

Year 2

Addition and Subtraction

- Recall and use addition and subtraction facts up to 20 fluently, and derive and use related facts up to 100.
- Add and subtract with concrete objects, representations and mentally $TO + O = TO + \text{tens} = TO + TO = O + O + O =$
- Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- Recognise and use the inverse relationship between additions and use this to check calculations and solve missing number problems.

Addition

Fluency strategies

Reordering: Children should understand why it is more efficient to reorder numbers when adding. $14 + 27$ becomes $27 + 14$

Bridging: They should then use knowledge of number bonds with bridging. $27 + 14 = 27 + 3 + 11$ $3 + 8 + 7$ becomes to $3 + 7 + 8$ (using knowledge of number bonds to 10)

Partition: Both numbers then add and recombine $42 + 36 = 40 + 30 + 2 + 6 = 70 + 8 = 78$ Partition just one number $55 + 42 = 55 + 40 = 95 + 2$
Doubles and near doubles $15 + 16$ becomes double $15 + 1$

Compensating: Adding a close multiple of 10 (e.g. 18, 19, 21, 22) $23 + 19$ becomes $23 + 20 - 1 = 42$

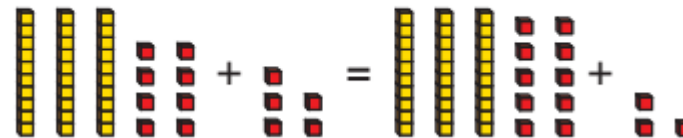
Deriving: new facts $3 + 7 = 10$ therefore $30 + 70 = 100$ $100 - 30 = 70$ $30 = 100 - 70$ $70 = 100 - \square$

Manipulatives and representations

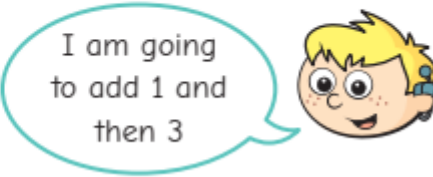
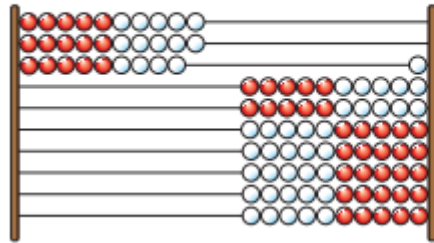
What addition is shown?



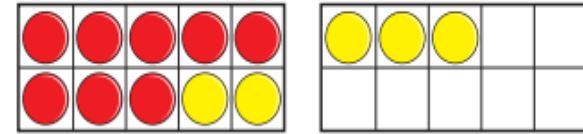
The base 10 shows that $38 + 5 = 40 + 3$



Max is using a Rekenrek to work out $29 + 4$

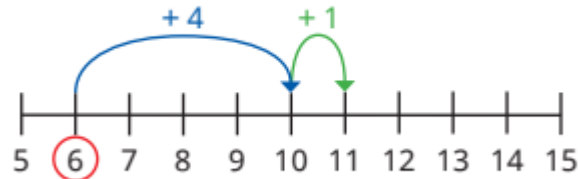


The counters show that $8 + 5 = 10 + 3$

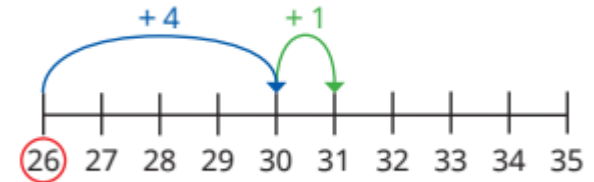


Numberlines

Here is Jo's method for working out $6 + 5$



Here is Ben's method for working out $26 + 5$



Partitioning

Use bonds to 10 to complete the additions.

The first one has been started for you.

▶ $45 + 7 = 50 + \underline{\quad} = \underline{\quad}$ ▶ $23 + 8$

Partition 7 into 5 and 2.
Add 5 to make 50 and then add 2.

Subtraction

Bridging through ten and multiples of ten should also be used when subtracting. $73 - 16$ becomes $73 - 10 - 3 - 3 = 63 - 3 - 3 = 57$

Counting on in tens and ones to find the difference.

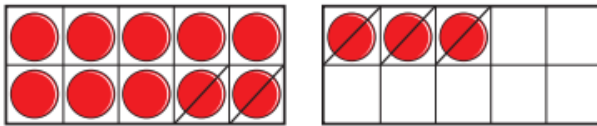
Count on because the numbers are close together $\sim 23 - 17 = 6$ $17 + 3 = 20$ $20 + 3 = 23$

Count back if numbers are further apart $\sim 45 - 22 = 23$ $45 - 20 - 2 = 23$

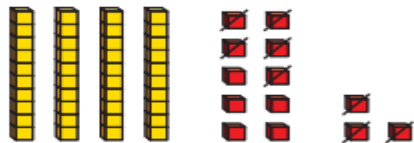
Compensating subtracting a close multiple of 10 (e.g. 18, 19, 21, 22) $65 - 18$ becomes $65 - 20 + 2 = 47$

Manipulatives and representations

The counters show that $13 - 5 = 10 - 2$

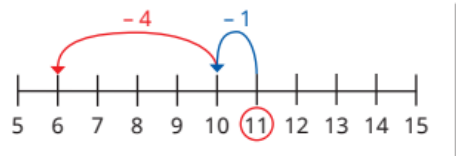


Max is using base 10 to work out $53 - 8$



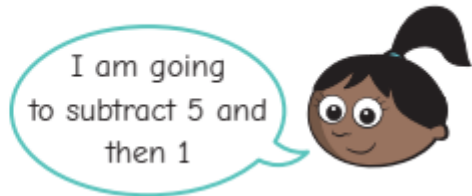
Numberline

Here is Tom's method for working out $11 - 5$



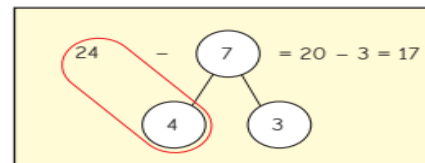
Sam is using a Rekenrek to work out $15 - 6$

Max used base 10 to make 53. He then exchanged one 10 for 10 ones. He then crossed out 8 ones.



Partitioning

Kay works out $24 - 7$



Year 2

Multiplication and Division

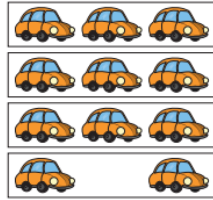
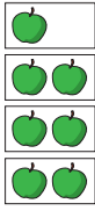
- Recall and use multiplication and division facts for 2, 5 and 10 multiplication tables.
- Know doubles of numbers to at least 15, doubles of multiples of 5 up to 50
- Recognise odd and even numbers
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using \times , \div and $=$
- Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Multiplication

Recognise equal groups

Which pictures show equal groups?

Which pictures show unequal groups?



Add equal groups

Complete the sentences to match the pictures.



There are _____ equal groups with _____ in each group.

_____ + _____ = 6

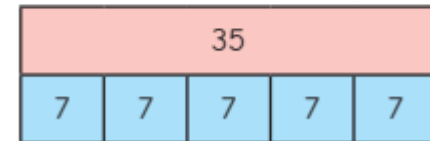
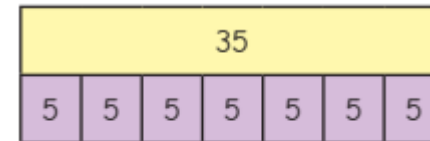
Make equal groups

Put 12 counters into different equal groups.



What do you notice?

Bar model



Repeated addition



_____ + _____ + _____ + _____ + _____ = 15

_____ × _____ = 15

Division

Grouping

There are 20 buckets.

▶ Circle groups of 5

How many groups did you circle?

▶ Complete the number sentence.

$20 \div 5 = \underline{\quad}$



Sharing

Share 12 cubes equally between 4 boxes.

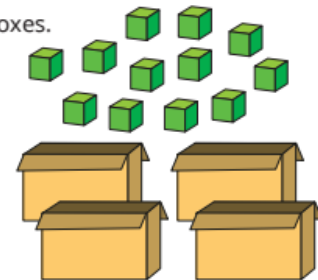
Complete the sentences.

There are _____ cubes altogether.

There are _____ boxes.

There are _____ cubes in each box.

$12 \div \underline{\quad} = \underline{\quad}$



At this stage children still need experience of both grouping and sharing. Grouping will become the basis of short and long division. As they become more confident with their multiplication tables, children should be able to identify ten and then five groups of some

Arrays

20 birds have been put into groups of 5

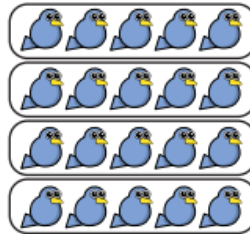
Complete the sentences.

There are _____ birds altogether.

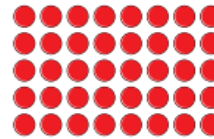
There are _____ birds in each group.

There are _____ groups.

_____ ÷ _____ = _____



Use the arrays to complete the number sentences.



_____ × 5 = _____

_____ ÷ 5 = _____



_____ × 5 = _____

_____ ÷ 5 = _____

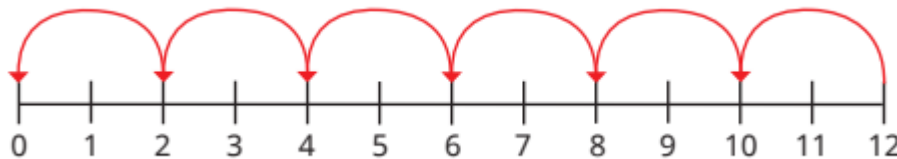


_____ × 5 = _____

_____ ÷ 5 = _____

Arrays- In order for children to understand the relationship between multiplication and division, arrays can be used to show grouping.

Number line



Some children may find it easier to experience this as counting forwards in groups of the divisor.