Slindon C.E. Primary School

Progression in Mathematical Calculations – Addition

Guidance for Parents

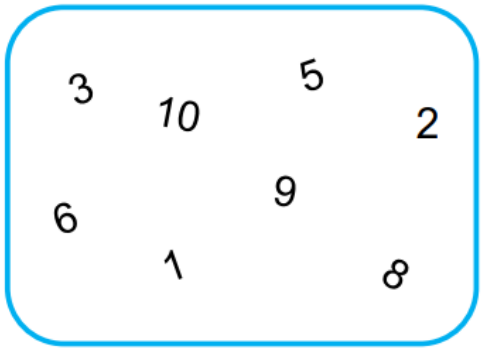
In **year 1** the expectation is that children will:
Represent and use number bonds within 20.
Add one-digit and two-digit numbers to 20, including zero.
Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems.

For example:

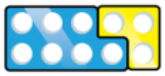
Ralph is thinking of the number 11

Which number does he choose out of the box to make:

- 14
- 19
- 12



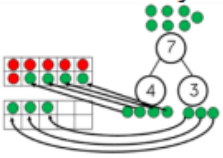
Describe the number bond shown.



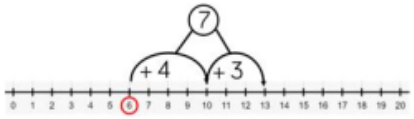
___ and ___ make ___
___ is made of ___ and ___
___ + ___ = ___ ___ + ___ = ___

Useful vocabulary:
add, more, plus
make, sum, total
altogether
score
double, near double
one more, two more… ten more
how many more to make…?
how many more is… than…?
how much more is…?
difference between
equals, sign, is the same as

Hannah has 6 balloons and Lilly gives her 7 more.
How many balloons does she have altogether?
Use the ten frames and the part whole model to find the total. Show your calculation on a number line.



6 + 4 = 10
10 + 3 = 13



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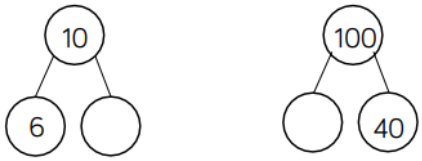
In **year 2** the expectation is that children will:
Recall and use addition facts to 20 fluently, and derive and use related facts up to 100.
Add numbers using concrete objects, pictorial representations and mentally, including two two-digit numbers and three one-digit numbers.
Show that addition of two numbers can be done in any order (commutative).
Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

For example:

Can you use the inverse operation to check 5 + 12 = 17?

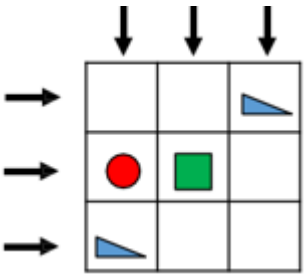
How many possible inverse calculations are there?

Complete the part whole models below:



Squares are worth 10
Triangles are worth 20
Circles are worth 30

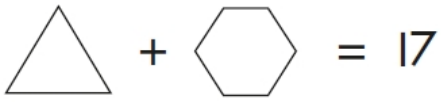
Can you complete the grid above so that all horizontal and vertical lines equal 60?

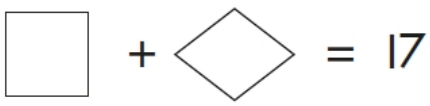


Useful vocabulary:
add, addition, more, plus
make, sum, total
altogether
score
double, near double
one more, two more... ten more...one hundred more
how many more to make...?
how many more is... than...?
how much more is...?
difference between
equals, sign, is the same as
tens boundary

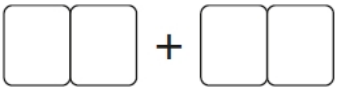
At the end of Key Stage 1 (year 2) the children will be expected to answer questions such as these in their SATs tests:

Write four **different** numbers to make these correct.





(a) Use each card **once** to make the **largest** total.



(b) What is the total?

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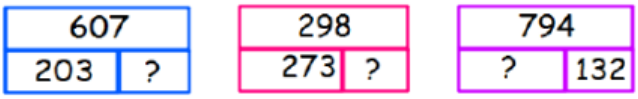
In **year 3** the expectation is that children will:
Add numbers mentally, including a three-digit number and ones, tens or hundreds.
Add numbers up to three digits, using columnar addition.
Solve problems, including missing number problems, estimate the answer to a calculation and use the inverse operation to check answers.

For example:

Using counting on, find the missing value on these bar models.



Monica and Rachel have some sweets.
Monica has 77 and Rachel has 121 They have written the calculation differently

Monica	Rachel
121	77
+ 77	+121
_____	_____

Who is correct?

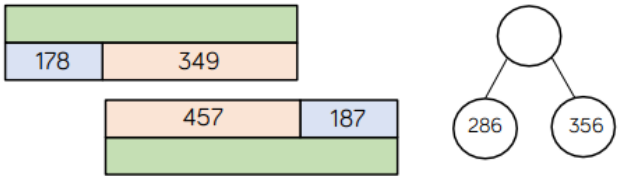
Roll a 1-6 die.
Fill in a box each time you roll.

Can you make the total:

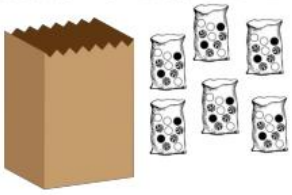
- An odd number
- An even number
- A multiple of 5
- The greatest number possible
- The smallest number possible

Useful vocabulary:
add, addition, more, plus
make, sum, total
altogether
score
double, near double
one more, two more... ten more...
one hundred more
how many more to make...?
how many more is... than...?
how much more is...?
difference between
equals, sign, is the same as
tens boundary, hundreds boundary

Use column addition to work out:



Miss Wilson has 237 marbles in her bag. She adds 6 more bags of 10 marbles.
How many will she have when she puts them in her bag?
Write the calculation for this problem.



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Progression in Mathematical Calculations - Addition

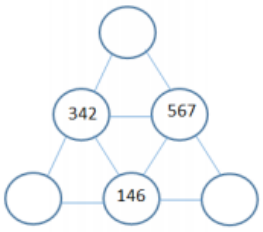
Guidance for Parents

In **year 4** the expectation is that children will:
Add numbers with up to 4 digits using columnar addition.
Estimate and use the inverse operation to check answers to calculations.
Solve addition two-step problems in contexts, deciding which method to use and why.

Useful vocabulary:
add, addition, more, plus, increase
sum, total, altogether
score
double, near double
how many more to make…?
difference between
how many more is… than…?
how much more is…?
equals, sign, is the same as
tens boundary, hundreds boundary
inverse

For example:

Complete the pyramid.
Which calculations do you use to find the missing numbers? Which strategies do you use to check your calculations?



Daniel buys a new laptop costing £1,265. He also buys a new mobile phone costing £492. What is the total cost?
His friend, Paul, buys a smart watch for £342.
How much money have they spent altogether?

$$\begin{array}{r} 6\square\square8 \\ +\ \square\square8\square \\ \hline 9{,}325 \\ \hline 1\ \ 1\ \ 1 \end{array}$$

Greg says that 'there is more than one answer for the missing numbers in the hundreds column'. Is he correct?
Explain your answer.

Match the calculations with a good estimate for the number sentence.

345 + 1,234	3,000 + 6,000
2,985 + 6,325	3,500 + 1,200
3,541 + 1,179	350 + 1,200
2,135 + 6,292	2,000 + 6,000

Jamal has £1000.

He buys a scooter for £345 and a skateboard for £110.

How much money does he have left?

Show 3 different methods of finding the answer.

Explain how you completed each one.

Which is the most effective method?

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Progression in Mathematical Calculations - Addition

Guidance for Parents

In **year 5** the expectation is that children will:
Add whole numbers with more than 4 digits using columnar addition.
Add increasingly large numbers mentally.
Use rounding to check answers to calculations and determine levels of accuracy.
Solve addition multi-step problems in contexts, deciding which method to use and why.

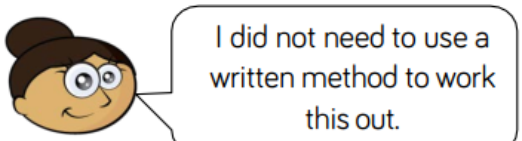
For example:

Adam is twice as old as Barry.
Charlie is 3 years younger than Barry.
The sum of all their ages is 53.
How old is Barry?

Useful vocabulary:
add, addition, more, plus, increase
sum, total, altogether
score
double, near double
how many more to make…?
difference between
how many more is… than…?
how much more is…?
equals, sign, is the same as
tens boundary, hundreds boundary
units boundary, tenths boundary
inverse

True or false?

49,999 – 19,999 = 50,000 – 20,000



Lea

How could Lea have worked this out?

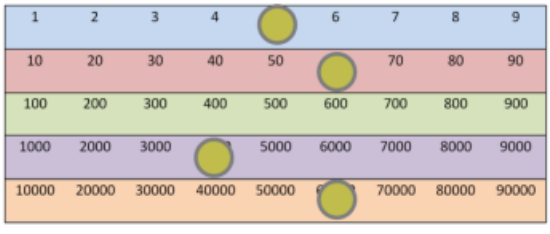
I'm thinking of a number. After I add 5,241 and subtract 352, my number is 9485. What was my original number?

Work out the missing numbers.

$$\square 4 \square 3 \square$$
$$+\ 2 \square 5 \square 2$$
$$78529$$

Sam is discovering numbers on a Gattegno board.

He makes this number:



Sam moves one counter three spaces on a horizontal line to create a new number.

When he adds this to his original number he gets 131,130

Which counter did he move?

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In **year 6** the expectation is that children will:
Perform mental calculations with large numbers.
Solve addition multi-step problems in contexts, deciding which method to use and why.
Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

For example:

Here is a bar model.

A	B
631,255	

A is an odd number which rounds to 100,000 to the nearest ten thousand.
It has a digit total of 30

B is an even number which rounds to 500,000 to the nearest hundred thousand.
It has a digit total of 10

A and B are both multiples of 5 but end in different digits.

Class 6 are solving this calculation:

3,912 + 3,888=

Claire

To solve this I will double 3,900

Explain why Claire has done this.

Useful vocabulary:
add, addition, more, plus, increase
sum, total, altogether
score
double, near double
how many more to make…?
difference between
half, halve
how many more is… than…?
how much more is…?
equals, sign, is the same as
tens boundary, hundreds boundary
units boundary, tenths boundary
inverse

A four-bedroom house costs £450,000
A three-bedroom house costs £199,000 less.
How much does the three-bedroom house cost?
What method did you use to find the answer?

At the end of Key Stage 2 (year 6) the children will be expected to answer questions such as these in their SATs tests:

Ken is playing a game. He has 4,289 points.

Then he scores another 355 points.

Ken's target is 6,000 points.

How many **more** points does Ken need to reach his target?

Write the three missing digits to make this **addition** correct.

	5	3	2	□	9
+		7	4	2	□
	□	0	6	7	6