



Clarendon Mental Calculation Policy

ADDITION

Mental recall of number bonds

$$6 + 4 = 10$$

$$25 + 75 = 100$$

$$\square + 3 = 10$$

$$19 + \square = 20$$

Use near doubles

$$6 + 7 = \text{double } 6 + 1 = 13$$

Addition using partitioning and recombining

$$34 + 45 = (30 + 40) + (4 + 5) = 79$$

Counting on or back in repeated steps of 1, 10, 100, 1000

$$86 + 57 = 143 \text{ (by counting on in tens and then in ones)}$$

$$460 - 300 = 160 \text{ (by counting back in hundreds) (counting on from 300 to 400 to 460)}$$

Add the nearest multiple of 10, 100 and 1000 and adjust

$$24 + 19 = 24 + 20 - 1 = 43$$

$$458 + 71 = 458 + 70 + 1 = 529$$

Use the relationship between addition and subtraction

$$36 + 19 = 55$$

$$19 + 36 = 55$$

$$55 - 19 = 36$$

$$55 - 36 = 19$$

SUBTRACTION

Mental recall of addition and corresponding subtraction facts.

$$10 - 6 = 4$$

$$17 - \square = 11$$

$$20 - 17 = 3$$

$$10 - \square = 2$$

Find a small difference by counting up

$$82 - 79 = 3$$

Counting on or back in repeated steps of 1, 10, 100, 1000

$86 - 52 = 34$ (by counting back in tens and then in ones) $460 - 300 = 160$ (by counting back in hundreds)

Subtract the nearest multiple of 10, 100 and 1000 and adjust

$$24 - 19 = 24 - 20 + 1 = 5 \qquad 458 - 71 = 458 - 70 - 1 = 387$$

Use the relationship between addition and subtraction

$$36 + 19 = 55 \qquad 19 + 36 = 55$$

$$55 - 19 = 36 \qquad 55 - 36 = 19$$

MULTIPLICATION

Doubling and halving

Applying the knowledge of doubles and halves to known facts

8×4 is double 4×4

Using multiplication facts

Using and applying division facts

Children should be able to utilise their tables knowledge to derive other facts

If I know $3 \times 7 = 21$, what else do I know?

$30 \times 7 = 210$, $300 \times 7 = 2100$, $3000 \times 7 = 21\ 000$, $0.3 \times 7 = 2.1$ etc

Use closely related facts already known

$$\begin{aligned} 13 \times 11 &= (13 \times 10) + (13 \times 1) \\ &= 130 + 13 \\ &= 143 \end{aligned}$$

Multiplying by 10 or 100

Knowing that the effect of multiplying by 10 is a shift in the digits one place to the left.

Knowing that the effect of multiplying by 100 is a shift in the digits two places to the left.

Partitioning

$$\begin{aligned} 23 \times 4 &= (20 \times 4) + (3 \times 4) \\ &= 80 + 12 \\ &= 102 \end{aligned}$$

Use of factors

$$8 \times 12 = 8 \times 4 \times 3$$

DIVISION

Doubling and halving

Knowing that halving is dividing by 2

Deriving and recalling division facts

Using and applying division facts

Children should be able to utilise their multiplication knowledge to derive other facts.
e.g. If I know $3 \times 7 = 21$, what else do I know?

$30 \times 7 = 210$, $300 \times 7 = 2100$, $3000 \times 7 = 21\ 000$, $0.3 \times 7 = 2.1$ etc

$21 \div 7 = 21$, $21\ 000 \div 3 = 7$

Dividing by 10 or 100

Knowing that the effect of dividing by 10 is moving the digits one place to the right.

Knowing that the effect of dividing by 100 is moving the digits two places to the right.

Use of factors:

$378 \div 21$ $378 \div 3 = 126$ $378 \div 21 = 18$ $126 \div 7 = 18$

Use related facts:

Given that $1.4 \times 1.1 = 1.54$

What is $1.54 \div 1.4$, or $1.54 \div 1.1$?

Use of the inverse operation.

Use of key facts using 1, 2, 4, 10, 5 and extending to multiples of, as they become more fluent:

$$1 \times 12 = 12$$

$$2 \times 12 = 24$$

$$4 \times 12 = 48$$

$$10 \times 12 = 120$$

$$5 \times 12 = 60$$