Released December 2017

Year 1

Small Steps Guidance and Examples

Block 1: Addition and Subtraction

White Rose Maths

Year 1 – Yearly Overview

	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)		Consolidation
Spring	Number: Addition and Subtraction (within 20)				Number: Place Value (within 50) (Multiples of 2, 5 and 10 to be included)			Measurement: Length and Height		Measurement: Weight and Volume		Consolidation
Summer	Number: Multiplication and Division (Reinforce multiples of 2, 5 and 10 to be included)			Number: Fractions		Geometry: position and direction	Number: Place Value (within 100)		Measurement : money	Time		Consolidation

Week 1 to 4 – Number: Addition and 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

NC Objectives

Represent and use number bonds and related subtraction facts within 20

Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.

Add and subtract one-digit and two-digit numbers to 20, including zero.

Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7= □ –9

Add by Counting On

Notes and Guidance

Children use their knowledge of adding up to 10 to add up to 20. Understanding that addition is commutative, they start with the larger number in order to add on efficiently.
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. Teachers should ensure that children do not include their start number when counting on.

Mathematical Talk

Which number should we start with? Why?

Where do we start using a number line?

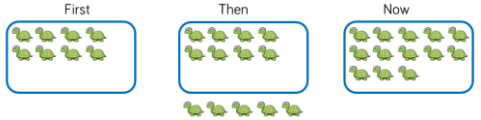
How many ___ were there at first?

Then what was added?

How many are there now?

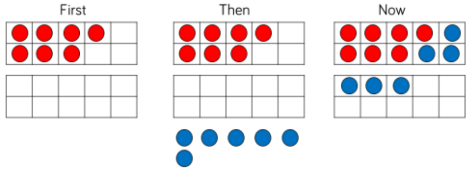
Varied Fluency

1 Complete the sentences.



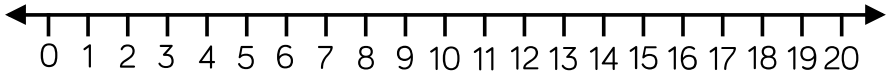
First there were ___ turtles.
Then ___ more joined the group.
Now there are ___ turtles.

2 Use ten frames to help you fill in the missing numbers.



First there were ___.
Then ___ more were added.
Now there is ___.

3 Jo has 13 prize tokens.
She wins 5 more.
How many prize tokens does Jo have now?
Show your calculation on the number line.



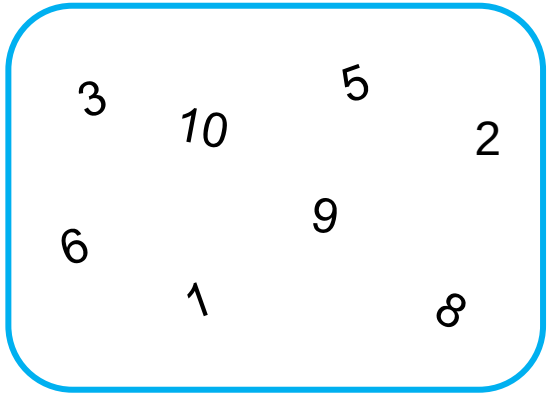
Add by Counting On

Reasoning and Problem Solving

Ralph is thinking of the number 11

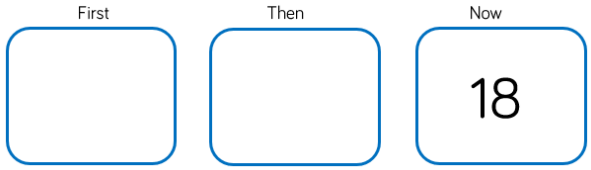
Which number does he choose out of the box to make:

- 14
- 19
- 12



$11 + 3 = 14$
$11 + 8 = 19$
$11 + 1 = 12$

A one-digit number is added to a two-digit number.
The answer is 18



What could the missing numbers be?

$17 + 1$
$16 + 2$
$15 + 3$
$14 + 4$
$13 + 5$
$12 + 6$
$11 + 7$
$10 + 8$

Find & Make Number Bonds

Notes and Guidance

Children will use their knowledge of number bonds to 10 to find number bonds to 20.

When using a number bond to 10 to make a number bond to 20, children will understand that the ones will stay the same but one number will also have one ten.
For example, 7 + 3 could become 17 + 3 or 7 + 13 when a ten is added to one of the numbers.

Mathematical Talk

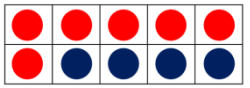
Look at the tens frame. How many red counters are there? How many blue counters? How many are there altogether?
Now look at the tens frame. What is the same? What is different?
How has our number bond to 10 changed?

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

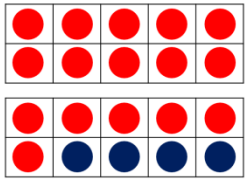
If I know ___ + ___ = 10, how will this help me?

Varied Fluency

1 What number bond is represented in the picture?

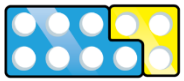


There are ___ red counters.
There are ___ blue counters.
Altogether there are ___ counters.
___ + ___ = ___ ___ + ___ = ___

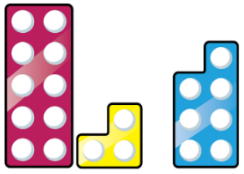


There are ___ red counters.
There are ___ blue counters.
Altogether there are ___ counters.
___ + ___ = ___
___ + ___ = ___

2 Describe the number bond shown.



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

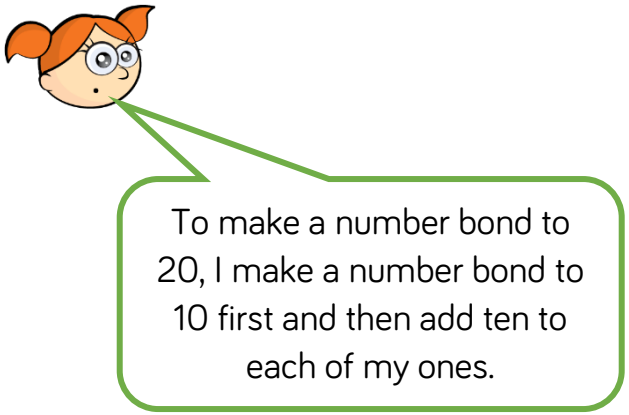


Use this to describe this number bond.
___ and ___ make ___
___ is made of ___ and ___
___ + ___ = ___ ___ + ___ = ___
___ − ___ = ___ ___ − ___ = ___

Find & Make Number Bonds

Reasoning and Problem Solving

Jenny says,

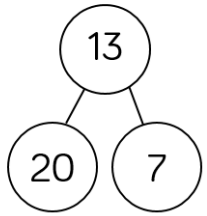


Do you agree?
Explain your answer.

Possible response:

Jenny is wrong because if she made a number bond to 10, e.g. 4 + 6 and then added ten to each of the ones she would get 14 + 16 and that would be more than 20
Jenny only needs to add ten to one of her ones e.g. 14 + 6

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



Can you spot his mistake?

Possible response:
Sam 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!

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 will add numbers within 20 by first making 10
Children will use their understanding of the part whole model and numbers bonds within 10 to make 10 first and then add on the remaining ones. They can build on their knowledge of commutativity and see that it does not matter which number comes first when using this strategy.
Children will use tens frames to help them see how number bonds to 10 can help them move towards mental methods.

Mathematical Talk

How did you count the counters? Do you need to count them all? Which number did you start from?

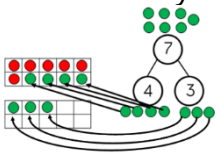
Which number would you start counting from on the number line?

How did your number bonds to 10 help you to solve the problem?

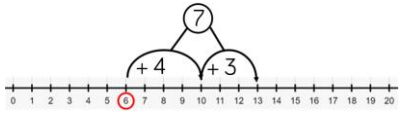
How can you move the counters to help you find the total?

Varied Fluency

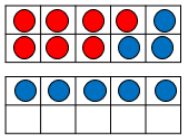
1 Hannah has 6 balloons and Lilly gives her 7 more.
How many balloons does she have altogether?
Use the ten frames and the part whole model to find the total. Show your calculation on a number line.



$6 + 4 = 10$
$10 + 3 = 13$

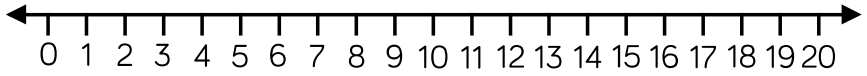


2 Write a number sentence to describe what has happened on the ten frames.



$\square + \square = \square$

Use a number line to find the answer.



3 Represent each calculation on ten frames and a number line

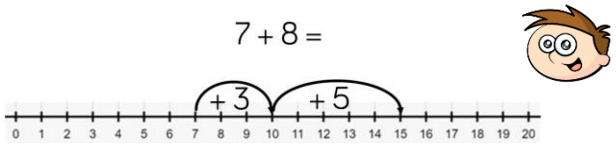
$5 + 8 = \square$ $9 + 4 = \square$ $6 + 8 = \square$

Add by Making 10

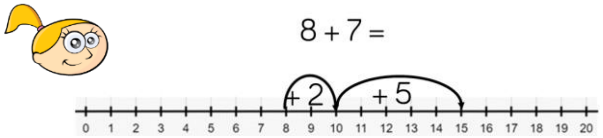
Reasoning and Problem Solving

Alex and Eva are trying to add 7 and 8 together using a number line.

Alex shows it this way:



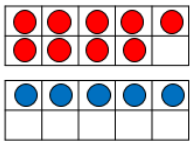
Eva shows it this way:



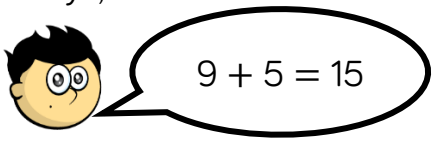
Who is correct?
Explain your answer.

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

Mark uses ten frames to find the calculate nine plus five.



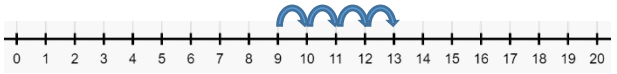
He says,



Do you agree?
Explain why.

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

Coral worked out the answer to 9 + 5 using a number line.
Here is what she did?



Can you explain what she has done wrong?
Show what she should have done on your own number line.

Coral has counted the numbers rather than the jumps. She should have five jumps which would make the answer 14

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.

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

Mathematical Talk

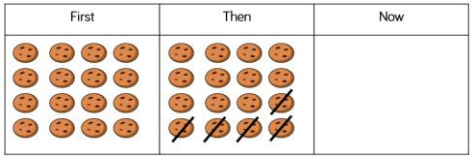
How many objects were there at first? Then what happened to the objects? How many objects are there now?

If Finn ate nothing, what number would we use to represent this? How do we write this as a calculation?
If Finn ate all of the biscuits what number would we be left with? How do we write this as a calculation?

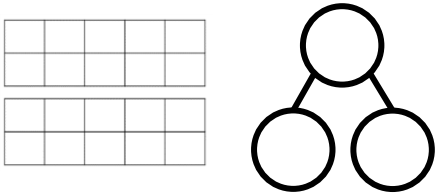
What does the zero represent in this calculation? What does it represent in the other calculation?

Varied Fluency

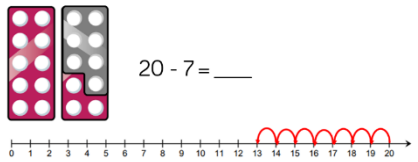
1 There were 16 biscuits on a plate and Finn ate 5 of them.
Complete the sentences.
First there were ___ biscuits.
Then ___ were eaten.
Now there are ___ biscuits.
16 – 5 = ___



2 First there were 18 sheep. Four of them ran away.
How many sheep are left?
Use ten frames and counters to represent the sheep.



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



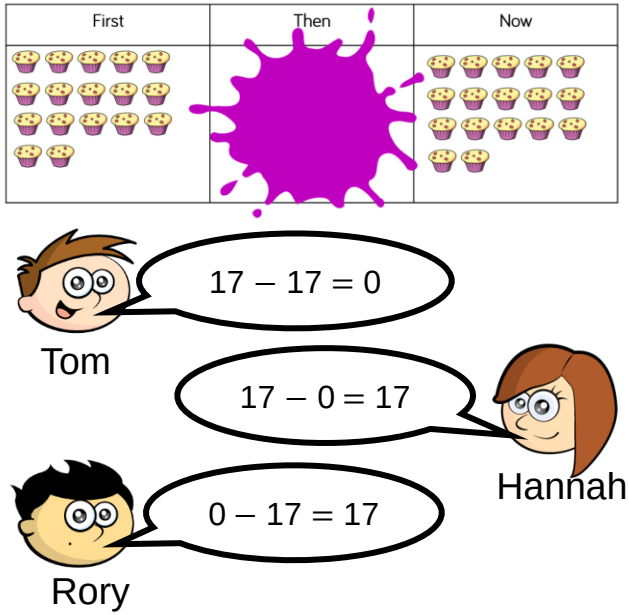
Use this method to calculate:

- 20 – 8
- 18 – 6
- 19 – 4

Subtraction – Not Crossing 10

Reasoning and Problem Solving

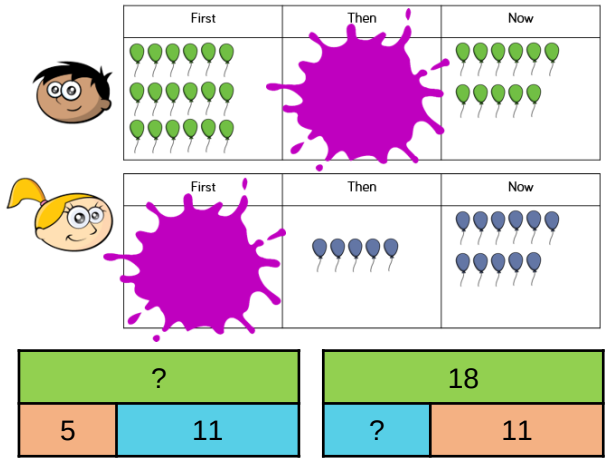
Tom, Hannah and Rory are working out which calculation is represented below.



Can you work out who is correct?
Explain why.

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

Kate and Stephen have some balloons.
Some of their balloons fly away.



Who had more balloons at the start?
Who lost more balloons?
Explain why.

Use the images and the bar model to help you.

Stephen had more balloons to begin with as he had 18 and Kate only had 16

Stephen also lost more balloons because he lost 7 whereas Kate only lost 5

Subtraction – Crossing 10 (1)

Notes and Guidance

For the first time children will undertake subtraction where they have to cross 10. We recommend that this is first introduced through the concept of "take-away" as conceptually children understand this easier.

They will build on their previous knowledge of partitioning numbers, different ways of making numbers within 10, as well as counting back and 'crossing out' methods of subtraction.

Mathematical Talk

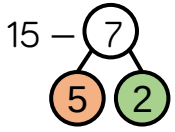
How can we partition the number? Are there any other ways?

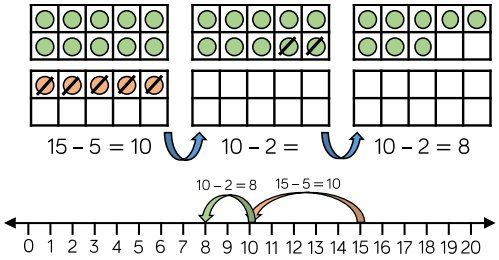
Why would you partition the number that way?

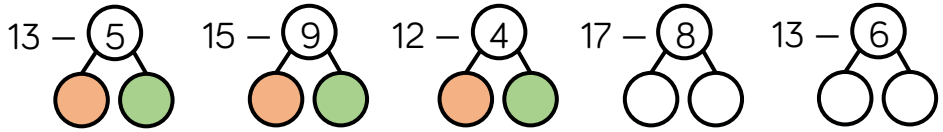
Which way will we travel on the number line if we are subtracting?

Varied Fluency

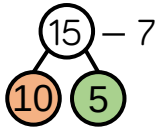
1 Complete the following calculations using base ten and a number line.

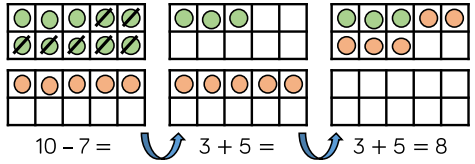


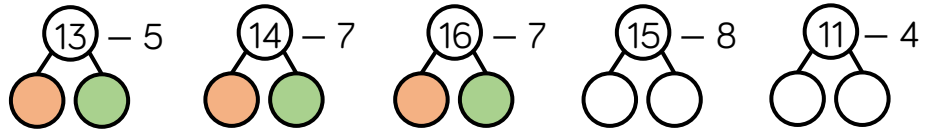




2 Complete the following calculations using base ten to help you.



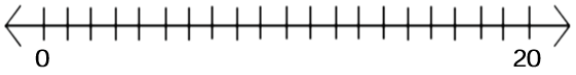




Subtraction – Crossing 10 (1)

Reasoning and Problem Solving

Tia is working out 12 – 4 by counting back on a number line.



Her answer is 9

What has Tia done wrong?

Can you explain her mistake?

What should the answer be?

Tia has counted 12 instead of 11 as her first jump back.

12 – 4 = 8

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

17 – 5 ◯ 12 – 5

14 – 4 ◯ 18 – 8

11 – 7 ◯ 11 – 4

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. They look at subtraction as take away. Then children look at subtraction as partitioning and then they will go on to see subtraction as the difference.

Children use stem sentences to help them understand the structure of construction.

Mathematical Talk

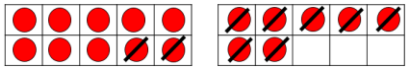
Can you explain the subtraction using first, then and now?

Where will you start on the number track each time?
Why?

Did you count forwards of backwards?
Which do you find easier?

Varied Fluency

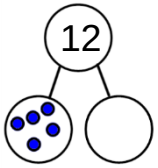
1 Complete the number sentences to describe what happens to the sweets.



□ – □ = □

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

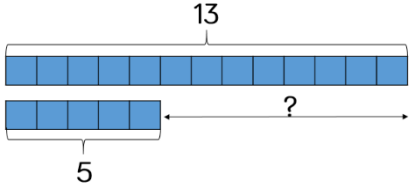
2 There are 12 red and blue cars in the car park.
5 of them are blue. How many are red?



□ – □ = □

___ of the cars are red.

3 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

What is the same and what is different about these problems?

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

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

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

Same:
They all involve balloons
They all need you to subtract 5 from 12

Different:
There are different uses of subtraction
The last problem has 17 balloons

Jim has 16 apples.
He gives Sam 9 apples.
Who has the most apples now?
Explain how you know.

Sam because he has 9 and Jim only has 7 left.

Look at the following objects.

Billy works out these calculations.
What is the question?
What is the answer?

11 – 4 =
11 – 8 =
15 – 9 =
15 – 11 =

11 – 4 = 7 (How many more yellow bears are there?)
11 – 8 = 3 (Billy eats 8 yellow how many yellow are left?)
15 – 9 = 6 (Billy eats 9 how many are left?)
15 – 11 = 4 (11 are yellow how many are purple?)

Related Facts

Notes and Guidance

Children explore addition and subtraction fact families for numbers within 20

Children should work concretely and pictorially to find links between the addition and subtraction sentences and recognise the inverse operation.

Mathematical Talk

What's the same and what's different about the ten frames?

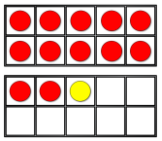
How could we use counters and ten frames to find the missing part in the bar model?

If we know ___, what else do we know?

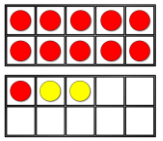
Can you think of any other ways to describe this number sentence?

Varied Fluency

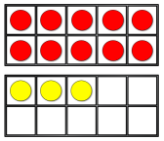
1 Complete the addition sentences.



12 + 1 = 13



11 + __ = 13

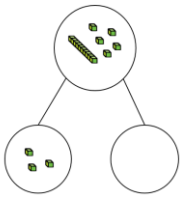


10 + __ = 13

Can you write a subtraction sentence for each?

13 – __ = __ 13 – __ = __ 13 – __ = __

2 Complete:



15 subtract ___ equals 4
15 – 3 = ___
3 add ___ equals 15
___ + 3 = 15

3 Complete and write 4 addition and subtraction sentences for each bar model.

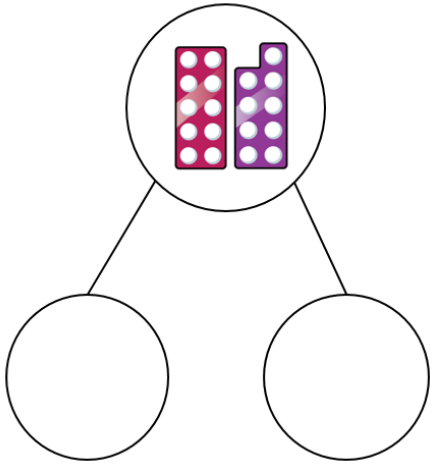
Can you use the numbers 8, 7 and 15 to make a bar model? Can you write 4 addition and subtraction sentences about this bar model?

Related Facts

Reasoning and Problem Solving

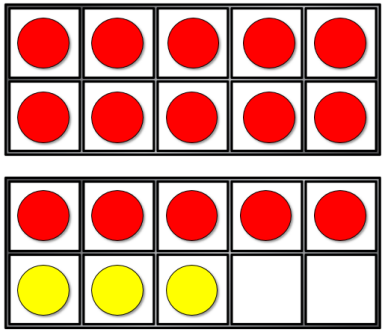
Investigate how many different ways you can complete the missing parts.

Record any addition and subtraction fact families you find.



Children could complete the parts using different number bonds e.g. 19 + 0, 18 + 1 etc and then write the correct addition and subtraction families to match their part whole model.

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
3 + 15 = 18	15 – 18 = 3

Correct answers:

15 + 3 = 18

18 – 15 = 3

18 – 3 = 15

3 + 15 = 18

Compare Number Sentences

Notes and Guidance

Children will 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 need to 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

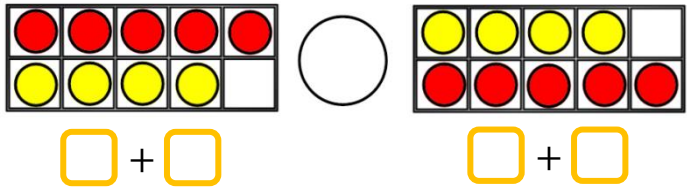
What do each of the symbols mean?

What do you notice about the two ten frames?

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

Varied Fluency

1 Choose the correct symbol <, > or = to compare the number sentences.



□ + □ ○ □ + □

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

18 – 5	○	18 – 4
12 + 4	○	12 – 4
8 + 7	○	9 + 6

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

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

Compare Number Sentences

Reasoning and Problem Solving

Jamie has 16 sweets and eats 7 of them.

Sam has 18 sweets and eats 6 of them.

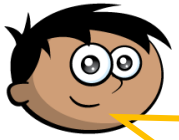
Who has more sweets left?

Explain how you know.

Sam because he has 12 sweets left and Jamie only has 9

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

$$14 - 5 \bigcirc 14 + 5$$



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

Do you agree with Raj? Explain your answer.

Raj 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 <