Spring Scheme of Learning

Year 1

#MathsEveryoneCan

2020-21

White Rose Maths

New for 2020/21

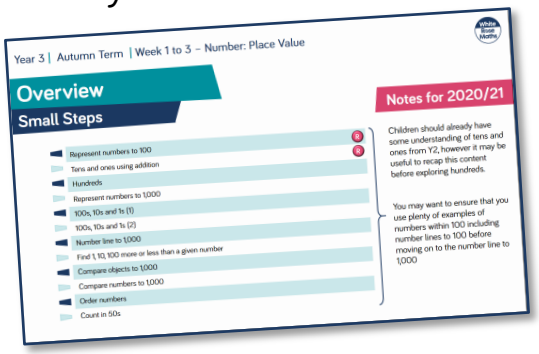
2020 will go down in history. The world has changed for all of us.

We want to do as much as we can to support children, teachers, parents and carers in these very uncertain times.

We have amended our schemes for 2020/21 to:

- ★ highlight key teaching points
- ★ recap essential content that children may have forgotten
- ★ flag any content that you might not have covered during the school closures period.

We hope these changes will add further value to the schemes and save you time.


Year 3 | Autumn Term | Week 1 to 3 – Number: Place Value

Overview

Small Steps

- Represent numbers to 100
- Tens and ones using addition
- Hundreds
- Represent numbers to 1,000
- 100s, 10s and 1s (1)
- 100s, 10s and 1s (2)
- Number line to 1,000
- Find 1, 10, 100 more or less than a given number
- Compare objects to 1,000
- Compare numbers to 1,000
- Order numbers
- Count in 50s

Notes for 2020/21

Children should already have some understanding of tens and ones from Y2, however it may be useful to recap this content before exploring hundreds.

You may want to ensure that you use plenty of examples of numbers within 100 including number lines to 100 before moving on to the number line to 1,000

Lesson-by-lesson overviews

We've always been reluctant to produce lesson-by-lesson overviews as every class is individual and has different needs. However, many of you have said that if blended learning becomes a key feature of school life next year, a weekly plan with linked content and videos could be really useful.

As always, we've listened! We've now produced a complete lesson-by-lesson overview for Y1 to Y9 that schools can use or adapt as they choose. Each lesson will be linked to a free-to-use home learning video, and for premium subscribers, a worksheet. This means that you can easily assign work to your class, whether they are working at home or in school.

Inevitably, this lesson-by-lesson structure won't suit everyone, but if it works for you, then please do make use of this resource as much as you wish.

Teaching for Mastery

These overviews are designed to support a mastery approach to teaching and learning and have been designed to support the aims and objectives of the new National Curriculum.

The overviews:

- have number at their heart. A large proportion of time is spent reinforcing number to build competency
- ensure teachers stay in the required key stage and support the ideal of depth before breadth.
- ensure students have the opportunity to stay together as they work through the schemes as a whole group
- provide plenty of opportunities to build reasoning and problem solving elements into the curriculum.

For more guidance on teaching for mastery, visit the NCETM website:

https://www.ncetm.org.uk/resources/47230

Concrete - Pictorial - Abstract

We believe that all children, when introduced to a new concept, should have the opportunity to build competency by taking this approach.

Concrete – children should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

Pictorial – alongside this children should use pictorial representations. These representations can then be used to help reason and solve problems.

Abstract – both concrete and pictorial representations should support children's understanding of abstract methods.

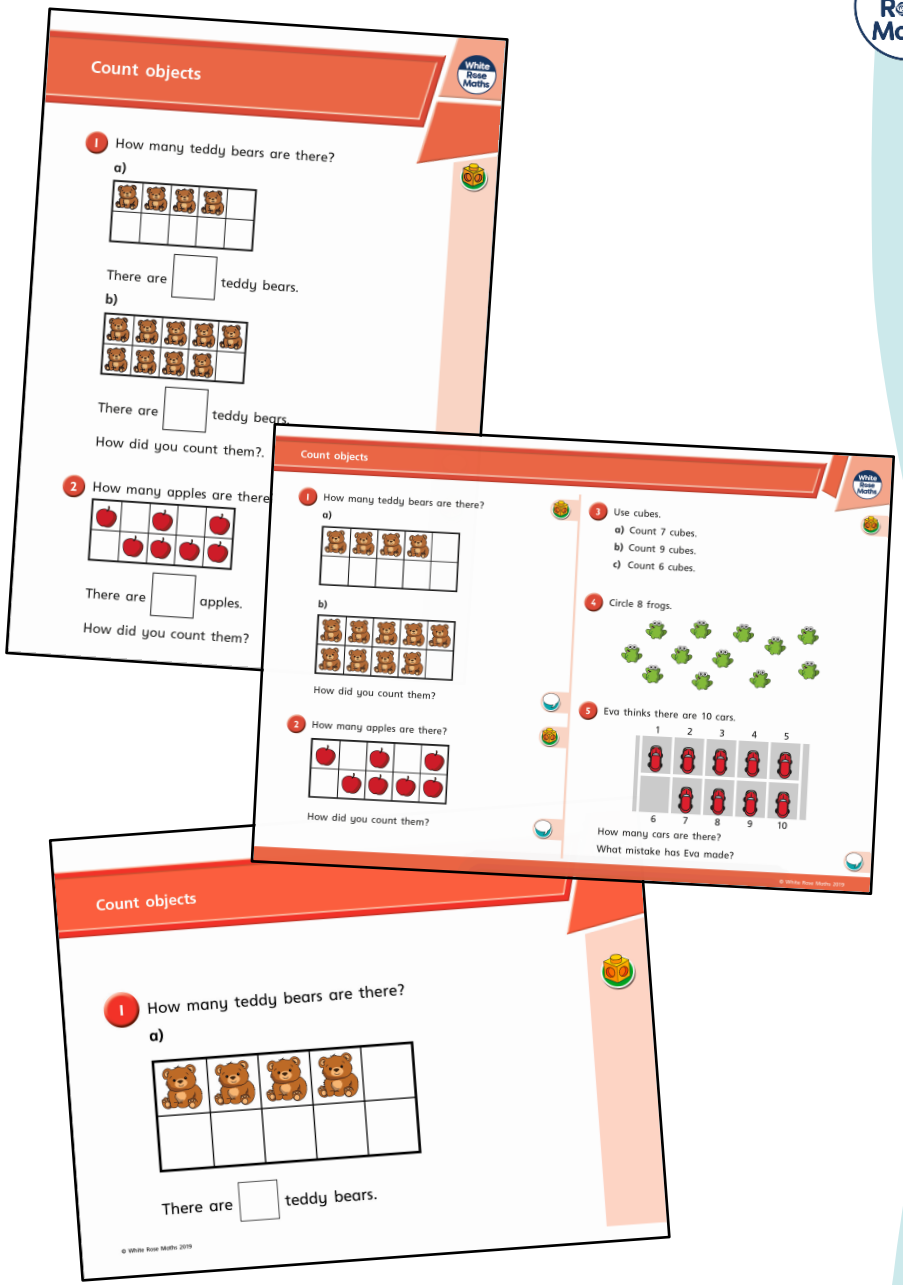
Need some CPD to develop this approach? Visit www.whiterosemaths.com for find a course right for you.

Supporting resources

We have produced supporting resources for every small step from Year 1 to Year 11.

The worksheets are provided in three different formats:

- Write on worksheet – ideal for children to use the ready made models, images and stem sentences.
- Display version – great for schools who want to cut down on photocopying.
- PowerPoint version – one question per slide. Perfect for whole class teaching or mixing questions to make your own bespoke lesson.



For more information visit our online training and resources centre resources.whiterosemaths.com or email us directly at resources@whiterosemaths.com

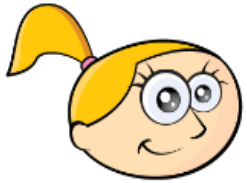
Meet the Characters

Children love to learn with characters and our team within the scheme will be sure to get them talking and reasoning about mathematical concepts and ideas. Who's your favourite?

Teddy

Rosie

Mo



Eva

Alex

Jack

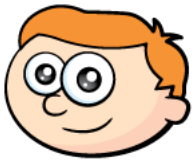
Whitney

Amir

Dora

Tommy

Dexter



Ron

Annie

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value (within 10)				Number: Addition and Subtraction (within 10)					Geometry: Shape	Number: Place Value (within 20)	
Spring	Consolidation	Number: Addition and Subtraction (within 20)			Number: Place Value (within 50)			Measurement: Length and Height		Measurement: Weight and Volume		Consolidation
Summer	Consolidation	Number: Multiplication and Division			Number: Fractions		Geometry: Position and Direction	Number: Place Value (within 100)		Measurement: Money	Measurement: Time	

White Rose Maths

Spring - Block 1

Addition & Subtraction

Overview

Small Steps

- Add by counting on
- Find & make number bonds
- Add by making 10
- Subtraction – Not crossing 10
- Subtraction – Crossing 10 (1)
- Subtraction – Crossing 10 (2)
- Related facts
- Compare number sentences

Notes for 2020/21

Addition within 10 is a vital topic in year 1 therefore we have given these concepts more time within our scheme of learning.

If children have a firm grasp of these concepts they will have a strong foundation to build upon in later years.

Add by Counting On

Notes and Guidance

Children explore addition by counting on from a given number. They begin to understand that addition is commutative and that it is more efficient to start from the largest number.
It is important that children see that they are not just adding two separate numbers or items, they are adding to what they already have.
Ensure children do not include their start number when counting on.

Mathematical Talk

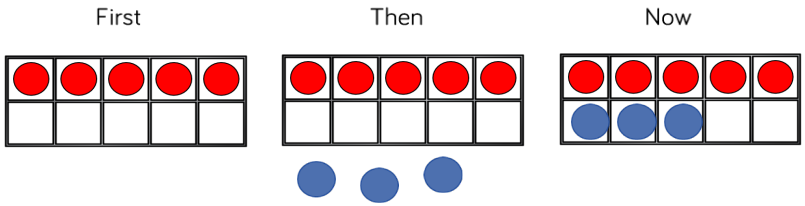
What number did you start with? Then what happened? Now what do I have?

What does each number represent? What do the counters represent?

How can I represent counting on using practical equipment?
How can I represent counting on using a bar model or a number line?

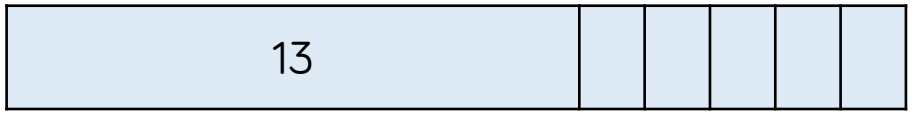
Varied Fluency

- Use ten frames to complete the number story.

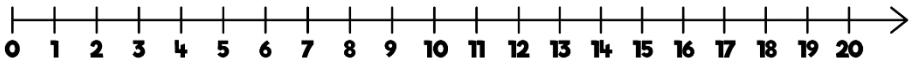


First there were ___ cars in the car park.
Then ___ more cars parked in the car park.
Now there are ___ cars in the car park.

- Eva has 13 prize tokens.
She wins 5 more.
How many prize tokens does Eva have now?



- Mo starts at 9 and counts on 6 $9 + 6 = \square$
Show his calculation on the number line.

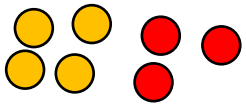


Add by Counting On

Reasoning and Problem Solving

Use the diagram and counters to tell your own number story for these calculations:

0 + 12 = ___
7 + 0 = ___
14 + ___ = 17



First	Then	Now

Children can come up with a range of contexts where they have an amount that is increasing. Using 'First, then and now' they describe it.

Mo and Jack are working out 11 + 7

Mo says,

11, 12, 13, 14, 15, 16, 17

Jack says,

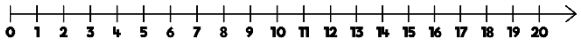
12, 13, 14, 15, 16, 17, 18

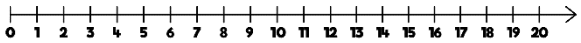
Use a number line to show who is correct.

Jack is correct as he has counted on 7 steps from 11
Mo has incorrectly included 11 when counting.

Ron starts at 9 and adds on 5
Alex starts at 5 and adds on 9
Show their calculations on the number lines.
What do you notice? Does this always happen?

Which method do you like best? Why?





Both children end on 14
This is because 9 + 5 is equivalent to 5 + 9

The children can explore their own calculations to understand that addition is always commutative.
They see that Ron's method is quicker because there is less to count on.

Find & Make Number Bonds

Notes and Guidance

Children see that working systematically helps them to find all the possible number bonds to 20
They will use their knowledge of number bonds to 10 to find number bonds to 20
Using examples such as, 7 + 3, 17 + 3 or 7 + 13 encourages children to see the link between bonds to 10 and bonds to 20 and reinforces their understanding of place value.

Mathematical Talk

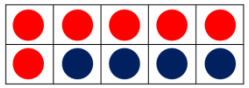
What strategy could you use to make sure you find all the number bonds?

What number bond can we see? How does this help us find the number bond to 20?

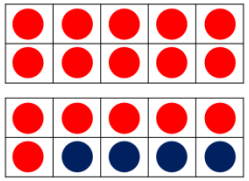
How does knowing your number bonds to 10 help you to work out your number bonds to 20?

Varied Fluency

- What number bond is represented in the pictures?

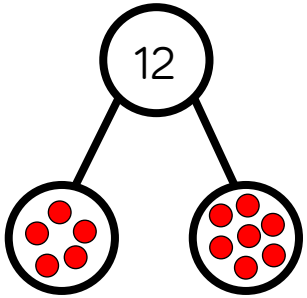


There are ___ red counters.
There are ___ blue counters.
Altogether there are ___ counters.
___ + ___ = ___ ___ + ___ = ___



There are ___ red counters.
There are ___ blue counters.
Altogether there are ___ counters.
___ + ___ = ___
___ + ___ = ___

- Continue the pattern to find all the number bonds to 12
How do you know you have found them all?



12 = 12 + 0
12 = 11 + ___
12 = 10 + ___

Find & Make Number Bonds

Reasoning and Problem Solving

Use equipment to represent each of the calculations below.

What is the same?
What is different?

$$7 + 3 = 10$$

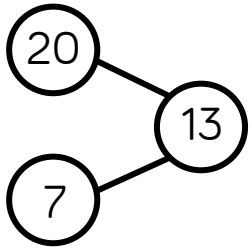
$$17 + 3 = 20$$

$$20 = 7 + 13$$

Explain your thinking.

Children may notice that the = is in a different place.
They might notice that the number of ones remains the same and that a ten has been added to create a number bond to 20
Mathematical equipment such as ten frames or Base 10 will make this clear.

Jack represents a number bond to 20 in the part whole model.



Can you spot his mistake?

Possible response: Jack has put 20 as a part but it should be a whole.

True or false?

There are double the amount of numbers bonds to 20 than there are number bonds to 10

Prove it – can you use a systematic approach?

False – there are 11 number bonds to 10 and 21 number bonds to 20 Children can show this in various ways.

Add by Making 10

Notes and Guidance

Children add numbers within 20 using their knowledge of number bonds.
It is important that children work practically using ten frames and/or number lines to help them see how number bonds to 10 can help them calculate.
They will move towards using this as a mental strategy.

Mathematical Talk

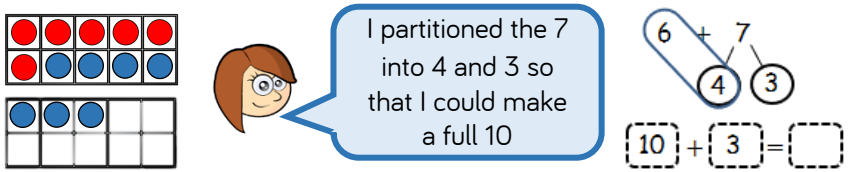
How can you partition a number and use your number bonds to 10 to help you?

How does using the counters help you to see this strategy?

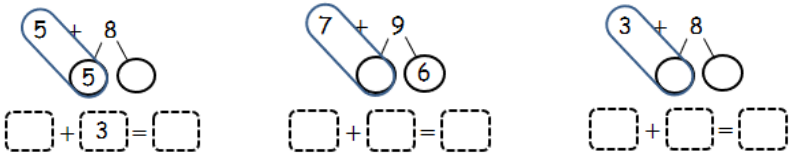
How does using a number line help you to see this strategy?

Varied Fluency

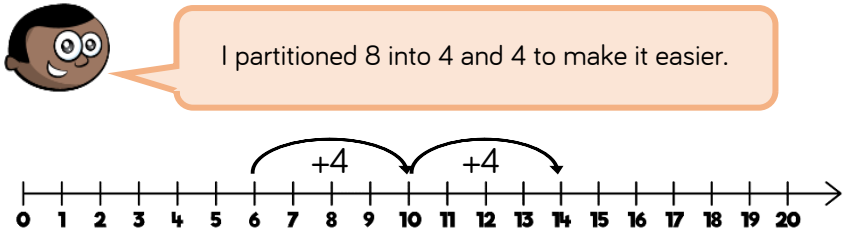
- Rosie has used the 10 frames to calculate 6 + 7



Use Rosie's method to complete:



- Mo has used a number line to calculate 6 + 8



Use Mo's method to calculate:

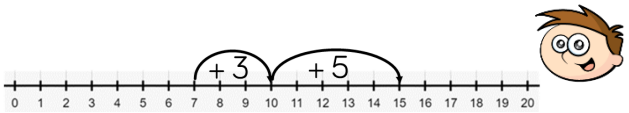
5 + 8 = ☐ 9 + 4 = ☐ 6 + 8 = ☐

Add by Making 10

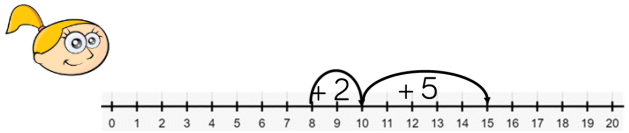
Reasoning and Problem Solving

Teddy and Eva are adding together 7 and 8 using a number line.

Teddy shows it this way:



Eva shows it this way:



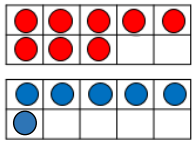
Who is correct?
Explain your answer.

They are both correct because addition is commutative and the answer to both calculations is 15

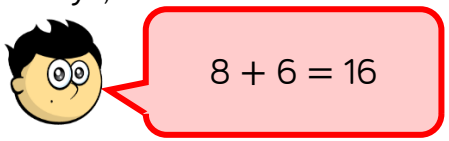
Teddy has started with 7 and partitioned the 8 into 3 and 5 to make 10

Eva has started with 8 and partitioned the 7 into 2 and 5 to make 10

Dexter uses ten frames to calculate eight plus six.



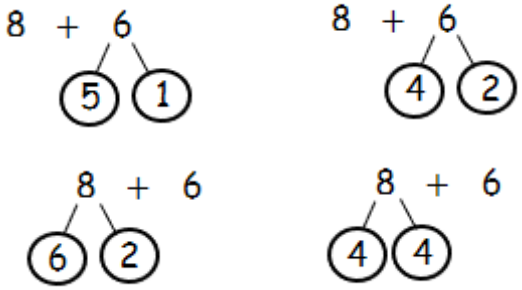
He says,



Do you agree?
Explain why.

Dexter is wrong because the answer should be 14. He should have filled the first ten frame before starting a second one.

Annie is calculating 8 + 6
Which of these methods is most helpful?
Why?



Partitioning the 6 into 4 and 2 is helpful as 8 and 2 make 10

Partitioning the 8 into 4 and 4 is helpful as 6 and 4 make 10

Subtraction – Not Crossing 10

Notes and Guidance

Children build on the language of subtraction, recognising and using the subtraction symbol within 20

The use of zero is important so children know that when nothing is taken away, the start number remains the same or when the whole group is taken away, there will be nothing left.

They will also use the part-whole model alongside practical equipment to reinforce number bonds within 20

Mathematical Talk

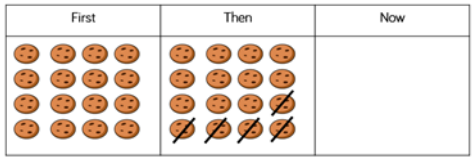
How many objects were there at first? Then what happened to the objects? How many objects are there now?

If Mo ate nothing, what number would we use to represent this? How do we write this as a calculation? What does the zero represent in this calculation?

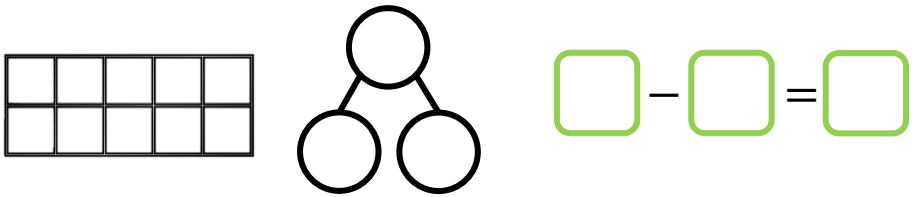
If Mo ate all of the biscuits, what number would we be left with? How do we write this as a calculation? What does the zero represent in this calculation?

Varied Fluency

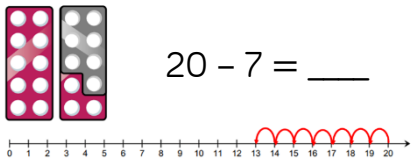
- There are 16 biscuits on a plate. Mo eats 5 of them.
  Complete the sentences.
  First there were ___ biscuits.
  Then ___ were eaten.
  Now there are ___ biscuits.
  16 – 5 = ___



- First there were 9 sheep. Then they all ran away.
  How many sheep are left?
  Use ten frames and counters to represent the sheep.



- Use the number pieces and the number line to complete the number sentences.



20 – 7 = ___

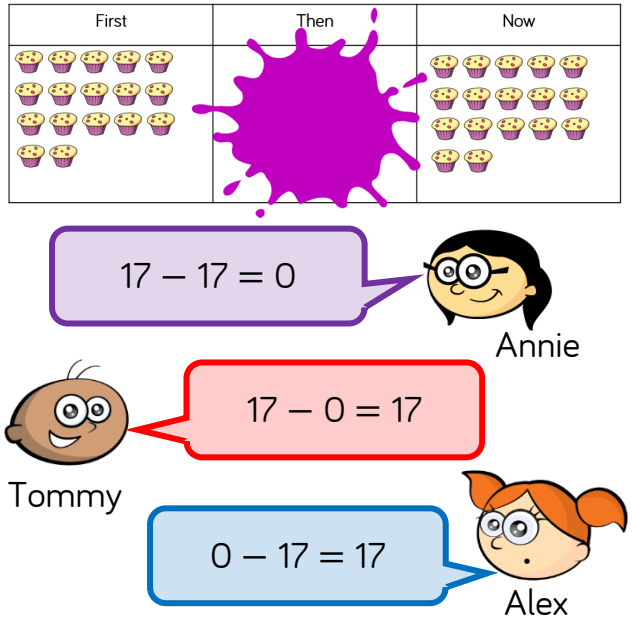
Use this method to calculate:

20 – 8
18 – 6
19 – 4

Subtraction – Not Crossing 10

Reasoning and Problem Solving

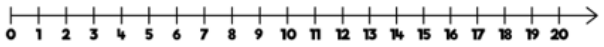
Annie, Tommy and Alex are working out which calculation is represented below.



Can you work out who is correct?
Explain why.

Possible response:
Tommy is correct because first there were 17 cakes and now there are still 17 cakes so zero cakes were eaten.

How many ways can you complete this number sentence?
Use the number line to help you.



☐ – ☐ = 11

20 – 9 = 11
19 – 8 = 11
18 – 7 = 11
17 – 6 = 11
16 – 5 = 11 etc.

Subtraction – Crossing 10 (1)

Notes and Guidance

For the first time, children will be introduced to subtraction where they have to cross ten. This small step focuses on the strategy of partitioning to make ten.

Children should represent this using concrete manipulatives or pictorially to begin with. Ten frames and number lines are particularly useful to model the structure of this strategy.

Children will move towards using this as a mental strategy.

Mathematical Talk

How can you partition a number to help you subtract?

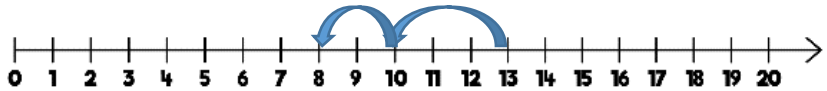
How does using the counters help you to see this strategy?

How does using a number line help you to see this strategy?

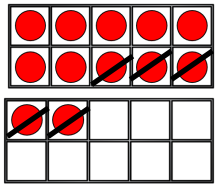
Can you think of another way to represent this problem?

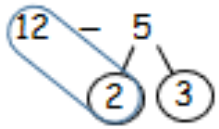
Varied Fluency

- First there were 13 jam tarts. Then 5 were eaten. Now there are 8 jam tarts.



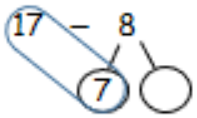
- Rosie has used the ten frames to calculate 12 – 5



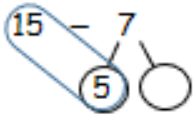


10 – 3 = 7

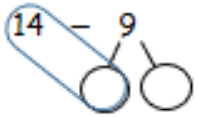
Use her method to complete:



10 – ☐ = ☐



☐ – ☐ = ☐



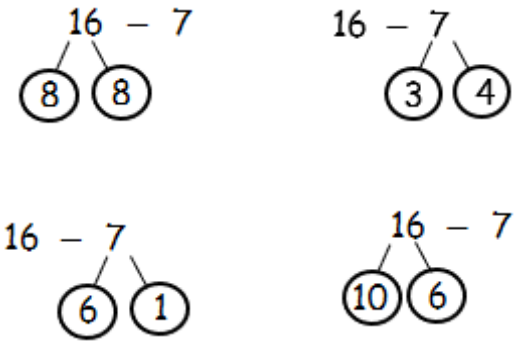
☐ – ☐ = ☐

Subtraction – Crossing 10 (1)

Reasoning and Problem Solving

Rosie is calculating 16 – 7

Which of these methods is most helpful? Why?



Could you find a way to partition 16 to help you subtract 7?

Partitioning the 7 into 6 and 1 is useful as Rosie can subtract the 6 to make 10 then subtract the 1

If you partition 16 into 7 and 9, you can subtract 7

Teddy works out 15 – 6
This is Teddy's working out:

15 – 5 = 10 – 1 = 9

Why is Teddy's working out wrong?

Teddy has used the = sign incorrectly.
10 – 1 is not equal to 15 – 5
He should have written:
15 – 5 = 10
10 – 1 = 9

Use <, > or = to make the statements correct.

I can do this without working out any answers.

17 – 5 ◯ 12 – 5

14 – 4 ◯ 18 – 8

11 – 7 ◯ 11 – 4

Is Whitney correct? Explain how you know.

17 – 5 > 12 – 5

14 – 4 = 18 – 8

11 – 7 < 11 – 4

Subtraction – Crossing 10 (2)

Notes and Guidance

Children subtract numbers, within 20, crossing the 10. Children begin to understand the different structures of subtraction (taking away, partitioning, difference).

They use concrete manipulatives and pictorial methods to support their understanding.

One of the most difficult concepts for children is finding the difference where they subtract to calculate how many more.

Mathematical Talk

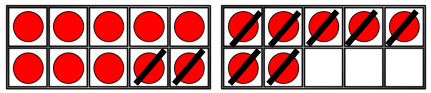
How do the counters and bar models help you to subtract?

Which method would you use to show your thinking and why?

Did you count forwards or backwards? Why?

Varied Fluency

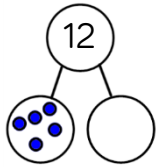
- Complete the number sentences to describe what happens to the sweets.



First there were ___ sweets.
Then ___ sweets were eaten.
Now there are ___ sweets.

☐ – ☐ = ☐

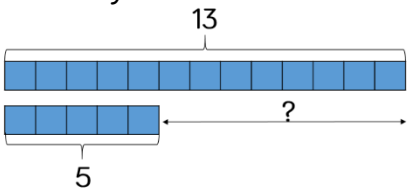
- There are 12 cars in the car park.
5 of them are blue.
How many are red?



☐ – ☐ = ☐

___ of the cars are red.

- Adam has 13 playing cards.
Oliver has 5 playing cards.
How many more cards does Adam have?



☐ – ☐ = ☐

Subtraction – Crossing 10 (2)

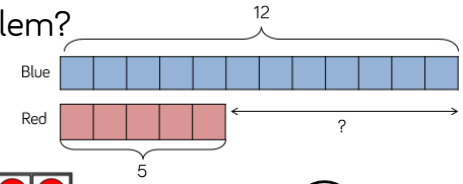
Reasoning and Problem Solving

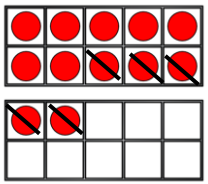
A
Max has 12 balloons.
5 of the balloons burst.
How many are left?

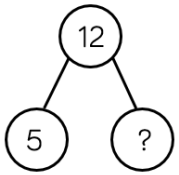
B
Max has 12 balloons.
5 of the balloons are red.
There rest are blue.
How many blue balloons does Max have?

C
Max has 12 blue balloons and 5 red balloons.
How many more blue balloons than red balloons does he have?

Which method would you use to solve each problem?



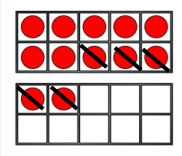




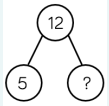
Ask the children to justify which method they would use and why.

Possible answers:

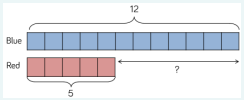
A Take away

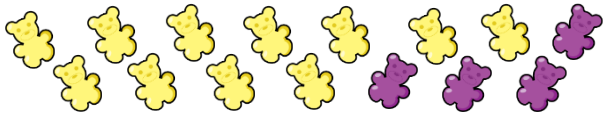


B Partitioning



C Difference



Amir has 16 apples. Ron has none. Amir gives Ron 9 apples. Who has the most apples now? Explain how you know.	Ron because he has 9 and Amir only has 7 left. 16 – 9 = 7
Look at the following objects.  Teddy works out these calculations. 15 – 4 = ____ 15 – 11 = ____ 11 – 4 = ____ What question could he have asked each time?	15 – 4 = 11 (Teddy has 15 bears. He eats 4. How many are left?) 15 – 11 = 4 (11 are yellow how many are purple?) 11 – 4 = 7 (How many more yellow bears are there?)

Related Facts

Notes and Guidance

Children explore addition and subtraction fact families for numbers within 20. They should work concretely and pictorially to find links between the addition and subtraction sentences.
They should recognize that addition and subtraction are inverse operations.
Children should begin to understand that addition is commutative but subtraction is not.

Mathematical Talk

What's the same and what's different?

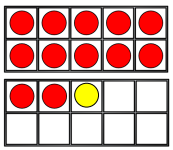
If we know 12 + 1 = 13, what else do we know?

Can you see any patterns?

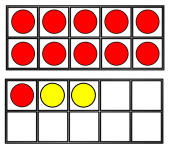
If we know that 15 – 3 = 12, why can't we say 3 – 15 = 12?

Varied Fluency

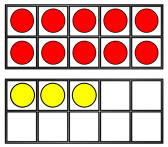
- Complete the addition sentences.



12 + 1 = 13



11 + ___ = 13

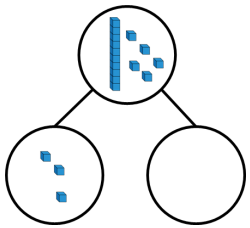


___ + ___ = ___

Can you write a subtraction sentence for each?

13 – 1 = 12 13 – ___ = ___ ___ – ___ = ___

- Complete:



15 – ___ = 3
15 – 3 = ___
3 + ___ = 15
___ + 3 = 15

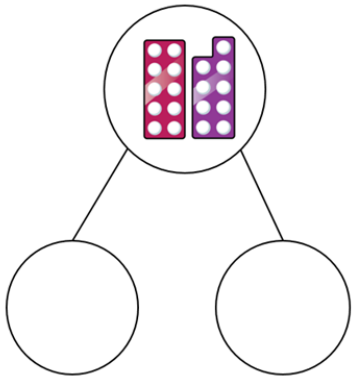
- Complete and write addition and subtraction sentences for each bar model.

Can you use the numbers 8, 7 and 15 to make a bar model?
Can you write addition and subtraction sentences for this bar model?

Related Facts

Reasoning and Problem Solving

Use the cards to write as many addition and subtraction sentences as you can.

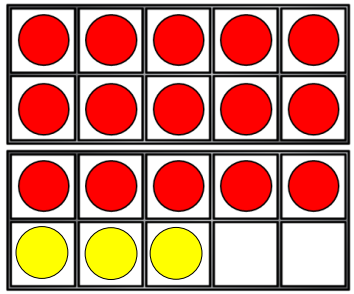


nine	add
ten	subtract
nineteen	is equal to

Children can use the words to create sentences

Possible answers:
Nine add ten is equal to nineteen.
Nine is equal to nineteen subtract ten.

Circle the addition and subtraction number sentences that match the ten frames.



15 + 3 = 18	15 – 3 = 18
3 + 18 = 15	18 – 15 = 3
18 + 3 = 15	18 – 3 = 15
18 = 3 + 15	15 – 18 = 3

15 + 3 = 18
18 – 15 = 3
18 – 3 = 15
18 = 3 + 15

Compare Number Sentences

Notes and Guidance

Children compare number sentences within 20 using inequality symbols.

Children may still need to use concrete manipulatives or draw images to help them compare calculations.
They should be encouraged to look at whether it is always necessary to have to work out the answers to calculations in order to compare them.

Mathematical Talk

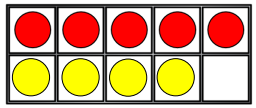
What do each of the symbols mean?

Do you always have to work out the answers to be able to compare calculations? Why?

Why might Tommy put 8 into the example below?
e.g. 7 + 1 = ___ – 2

Varied Fluency

- Which card completes the number sentence?

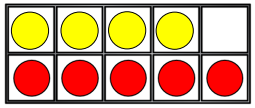


5 + 4

is more than

is less than

is equal to



4 + 5

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

3 + 8 ◯ 8 + 3

18 – 5 ◯ 18

12 + 4 ◯ 12 – 4

- Choose the correct digit card to make the number sentences correct.

13 – 5 < 13 – ___
16 – 4 = ___ + 4
9 + ___ > 9 + 1

4 8 2

Compare Number Sentences

Reasoning and Problem Solving

Alex

Any number less than 11 would make this correct.

$7 + 11 < 7 + \_\_$

Do you agree with Alex?

Explain why.

Alex is incorrect. She needs to use any number greater than 11

Whitney has 16 sweets and eats 7 of them.

Mo has 17 sweets and eats 8 of them.

Who has more sweets left?

Explain how you know.

Mo and Whitney have the same. $16 - 7$ is equal to $17 - 8$

Dexter is working out which symbol to use to compare the number sentences.

$14 - 5$ ◯ $14 + 5$

The missing symbol must be = because all of the numbers are the same.

Do you agree with Dexter?
Explain why.

Dexter is incorrect because when you take 5 away from 14 the answer will be smaller than when you add 5 to 14 so the correct symbol should be <