Division
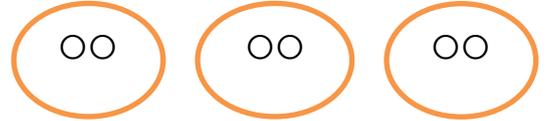
Division can be viewed in two different ways

Groups **of** 2   6 ÷ 2 = 3 (2 in each group)

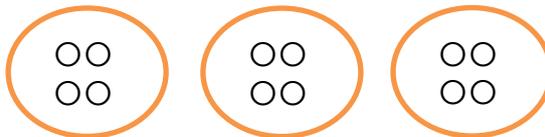2 **equal** groups   6 ÷ 2 = 3 (2 equal groups)

Young children use different concrete materials like teddies, counters, dinosaurs & cars to make 'groups of' and 'equal groups' of varying sizes

Example

Groups of 4

4 equal groups

When children are older they begin to investigate division of numbers by 2, 4, 3, 10, 5, 8, 6, 9 & 7

Students are asked to imagine a number that is 2 times smaller (half); 4 times smaller (quarter); 3 times smaller (third); 6 times smaller etc

Dividing numbers by 2 (equal groups)

Example (teen number)

$16 \div 2 = 8$ $\frac{1}{2}$ of $16 = 8$

10 + 6   10 + 6

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

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

$5 + 3 = 8$ $5 + 3 = 8$

Example (teen number with remainder)

$13 \div 2 = 6 \ r \ 1$ $\frac{1}{2}$ of $13 = 6 \ r \ 1$

10 + 3   10 + 3

2 + 1   2 + 1

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

$2 \div 2 = 1$ $\frac{1}{2}$ of $2 = 1$

$5 + 1 = 6$ $5 + 1 = 6$

Every even number (including tens numbers) is divisible by 2 because you can halve it and get a whole number.

Every odd number is not divisible by 2 because when you halve it you are left with a whole number and a remainder.

Dividing numbers by 4 (equal groups)

$24 \div 4 = 6$ $\frac{1}{4}$ of 24 = 6

20 + 4   20 + 4

$20 \div 4 = 5$ $\frac{1}{4}$ of 20 = 5

$4 \div 4 = 1$ $\frac{1}{4}$ of 4 = 1

$5 + 1 = 6$ $5 + 1 = 6$

Partitioning using place value worked because 20 is divisible by 4 but not every tens number is divisible by 4

Using preferred multiples (of 4)

$32 \div 4 = 8$ $\frac{1}{4}$ of 32 = 8

24 + 8   24 + 8

$24 \div 4 = 6$ $24 \div 4 = 6$

$8 \div 4 = 2$ $8 \div 4 = 2$

$6 + 2 = 8$ $6 + 2 = 8$

When children divide a number that is not a multiple of 4, by 4, they will have a remainder of 1, 2 or 3

Dividing numbers by 3 using preferred multiples of 3

$48 \div 3 = 16$ $\frac{1}{3}$ of $48 = 16$

30 + 18   30 + 18

$30 \div 3 = 10$ $\frac{1}{3}$ of $30 = 10$

$18 \div 3 = 6$ $\frac{1}{3}$ of $18 = 6$

$10 + 6 = 16$ $10 + 6 = 16$

When children divide a number that is not a multiple of 3, by 3, they will have a remainder of 1 or 2

Dividing numbers by 8 using preferred multiples of 8

$56 \div 8 = 7$ $\frac{1}{8}$ of $56 =$

40 + 16   40 + 16

$40 \div 8 = 5$ $\frac{1}{8}$ of $40 = 5$

$16 \div 8 = 2$ $\frac{1}{8}$ of $16 = 2$

$5 + 2 = 7$ $5 + 2 = 7$

When children divide a number that is not a multiple of 8, by 8, they will have a remainder of 1, 2, 3, 4, 5, 6 or 7

Dividing numbers and recording the remainder as a fraction

$57 \div 8 = 7\frac{1}{8}$ $\frac{1}{8}$ of $57 = 7\frac{1}{8}$

40 + 17   40 + 17

16 + 1   16 + 1

$40 \div 8 = 5$ $\frac{1}{8}$ of $40 = 5$

$17 \div 8 = 2$ $\frac{1}{8}$ of $17 = 2$

$1 \div 8 = \frac{1}{8}$ $\frac{1}{8}$ of $1 = \frac{1}{8}$

$5 + 2 + \frac{1}{8} = 7\frac{1}{8}$ $5 + 2 + \frac{1}{8} = 7\frac{1}{8}$

Multiplicative place value (dividing numbers by 10)

Lowest whole number column is 'ones'

When we divide, we come down the place value columns

When a number is divided by 10, it moves one column to the right

Example

$60 \div 10 = 6$

hundreds	tens	ones
	6	0

Example

$640 \div 10 = 64$

hundreds	tens	ones
6	4	0
	6	4