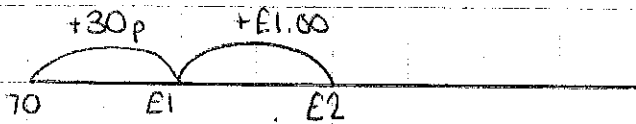Start at the smaller number and count on. Add up the total of the jumps!



↰ jump to next 10 first

$$223 - 215 = \underline{8}$$
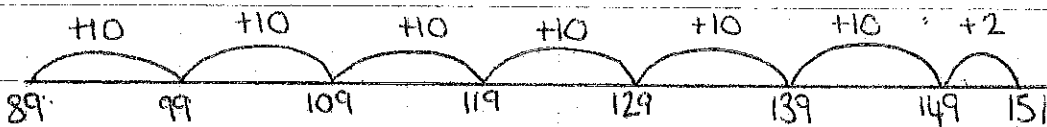
6. Subtracting amounts of money by counting up

$$£2 - 70p = £1 \cdot 30$$

```
   +30p      +£1.00
  ⌢         ⌢
70      £1       £2
```

7. Missing numbers

$$151 - 62 = 89$$

count up from
the answer.

```
  +10   +10   +10   +10   +10   +10   +2
 ⌢     ⌢     ⌢     ⌢     ⌢     ⌢   ⌢
89    99   109   119   129   139   149  151
```

8. Subtracting using partitioning

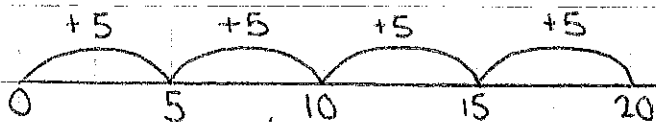$$48 - 35 = 13$$

$$40 - 30 = 10$$
$$\underline{8 - 5 = 3}$$
$$10 + 3 = 13$$

# The process of multiplication in Year 3

1. Multiplication along a numberline

   $5 \times 4 = 20$    groups of 5, 4 times

   ```
        +5      +5     +5      +5
      ⌒      ⌒      ⌒      ⌒
   0      5     10      15      20
   ```

2. Doubling using partitioning
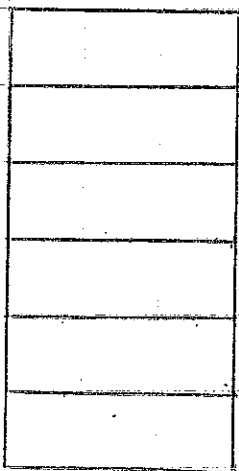
   Double 26
   $20 \times 2 = 40$
   $6 \times 2 = 12$
   $40 + 12 = 52$

3. Multiplication using arrays

   $3 \times 6 = 18$    : groups of 3, 6 times

## 4. Multiplication using place value

| 100s | 10s | 1s |
|------|-----|-----|
|      | 3   | 4  |
| 3    | 4   | 0  |

$$34 \times 10 = 340$$

## 5. Multiplication using the grid method

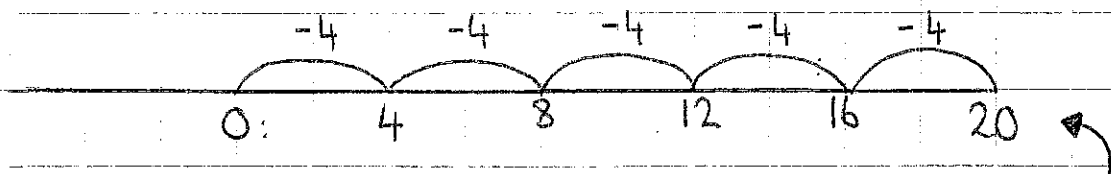$$3 \times 24 = 72$$

| x | 20 | 4 |
|---|----|----|
| 3 | 60 | 12 |

$$60 + 12 = 72$$

# The process of division in Year 3

1. Division along a numberline

$$20 \div 4 = 5 \qquad \text{(repeated subtraction)}$$



start this end and go down to 0

2. Halving using partitioning

a) even number



```
  1 6
 /   \
10    6
```

$$\frac{1}{2} \text{ of } 10 = 5$$

$$\frac{1}{2} \text{ of } 6 = 3$$

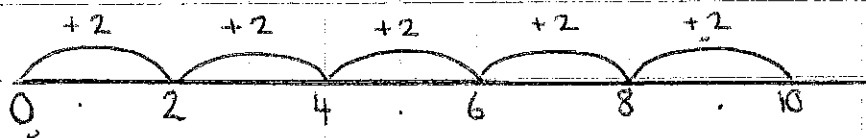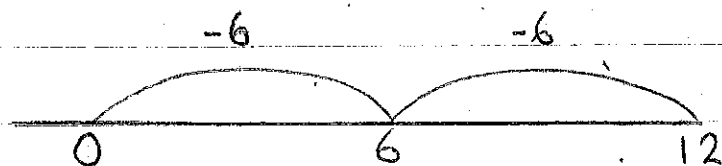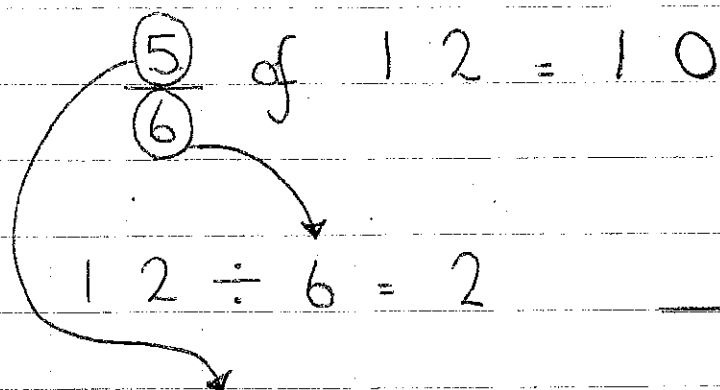$$5 + 3 = 8$$

b) odd number

```
  1 5
 /   \
10    5
```

$$\frac{1}{2} \text{ of } 10 = 5$$
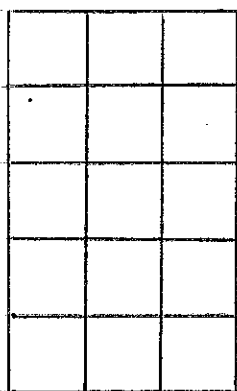
$$\frac{1}{2} \text{ of } 5 = 2\frac{1}{2}$$

$$5 + 2\frac{1}{2} = 7\frac{1}{2}$$

## 3. Fractions

$\frac{5}{6}$ of $12 = 10$

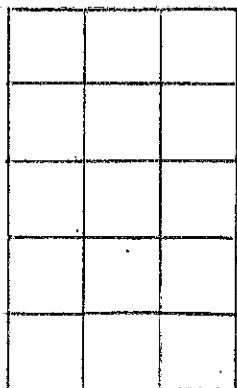$12 \div 6 = 2$

$2 \times 5 = 10$

## 4. Division using arrays

$15 \div 3 = 5$

(15 divided into groups of 3 = 5 groups)

## 5. Division with remainders

### a) using arrays

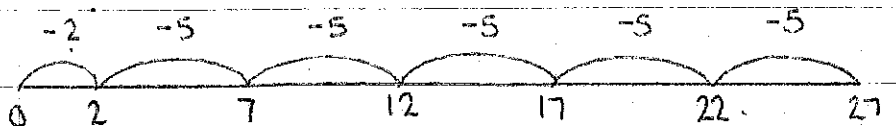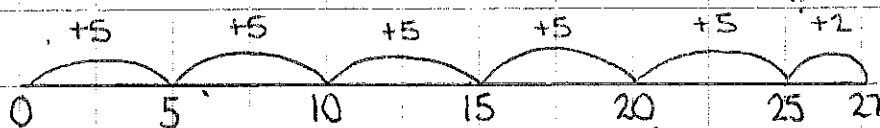$16 \div 3 = 5 \, r1$

## b) using a numberline

$$27 \div 5 = 5r2$$

counting back in group of 5



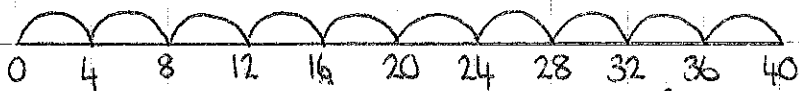## c) alternative method: using multiplication number facts



## 6. missing numbers

use inverse multiplication facts
count along in groups of 4, 10 times

$$40 \div 4 = 10$$



## 7. Chunking along numberline

$$56 \div 4 = 14$$