Year 2

Small Steps Guidance and Examples

Block 2: Addition and Subtraction

White Rose Maths

Overview

Small Steps

- Fact families – Addition and subtraction bonds to 20
- Check calculations
- Compare number sentences
- Related facts
- Bonds to 100 (tens)
- Add and subtract 1s
- 10 more and 10 less
- Add and subtract 10s
- Add a 2-digit and 1-digit number – crossing ten
- Subtract a 1-digit number from a 2-digit number – crossing ten
- Add two 2-digit numbers – not crossing ten – add ones and add tens
- Add two 2-digit numbers – crossing ten – add ones and add tens
- Subtract a 2-digit number from a 2-digit number – not crossing ten
- Subtract a 2-digit number from a 2-digit number – crossing ten – subtract ones and tens
- Bonds to 100 (tens and ones)
- Add three 1-digit numbers

NC Objectives

Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.

Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a two-digit number and tens; two two-digit numbers; adding three one-digit numbers.

Show that the addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.

Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods.

Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Fact Families

Notes and Guidance

Children apply their understanding of known addition and subtraction facts within 20 to identify all related facts.
This will include an understanding of the relationship between addition and subtraction and knowing the purpose of the equals sign as well as the addition and subtraction signs.
This will be supported with showing the link between representations, such as the part whole model and bar model.

Mathematical Talk

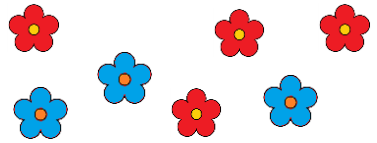
What if we took away the red flowers? What are the parts? What is the whole?

Does it change the answer if we add the blue and red flowers in a different order?

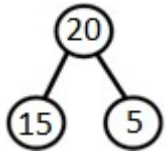
What does each circle represent on the part whole model?

Varied Fluency

1 Using concrete apparatus, can you talk about the relationships between the different flowers?



2 One relationship shown by this part whole model is
$15 + 5 = 20$
Can you write all associated fact facts in the sentences below?

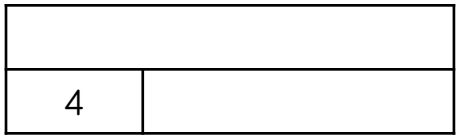


3 Look at the bar model below. Can you write all of the sentences in the fact family?

Fact Families

Reasoning and Problem Solving

Here is an incomplete bar model.
The total is greater than 10 but less than 20
What could the numbers be?
How many different combination scan you find?



7 and 11
8 and 12
9 and 13
10 and 14
11 and 15
12 and 16
13 and 17
14 and 18
15 and 19

$8 - 5 = 3$

$8 - 3 = 5$

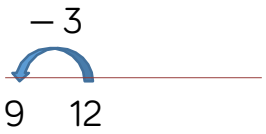
$8 = 5 - 3$

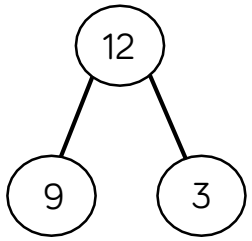
$3 = 8 - 5$

Laura says, "I think that all of these facts are correct because the numbers are related."
Sam disagrees.
Who is correct? Can you prove it?

Sam is correct because 8 does not equal 5 – 3

Which of the representations are equivalent to the bar model?





$12 = 9 + 3$

There were 9 cars in the car park.
3 cars have left.

$9 - 3 = 12$

The number line, the part whole model and
$12 = 9 + 3$

Check Calculations

Notes and Guidance

It is essential that children have the opportunity to discuss and share strategies for checking addition and subtraction calculations.

Checking calculations is not restricted to using the inverse.

Teachers should discuss using concrete resources, number lines and estimating as part of a wide range of checking strategies.

Mathematical Talk

What resources could you use to check your calculation?

Can you check it in more than one way?

Why do we need to check our calculation?

Varied Fluency

1 Use concrete objects to check and prove whether the calculations are correct.

$$12 - 4 = 8$$

$$7 + 8 = 15$$

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

How many possible inverse calculations are there?

3 Erin writes this calculation: $18 - 5 = 13$

Which of the following could she use to check her work?

$13 + 5$ $\quad$ $13 - 5$

$18 - 13$ $\quad$ $5 + 13$

Check Calculations

Reasoning and Problem Solving

Emily did the following calculation:

$$12 - 8 = 4$$

She checked it by using the inverse.

She did $12 + 8 = 20$ and said that her first calculation was wrong.

What advice would you give her?

It should have been $8 + 4 = 12$

Theo is checking Ellen's work but doesn't do an inverse calculation.

He says, "these calculations can't be right."

How might he know?

$$24 + 6 = 84$$
$$25 - 23 = 12$$
$$18 - 3 = 21$$

All of the calculations involve errors:

6 has been added to the tens instead of the ones.

25 and 23 are very close in value and therefore can't result in such a large difference.

18 and 3 have been added instead of subtracted.

Compare Number Sentences

Notes and Guidance

Children should be encouraged to examine number sentences to find missing values by using structure rather than calculation.

The focus of this small step is using numbers within 20 to explore mathematical relationships within the context of familiar numbers.

Children should compare similar calculations using greater than, less than and equals signs.

Mathematical Talk

What other numbers make the same total?

Do we need to calculate to find the answer?

Do you notice a pattern? What would come next?

Varied Fluency

1 How can we use the following representation to prove $5 + 3 = 4 + 4$?

2 Fill in the missing symbols:

$6 + 4$	◯	$6 + 5$
$6 + 4$	◯	$3 + 6$
$11 - 4$	◯	$12 - 5$
$11 - 4$	◯	$12 - 4$

3 Fill in the missing numbers:

$5 + 3 = 6 + \square$

$5 + 3 = \square + 6 = 7 + \square$

$\square + 3 = \square + 4 = 5 + 5$

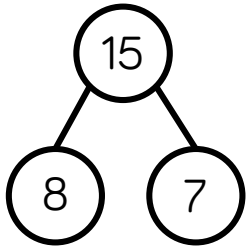
You could also do this for subtraction relationships.

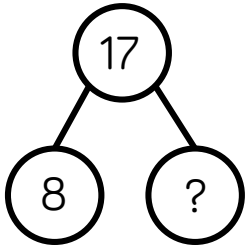
Compare Number Sentences

Reasoning and Problem Solving

Deb thinks she knows the missing number without calculating the answer.

Can you explain how this could be possible?





17 is two more than 15, so the missing number must be two more than 7

The missing number must be 9

Both missing numbers are less than 10

$$7 + \square < 7 + \square$$

How many different possible answers can you find?

Lots of different combinations, the left number has to be smaller than the right.

Possible answers:
1 and 2
1 and 3
1 and 4
1 and 5
1 and 6
1 and 7
1 and 8
1 and 9
Etc.

Related Facts

Notes and Guidance

Children should have an understanding of calculations with similar digits. For example, $2 + 5 = 7$ so $20 + 50 = 70$.
This involves both addition and subtraction.
It is important to highlight the correct vocabulary and help children to notice what is the same and what is different between numbers and calculations.
'Tens' and 'ones' should be used to aid understanding.

Mathematical Talk

What is the same?

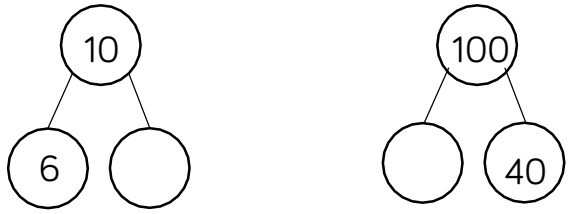
What is different?

Varied Fluency

1 I have 3 blue pens and 4 black pens. Together I have 7 pens. Tom has 30 blue pens and 40 black pens. How many does he have in total?

Use concrete apparatus to show your thinking.

2 Complete the part whole models below:



3 Find the missing numbers in the related facts.

$5 + 4 = 9$
$50 + 40 = \square$

$8 = 3 + 5$
$80 = 30 + \square$

$4 = 10 - 6$
$40 = \square - 60$

Related Facts

Reasoning and Problem Solving

Continue the pattern.

$$90 = 100 - 10$$
$$80 = 100 - 20$$
$$70 = 100 - 30$$

What are the similarities and difference between this pattern and the following one?

$$9 = 10 - 1$$
$$8 = 10 - 2$$
$$7 = 10 - 3$$

The digits are the same but the place value changes.

Kim says, "If I know $9 + 1 = 10$, I can work out $90 + \_\_\_ = 100$"

Find the missing number and explain how Kim knows.

10

All the numbers are ten times bigger.

Scott goes to the fruit shop.

One apple costs 6p.
A bag of 10 apples costs 50p.

If he needs 20 apples, what's the cheapest way to buy them?

Two bags of 10 costing £1 is cheaper.

What would the difference be between buying 20 single apples and 2 bags of 10 apples?

The difference between buying 20 single apples and 2 bags of 10 is 20p.

How much does each apple cost if he buys a bag of 10? Explain your answer.

In a bag, each apple costs 5p because $50p \div 10 = 5p$

Bonds to 100 (Tens)

Notes and Guidance

Teachers should focus at this stage on multiples of 10 up to and within 100.

Links should be made again between single digit bonds and tens bonds.

Using a 10 frame to represent 100 would be a useful resource to make this link.

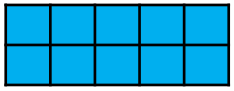
Mathematical Talk

What does this represent?

Why is it different to a normal ten frame?

Varied Fluency

1 Match the 10 frames to the sentences below:



One hundred equals eighty plus twenty

$100 = 100 + 0$

$40 + 60 = 100$

2 Fill in the missing numbers

$2 + 6 = 8$

$2\square + \square 0 = 80$

$20 + 60 = \square\square$

$80 = \square 0 + 6\square$

3 Continue the pattern

$90 = 100 - 10$

$80 = 100 - 20$

Can you make up a similar pattern starting with the numbers 60, 30 and 90?

Bonds to 100 (Tens)

Reasoning and Problem Solving

Sara thinks there are 10 different number bonds to 90 using multiples of 10
Beth thinks there are only 5

Who is correct?

Can you help the person who is wrong to understand their mistake?

Beth because 0 + 90 is the same as 90 + 0
Sara has repeated her answers the other way round.

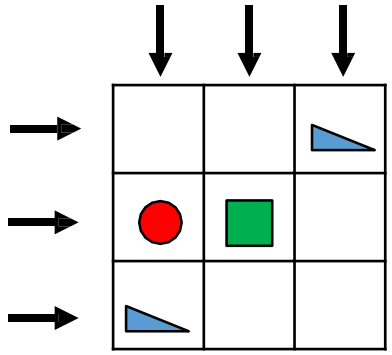
Using multiples of 10, how many number bonds are there for the following numbers?

20 30 40 50

What do you notice about the amount of bonds for each number?

If 80 has 5 bonds, predict how many 90 would have.

20 and 30 both have 2. 40 and 50 both have 3.
When the tens digit is odd it has the same number of bonds as the previous tens number. 90 would also have 5

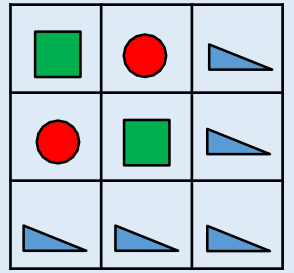


Squares are worth 10
Triangles are worth 20
Circles are worth 30

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

Can children create another pattern on an empty grid where each line equals 60?
How many possible ways are there to solve this?

Solution



Lots of possible solutions available.

Add and Subtract 1s

Notes and Guidance

Children at this point should start seeing the pattern with what happens when we add and subtract 1

This is the step before finding ten more than or ten less than, as bridging beyond a 10 should not be attempted yet.

The pattern should be highlighted also by adding 2 (by adding another one) and then adding 3

Mathematical Talk

What happens when we add 2?

What is the link between adding 1 and adding 2?

What about if we cant to add 3?

Varied Fluency

1 Create sentences based on the picture.

Example

There are 4 children playing in a park. One more child joins them so there will be 5 children playing together.

2 Continue the pattern

$22 = 29 - 7$
$22 = 28 - 6$

Can you create an addition pattern by adding in ones and starting at the number 13?

3 Continue the number tracks below.

31			34		

		45			48

				67	

	13				

Add and Subtract 1s

Reasoning and Problem Solving

True or False?

These four calculations have the same answer.

$1 + 4 + 2$ $\quad$ $4 + 2 + 1$

$2 + 4 + 1$ $\quad$ $4 + 1 + 2$

True because they all equal 7 and addition is commutative

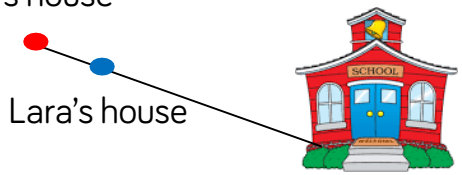
These four calculations have the same answer.

$7 - 3 - 2$ $\quad$ $2 - 3 - 7$

$3 - 2 - 7$ $\quad$ $7 - 2 - 3$

False because subtraction isn't commutative

Sam's house



Lara's house

Sam lives 5km from school.
Laura lives 4km from school in the same direction.

What is the distance between Sam's and Laura's houses?

1km

After travelling to and from school, Sam thinks that he will walk 1km more than Laura. Is he correct?
Explain your answer.

No, he will walk 2km further. 1 on the way to school and 1 on the way home.

What will be the difference in distance walked after 2 school days?

4km

10 More and 10 Less

Notes and Guidance

Teaching needs to focus on the importance of the tens digit.
Using a 100 square, explore with the children what happens to the numbers in the columns.
Draw attention to the idea that the tens digit changes while the ones digit remains the same.
Children will need to see how the number changes with concrete materials before moving onto more abstract ideas.

Mathematical Talk

What's the same?

What's different?

Varied Fluency

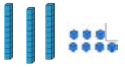
1 Continue the number tracks below.

10	20	30			

			35	45	55			

2 Using a 100 square, circle the number that is 10 more than 27.
Circle the number that is 10 less.
Repeat in different colours for different numbers.

3 Using apparatus, complete the missing boxes.

10 less		10 more
		
2	12	22
		
	37	

10 More and 10 Less

Reasoning and Problem Solving

SALE

15p 22p 35p 68p

Each piece of fruit is reduced by 10p.

What are the new prices?

Red Apple 5p

Green Apple 12p

Banana 25p

Lemon 58p

Tomas says, "I know that 10 more than 72 is 82 because I only have to look at the tens digit."
Is he correct?
Explain your reasoning.

Yes because when you add ten you aren't adding ones.

Molly is counting backwards in 10s. She says forty nine, thirty nine, twenty nine and then stops.
What numbers comes next and why?

19 because you take one ten away from 29

Class 3 gives one of their full packets of crayons away.

How many crayons do they have left?

Explain your reasoning.

43

They will have four full packs left which is four tens, and thee crayon which represents three ones.

Add and Subtract 10s

Notes and Guidance

Building on from the previous step, children should make use of place value to add and subtract 10s from a given number within 100.
The key teaching point again is that the importance of the tens digit within the given numbers and children should be encouraged to see the relationship.

For example $64 + 20 = 84$

Mathematical Talk

Which column changes?

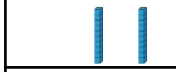
Which column stays the same?

Varied Fluency

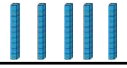
1 Continue the number track by adding 20 each time..

23				

2 Use the place value charts and concrete materials to complete the calculations.

Tens	Ones
	
	

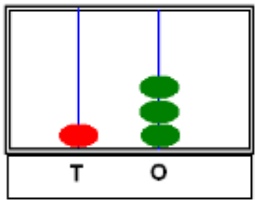
$$\begin{array}{r} 2\ 3 \\ +\ 4\ 0 \\ \hline \\ \hline \end{array}$$

Tens	Ones
	
	

$$\begin{array}{r} 5\ 6 \\ -\ 3\ 0 \\ \hline \\ \hline \end{array}$$

Add and Subtract 10s

Reasoning and Problem Solving



Tom has three spare red beads.

What numbers could he make?
Explain your answer.

23

33

43

He doesn't have to use all of the beads.

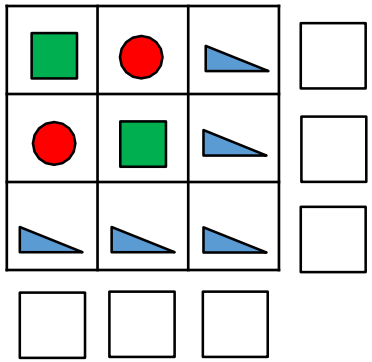
Here are class 2s crayons.

They are given a new box of 10 each day for a week.

How many crayons do they have at the end of the week?

Discussion could be had about whether it's a full week or a school week.

Answers would be 96 or 76 respectively.



Circles represent 20
Triangles represent 10
Squares represent 50

What Is the value of each row and column?

Rows

(top to bottom)

80

80

30

Columns

(left to right)

80

80

30

Add 2-digits and 1-digit

Notes and Guidance

Before crossing the 10 with addition, children need to have a strong understanding of place value. The idea that ten ones are the same as one ten is essential here. Children need to be able to count to 20 and need to be able to partition 2 digit numbers in order to add them. They need to understand the difference between one digit and two digit numbers and line them up in columns. In order to progress to using the number line more efficiently, children need to be secure in their number bonds.

Mathematical Talk

Using Base 10, can you partition your numbers?

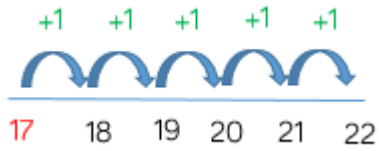
Can we exchange 10 ones for one ten?

How many ones do we have? How many tens do we have?

Can you draw the base 10 and show the addition pictorially?

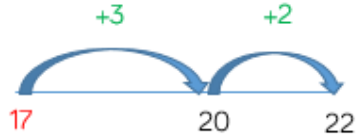
Varied Fluency

1 17 + 5 =



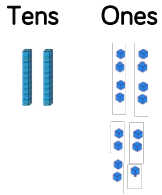
Can you put the larger number in your head and count on the smaller number? Start at 17 and count on 5

2 Can we use number bonds to solve the addition more efficiently?



We can partition 5 into 3 and 2 and use this to bridge the 10

3 Find the total of 28 and 7



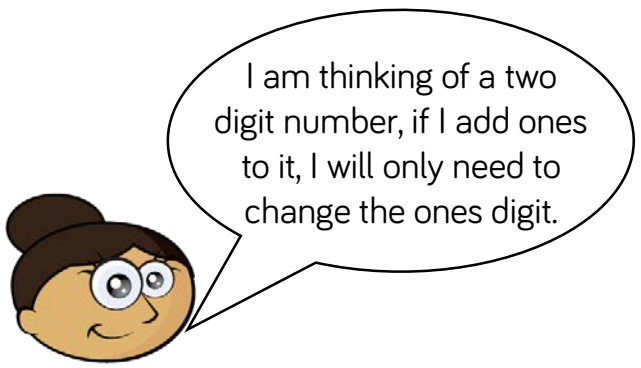
$$\begin{array}{r} 2\ 8 \\ +\quad 7 \\ \hline 3\ 5 \\ \hline 1 \end{array}$$

- Partition both the numbers.
- Add together the ones.
- Have we got 10 ones?
- Exchange 10 ones for 1 ten.
- How many ones do we have?
- How many tens do we have?

Add 2-digits and 1-digit

Reasoning and Problem Solving

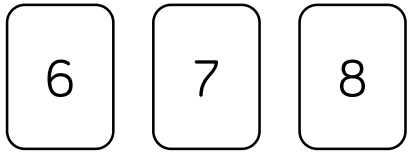
Always, sometimes, never?



Explain your answer.

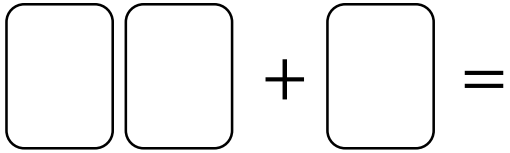
Sometimes because if your ones total 10 or more you will have to exchange them which will change the tens digit.

Here are three digit cards.



Place the digit cards in the number sentence.

How many different totals can you find?



What is the smallest total?

What is the largest total?

67 + 8 = 75
68 + 7 = 75
76 + 8 = 84
78 + 6 = 84
86 + 7 = 93
87 + 6 = 93

75 is the smallest total.

93 is the largest total.

Subtract 1-digit from 2-digits

Notes and Guidance

Just as with addition, children need to have a strong understanding of place value and the idea that one ten is the same as ten ones. Children need to be able to count to 20 and need to be able to partition 2-digit numbers in order to subtract from them. They need to understand the difference between one digit and two digit numbers and line them up in columns. In order to progress to using the number line more efficiently, children need to be secure in their number bonds.

Mathematical Talk

Are we counting backwards or forwards on the number line?

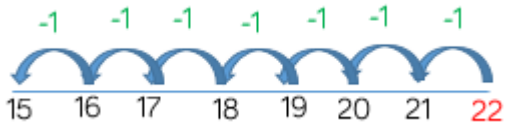
Have we got enough ones to subtract?

Can we exchange a ten for ten ones?

How can we show the takeaway? Can we cross out the cubes?

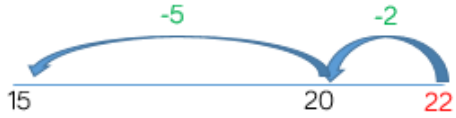
Varied Fluency

1 $22 - 7 =$



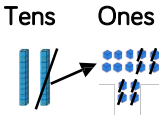
Can you put the larger number in your head and count back the smaller number? Start at 22 and count back 7

2 Can we use number bonds to subtract more efficiently?



We can partition 7 into 5 and 2 and use this to bridge the 10

3 Subtract 8 from 24



$$\begin{array}{r} {}^{1}\not{2}\,{}^{1}4 \\ -\quad 8 \\ \hline 1\ 6 \end{array}$$

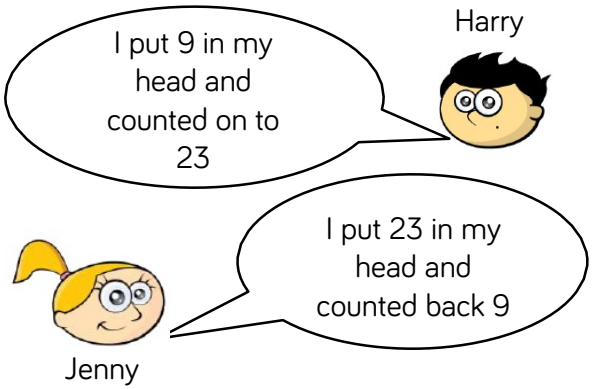
- Can we take 8 ones away?
- Exchange one ten for ten ones.
- Take away 8 ones.
- Can you write this using the column method?

Subtract 1-digit from 2-digits

Reasoning and Problem Solving

Harry and Jenny are solving the subtraction 23 – 9

Here are their methods



Who's method is the most efficient?

Can you explain why?

Can you think of another method to solve the subtraction.

Jenny's method is most efficient because there are less steps to take. The numbers are quite far apart so Harry's method of finding the difference takes a long time.

Jack is counting back to solve 35 – 7

He counts

35, 34, 33, 32, 31, 30, 29

Is Jack correct?

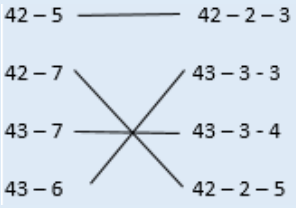
Explain your answer.

Jack is not correct as he has included 35 when counting back.

This is a common mistake and can be modelled on a number line.

Match the number sentences to the number bonds that make the method more efficient.

42 – 5	42 – 2 – 3
42 – 7	43 – 3 – 3
43 – 8	43 – 3 – 5
43 – 6	42 – 2 – 5



Add 2-digit Numbers (1)

Notes and Guidance

This step is an important pre requisite before children add two digit numbers with an exchange.
Here the teacher focuses on the language of tens and ones and looks at different methods to add the numbers including the column method.
It is important that teachers always show the children to start with the ones when adding using the column method.

Mathematical Talk

Can you partition the number into tens and ones?

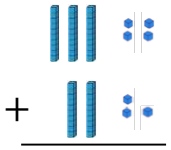
Can you count the ones? Can you count the tens?

Can you show your addition by drawing the base 10 to help?

Can you represent the problem?

Varied Fluency

1 Find the sum of 34 and 23



2 64 + 12 =

4 ones + 2 ones = ☐

6 tens + 1 ten = ☐

☐ tens + ☐ ones = ☐

3 Hamza has 41 sweets.

Jemima has 55 sweets.

How many sweets do they have altogether?

Add 2-digit Numbers (1)

Reasoning and Problem Solving

Katie has 12 marbles.

Jim has 13 marbles more than Katie.

How many marbles do they have altogether?

Jim has 25 marbles.

Altogether they have 37 marbles

What digits could go in the boxes?

$\square 2 + \square 5 = 87$

Possible answers:
1 and 7
2 and 6
3 and 5
4 and 4
5 and 3
6 and 2
7 and 1

Interesting discussion could be had around is 1 and 7 different than 7 and 1? Etc.

Add 2-digit Numbers (2)

Notes and Guidance

Building on the last step, children use base 10 and partitioning to add together 2 digit numbers including an exchange.

They have already seen what happens when there are more than 10 ones and should be confident in exchanging 10 ones for one 10.

Mathematical Talk

What is the value of the digits?
How many ones do we have altogether?
How many tens do we have altogether?
Can we exchange ten ones for one ten?
What is the sum of the numbers?
What is the total?
How many have we got altogether?

Varied Fluency

1 64 + 17 =

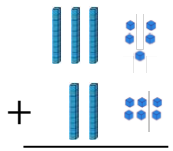
4 ones + 7 ones = ☐

6 tens + 1 ten = ☐

☐ tens + ☐ ones = ☐

$$\begin{array}{r} 64 \\ +\ 17 \\ \hline 11 \\ +\ 70 \\ \hline 81 \end{array}$$

2 Find the sum of 35 and 26



- Partition both the numbers.
- Add together the ones. Have we got 10 ones?
- Exchange 10 ones for 1 ten.
- How many ones do we have?
- Add together the tens. How many do we have altogether?

3 Class 3 has 37 pencils.
Class 4 has 43 pencils.

How many pencils do they have altogether?

Add 2-digit Numbers (2)

Reasoning and Problem Solving

Can you create a calculation where there will be an exchange in the ones, and your answer will have two ones and be less than 100?

There are lots of possible solutions.

E.g. 33 + 29 = 62

How many different ways can you solve 19 + 11?

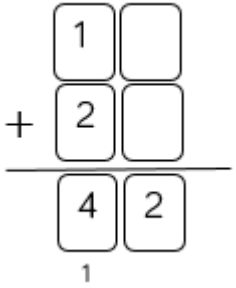
Explain your method to a partner.

Use concrete or pictorial resources to help explain your method.

Children might add the ones and then the tens.

Children should notice that 1 and 9 are a number bond to 10 which makes the calculation easier to complete mentally.

Find all the possible pairs of numbers that can complete the addition.



How do you know you have found all the pairs?

What is the same about all the pairs of numbers?

13 + 29

19 + 23

14 + 28

18 + 24

15 + 27

17 + 25

16 + 26

All the pairs of ones add up to 12

Subtract with 2-digits (1)

Notes and Guidance

This step is an important step before children start to look at subtraction where they cross a tens boundary.

Children need to use concrete materials but also draw images of the base 10 so they can independently solve problems.

Mathematical Talk

Do we need to make both numbers in the subtraction before we take away?
Which number do we need to make? The larger number or the smaller?
What are the numbers worth? Tens or Ones?
What happens if we have nothing left in a column? Which number do we write?

Varied Fluency

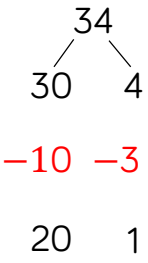
1 78 minus 34 = ☐

8 ones − 4 ones = ☐

7 tens − 3 tens = ☐

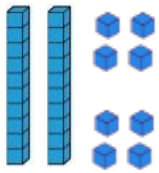
We have ☐ tens and ☐ ones.

2 34 − 13 =



- Partition the number 34.
- Partition 13 and subtract the ones and the tens.
- Place the partitioned number back together.

3 Subtract 13 from 28



$$\begin{array}{r} 2\ 8 \\ -\ 1\ 3 \\ \hline 1\ 5 \end{array}$$

Subtract with 2-digits (1)

Reasoning and Problem Solving

Jasmine has 33 stickers.

Ollie has 54 stickers.

How many more stickers does Ollie have?

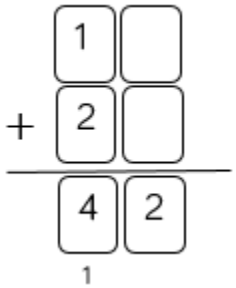
What method did you use to solve the problem?

Here the children are working out the difference.

Children might use subtraction to solve the problem or they might count on to find the difference.

Ollie has 21 more stickers than Jasmine.

Find the missing number.



Make the numbers using Base 10 to help you find your answer.

57

Subtract with 2-digits (2)

Notes and Guidance

Building on the previous step, children use their knowledge that one ten is the same as ten ones to exchange when crossing a ten in subtraction.

Mathematical Talk

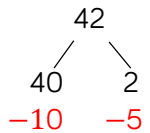
Have we got enough ones to take away?
Can we exchange one ten for ten ones?
How many have we got left?
What is the difference between the numbers?
Do we always need to subtract the ones first? Why do we always subtract the ones first?
Which method is the most efficient? Subtraction or counting on to find the difference?

Varied Fluency

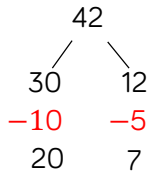
1 Use the number line to subtract 12 from 51.

Can you subtract the ones first and then the tens?
Can you partition the ones to count back to the next ten and then subtract the tens?

2 42 – 15 =

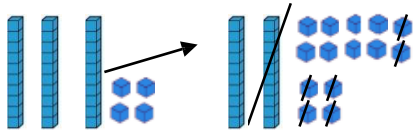


We can't subtract the ones. Can we partition differently?



Now we can subtract the ones and then subtract the tens.
42 – 15 = 27

3 Take 16 away from 34

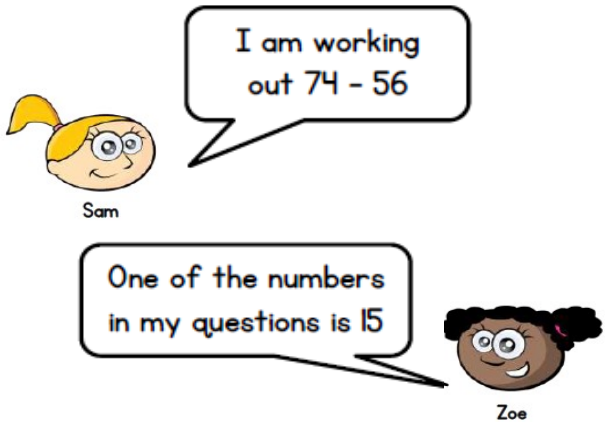


$$\begin{array}{r} {}^{2}\not{3}\,{}^{1}4 \\ -\ 1\ 6 \\ \hline 1\ 8 \end{array}$$

Subtract with 2-digits (2)

Reasoning and Problem Solving

Sam and Zoe are working out some subtractions.



Sam's answer is double Zoe's answer.

What could Zoe's subtraction be?

Sam's answer is 18

Zoe's answer is 9

Zoe's question could be 15 – 6 or 24 – 15

Find the greatest whole number that can complete each number sentence below.

$45 - 17 > 14 + \square$

13

$26 + 15 < 60 - \square$

18

Explain your answer.

Bonds to 100 (Tens and Ones)

Notes and Guidance

Here children build on their earlier work of number bonds to 100 with tens and number bonds to 10 and 20.

They use their new knowledge of exchange to find number bonds to 100 with tens and ones.

Mathematical Talk

How many more do we need to make 100?

How many tens are in 100?

If I have 35, do I need 7 tens and 5 ones to make 100? Explain why.

Can you make the number using Base 10?
Can you add more Base 10 to the number to make 100?

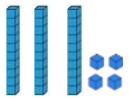
Varied Fluency

1 Use a 100 square.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- 40 squares are shaded, how many are not shaded?
- 45 squares are shaded, how many are not shaded?
- 54 squares are shaded, how many are not shaded?

2 Hamza is making 100 with base 10
How much more does he need if he has:

- 
- 5 tens and 3 ones
- 37

Children could place their base 10 on top of a 100 piece to help calculate.

3 $25 + \square = 100$

$100 - 84 = \square$

$\square + 69 = 100$

$100 - \square = 11$

Bonds to 100 (Tens and Ones)

Reasoning and Problem Solving

Chris has completed the missing number sentence.

$$46 + 64 = 100$$

Is Chris correct?
Explain your answer.

Chris is incorrect. He has seen number bonds to 10 but forgotten that he would need to exchange ten ones for one ten.

Complete the pattern

$$15 + 85 = 100$$
$$20 + 80 = 100$$
$$25 + 75 = 100$$
$$30 + \ldots\ldots = 100$$
$$\ldots\ldots + \ldots\ldots = 100$$

Can you explain the pattern?

$$30 + 70 = 100$$
$$35 + 65 = 100$$

The first numbers are going up in fives and the second numbers are going down in fives. All of the number sentences are number bonds to 100

Each row and column adds up to 100

Complete the grid.

45	45	
	35	
15		65

45	45	10
40	35	25
15	20	65

Add Three 1-digit Numbers

Notes and Guidance

Within this step, children need to use their knowledge of commutativity to find the most efficient and quick way to add the three one digit numbers.

They look for number bonds to 10 to help them add more efficiently.

Mathematical Talk

How many more do we need to make 100?

How many tens are in 100?

If I have 35, do I need 7 tens and 5 ones to make 100? Explain why.

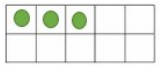
Can you make the number using Base 10?
Can you add more Base 10 to the number to make 100?

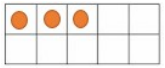
Varied Fluency

1 Use ten frames and counters to add the numbers
4 + 3 + 6

Can you add the numbers in a different way to find a number bond to 10?

4 + 6 = 10





10 + 3 = 13

2 Find the totals of each row and column.

5	4	2	
3	7	8	
5	7	3	

3 Use <, > or = to compare the number sentences.

5 + 4 + 6 ◯ 6 + 5 + 4

7 + 3 + 8 ◯ 7 + 7 + 3

9 + 2 + 5 ◯ 8 + 3 + 5

8 + 4 + 2 ◯ 2 + 5 + 8

Add Three 1-digit Numbers

Reasoning and Problem Solving

Always, sometimes, never? odd + odd + odd = odd Use one digit numbers to test if this is true. E.g. 3 + 5 + 7	Always – children should show this using different examples. They may recognise that two odds make an even so three odds make an odd.
Which numbers would you add together first in the following number sentences? Why would you add those first? 3 + 5 + 7 = 8 + 2 + 6 = 4 + 3 + 4 = Is there always an easier order to add three one digit numbers?	3 and 7 first – number bond to 10 8 and 2 first – number bond to 10 4 and 4 first – double a number. No, e.g. 5 + 6 + 7

Take 3 consecutive one digit numbers, e.g. 4, 5 and 6 Add them together. What do you notice? Choose different groups of 3 consecutive one digit numbers and see if there is a pattern.	1 + 2 + 3 = 6 2 + 3 + 4 = 9 3 + 4 + 5 = 12 4 + 5 + 6 = 15 5 + 6 + 7 = 18 6 + 7 + 8 = 21 7 + 8 + 9 = 24 If we order the groups, we can see that the totals go up by 3 each time. This is because we are adding one to each number each time so we are adding 3 extra altogether.