

# Unit 11

## Number bonds to 10

**Mastery Expert tip!** "Asking children to show the bonds to 10 in different representations, including on their fingers, and encouraging them to describe what they could see really helped them to embed these key facts and to understand commutativity."

**Don't forget to watch the Exploring composition video!**

### Early Learning Goals

This unit supports the following ELG:

→ **Number ELG:**

Have a deep understanding of number to 10, including the composition of each number

Subitise (recognise quantities without counting) up to 5

Automatically recall number bonds up to 5 and some number bonds to 10, including double facts

### WHY THIS UNIT IS IMPORTANT

This unit explores the vital building block for understanding number, the bonds to 10. These are represented in a ten frame and in part-whole models and using counters. The learning in this unit forms the basis for understanding addition (including the commutative law), which can then be applied to larger numbers. Key language related to both addition and subtraction is used throughout.

### WAYS OF WORKING

Ensure that children have access to double-sided counters (or counters in two colours) for this unit, which they can use to represent the objects. Blank ten frames and part-whole models will help children structure their work and enable them to recreate the questions in the **Online Flashcards** and **Maths Journal**.

### WHERE THIS UNIT FITS

→ Unit 10: Measure

→ **Unit 11: Number bonds to 10**

→ Unit 12: Subtraction

In this unit, children continue exploring addition, now looking specifically at the number bonds to 10. These are shown in a ten frame and using the whole-part model, which have both been used before. Children begin to explore the bonds in a more systematic way and recognise the commutative law of addition. Children are introduced to missing parts as a precursor to subtraction by counting on or back.

#### Link to Key Stage 1

#### Number – number and place value

- count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number; count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
- identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least
- given a number, identify one more and one less
- read and write numbers from 1 to 20 in numerals and words.

#### Number – addition and subtraction

- represent and use number bonds and related subtraction facts within 20

A solid understanding of the number bonds to 10 is the foundation of understanding all number bonds.

## ASSESSING MASTERY

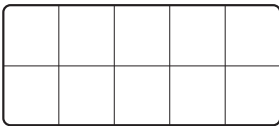
Children who have mastered this unit will be able to:

- confidently use the vocabulary of number bonds and addition
- accurately identify pairs of numbers with a total of 10
- use a ten frame and a part-whole model to represent bonds to 10
- understand that if 8 and 2, for example, make 10, then so must 2 and 8

COMMON MISCONCEPTIONS	STRENGTHENING UNDERSTANDING	GOING DEEPER
Children may not see that the whole is the sum of the parts in a part-whole model.	Using counters, encourage children to lay out the amount in each part in a long line or in the ten frame format to compare the sum of the two parts with the total in the whole.	Ask children to identify the whole, given the two parts, or the missing part given the whole and one part.
Children may use a random approach to finding number bonds to 10, missing some of them.	Use a bead string, starting with 5 and 5 and moving one bead at a time to show 6 and 4, 7 and 3 and so on.	Ask children to show the pattern of the bonds to 10, starting with 10 and 0, 9 and 1.
Children may not be aware of the commutative law of addition, seeing 8 and 2 as a separate number bond from 2 and 8.	Use paper plates to show the part-whole model and switch the parts around. Display number bonds on the <b>Ten frame teaching tool</b> and rotate.	Can children say or show the related bond, given one, such as 7 and 3? Can children prove that 3 and 7 is the same as 7 and 3?

## STRUCTURES AND REPRESENTATIONS

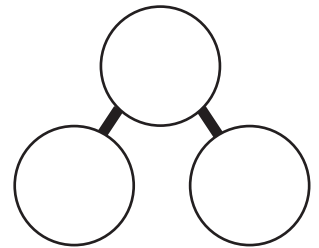
**Ten frame:** Ten frames help children to visualise bonds to 10.



**Counters:** Counters can be placed in the ten frame or lined up in a row. Use two different colours for each part of the bond.



**Part-whole model:** Part-whole models offer an alternative way of visualising bonds to 10, understanding that pairs of numbers combine to make a total of 10.



**Bead string:** Bead strings are a great way of introducing patterns and missing numbers and helping children be systematic in their approach. They can represent numbers and split numbers into parts, and show the effect of adding two numbers together.



## RESOURCES

**Mandatory:** double-sided counters or counters in two colours, drinking bottles, ten frames (photocopiable 14), blank part-whole model (photocopiable 23), multilink cubes

**Optional:** bead strings, 0–10 digit cards, 10 plastic bottles or skittles, soft ball, playdough, cake candles (sets of 10 in at least two colours), buttons, paper plates, glue, paper shapes, hula hoops, bean bags, ladybird template (photocopiable 16), small part-whole models (photocopiable 25), toy fish, bowls, large play bricks

## TEACHING TOOLS

part whole, ten frame

## KEY LANGUAGE

There is some key language that children will need to know as part of the learning in this unit:

- group, count, counters, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
- ten frame, part-whole model, whole, part, bead string
- how many altogether, how many more, how many fewer, more than, fewer than, less than, each
- missing number, one more, one less, add, number bond to 10

# Using a ten frame

## Learning focus

This week, children will explore number bonds to 10 using a variety of representations. Children will progress from seeing concrete representations to pictorial representations (counters), finally using counters on a ten frame to show all number bonds to 10. They will answer 'how many altogether' and 'how many more' questions.

## Small steps

- Previous step: Weight
- **This step: Using a ten frame**
- Next step: The part-whole model to 10

## COMMON MISCONCEPTIONS

Children may not be aware that 8 and 2 is equivalent to 2 and 8 (the commutative law of addition), so may see these as separate number bonds. Ask:

- *How many do you have here? What happens if you swap the groups around? Is the total the same or different?*

Children may find it difficult to identify what is missing. They may instead count what is there. Encourage children to use ten frames to help them to count the missing objects, using counters in a different colour to represent what is missing. Ask:

- *How many are hidden or missing? How is it possible to count things that are not there?*

## KEY LANGUAGE

**In lesson:** group, count, how many altogether, how many more, ten frame, counters, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

**Other language to be used by the teacher:** missing number, more than, fewer than, less than, number bond to 10

## STRUCTURES AND REPRESENTATIONS

ten frame, counters

## RESOURCES

**Mandatory:** double-sided counters or counters in two colours, drinking bottles, ten frames

**Optional:** bead strings, 1–10 digit cards, 10 plastic bottles or skittles, soft ball, playdough, cake candles (sets of 10 in at least two colours), ladybird template (photocopiable 16), large play bricks

## EXPLORE

Taking every opportunity throughout the school day to build and reinforce mathematical concepts gives children's learning purpose and meaning in the wider context of their lives.

ACTIVITY	AREA	DESCRIPTION	RESOURCES
Spots on the ladybird	Classroom	Provide large laminated ladybirds and counters in two colours. Ask children to use the counters to put 10 spots on the ladybirds. How many ways can they find to do this?	Laminated ladybird template (photocopiable 16), counters in two colours
Skittles	Outside	Arrange the 10 bottles like skittles. Children take turns to roll a ball to knock them down. They should choose how to record the number of skittles standing and fallen using pictures, numerals or other representations.	10 plastic bottles or skittles, soft ball
How many am I hiding?	Classroom	Show children a bead string with 10 beads. Establish that there are exactly 10 beads. Cover some with your hand and show children the remaining beads. Children use various strategies to find the hidden number. They could then play independently in pairs or small groups.	10 bead string
Birthday cupcakes	Art area	Children work in small groups to decorate a playdough cake with 10 candles to represent a number bond to 10. Each group has 20 candles, 10 in one colour, 10 in a different colour. Ask: <i>How many different ways can you show 10?</i>	Playdough, candles (sets of 10 in at least two colours)

# Day 1

## Learning focus

Exploring the composition of 10

## Before you teach

- Can children count up to 10 objects?
- Do children understand that numbers can be partitioned into pairs or groups of smaller numbers?
- Are children secure with their number bonds to 5?
- Can they match the numerals 1–10 to the correct quantity?

## Starter

### Unit 11 Number bonds to 10

#### Using a ten frame



#### PREREQUISITE CHECK

**PREREQUISITE CHECK** Picture of a pair of hands holding up 2 and 3 fingers.

**WAYS OF WORKING** Whole class and pairs  
Introduce this unit's first week of teaching with the **Prerequisite check**. Encourage children to show the same amounts using their own fingers to support their understanding. Ask: *How else can you show 5 with both hands?*

**IN FOCUS** Using knowledge of number bonds to 5, children should answer the question, *How many fingers?* They should also consider other ways of showing 5 using the fingers on both hands. Encourage children to say what their fingers are showing: *2 and 3 make 5 altogether*. In pairs, one child shows up to 4 fingers and their partner shows the number of fingers to make 5 in total.

#### ASK

- How many fingers can you see on this hand?
- How many fingers can you see on both hands altogether?
- Can you show 5 using different fingers from those in the picture?

#### 10 green bottles

*10 green bottles standing on the wall,  
10 green bottles standing on the wall,  
And if one green bottle should accidentally fall,  
There'll be 1 on the floor and 9 left on the wall.*  
[Repeat this through 9, 8, 7, 6, 5, 4, 3, 2, ...]  
*1 green bottle standing on the wall,  
1 green bottle standing on the wall,  
And if that one bottle should accidentally fall,  
There'll be 10 on the floor and none left on the wall.*

#### STIMULUS

**STIMULUS** Song: 10 green bottles

**WAYS OF WORKING** Whole class

**IN FOCUS** The song in the **Stimulus** introduces children to the idea that 10 can be made up of different pairs of numbers, which could be recorded by the teacher as they sing the song. The song will provide a context for finding number bonds to 10, as the standing and fallen bottles will always equal 10. Encourage children to count the number of bottles standing and fallen after each verse and to count all of the bottles to understand that there are still 10 in total.

#### ASK

- How many bottles are standing on the wall?
- How many bottles have fallen?
- How many bottles are there altogether?
- If one more bottle falls, how many will still be standing?
- Will there always be 10 bottles altogether, even though some of them have fallen over? How do you know?

**GET ACTIVE** As you sing the song together, encourage children to represent the bottles with their fingers and to fold a finger down when the bottle falls in each verse. Alternatively, sing the song again, giving space between each verse for children to show what is happening with counters. Give pairs of children 10 counters to represent the bottles. They put the counters in a horizontal row and count them to make sure they have exactly 10. As the class sings the song again, a verse at a time, they move one counter down. Encourage children to start at either end, rather than moving random counters down, so removing counter 10, then 9 and so on, or counter 1 then counter 2.

# Day 2

## Learning focus

Exploring the composition of 10, moving from concrete to pictorial representations

## Discover

**WAYS OF WORKING** Whole class or small groups

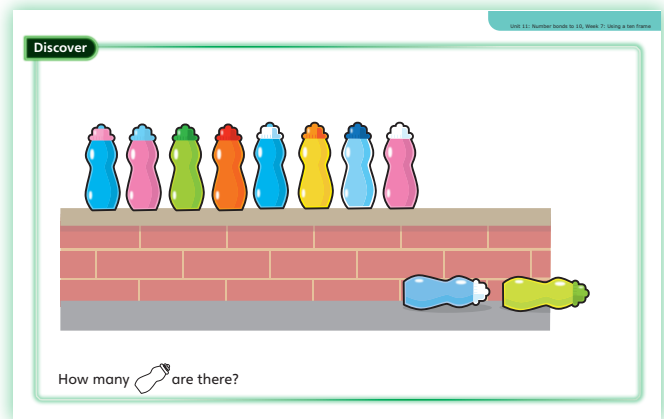
**IN FOCUS** The focus of **Discover** is to show children a clear representation of 10 using concrete objects in a familiar context. Building on knowledge of combining two parts to make a whole from Unit 9, children can see that there are 10 bottles altogether, even though some have fallen over.

### ASK

- How many bottles are standing?
- How many are on the floor?
- How many bottles are there altogether?

**STRENGTHEN** Replay the **Stimulus** song from the **Starter**

and encourage children to sing along. Collect 10 empty drinking bottles and encourage children to line up the 10 bottles and lay one down after each verse of the song. What do they notice? Build a wall outside with large play bricks and stand 10 bottles on it to mimic the song. Ask a child to take one bottle off as you sing each verse, laying it on the floor under where it stood, as in the **Discover** picture. Repeat the bonds shown together, for example: *8 and 2 is 10*.



### DEEPEN

Extend thinking by asking children about all possible number bonds to 10. What if 7 bottles are standing and 3 have fallen down, are there still 10 in total? What if 6 bottles are standing and 4 have fallen down? Do children notice anything about the pairs of numbers you are using? Use drinking bottles to demonstrate these number bonds.

## Share

**WAYS OF WORKING** Whole class

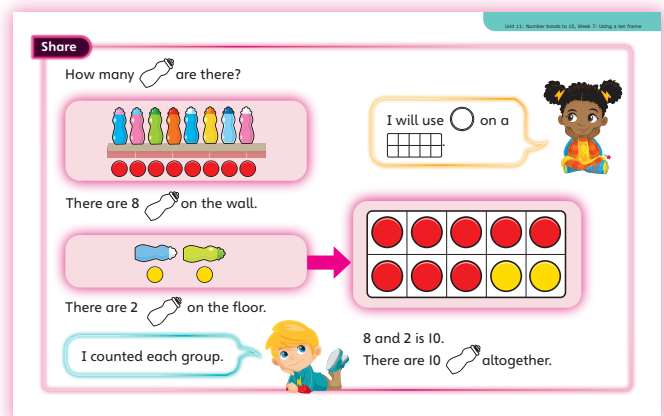
Ensure empty drinking bottles, double-sided counters or counters in two colours and ten frames are available for children to replicate the counting methods demonstrated in **Share**. Use single page view to focus on one step at a time. Ask children to say the answer sentence together, *8 and 2 is 10*, as this will help to reinforce the number bond. The **Ten frame teaching tool** can be used to model the **Share** and rotated to demonstrate commutativity.

**IN FOCUS** The focus of **Share** is to model two steps for answering the **Discover** question: counting the two groups and representing them with counters, then placing the counters on a ten frame to structure the count.

### ASK

- What has Dexter done to help him count all the bottles?
- What do the red counters show? What do the yellow counters show?
- What is Flo using to help her count?
- Does it matter that the counters are different colours?
- Can you see how many counters there are in the ten frame, without counting each one? How many counters are in the top row? How many in the bottom row? How many altogether?

**STRENGTHEN** Encourage children to play with ten frames and to change the amount of red and yellow counters



themselves, while ensuring that the frame is always full, with one counter in each space. Can they draw the different representations they make?

### DEEPEN

Ask children to work with a partner to find all the various ways of showing 10 on the ten frame using two colours of counters. Start them off with 5 counters of each colour, and demonstrate the first couple of number bonds to get them started. Discuss commutativity with children, for example that 4 and 6 is the same as 6 and 4. Both total 10. Demonstrate using the counters and swapping the colours.

# Day 3

## Learning focus

Exploring the composition of 10 by reinforcing different representations of 10

## Think together

### WAYS OF WORKING Whole class

Ensure that two colours of counters and blank ten frames are available.

### IN FOCUS

The focus of **Think together** is to practise the method of working out how many altogether by first identifying how many bottles are on the wall and then looking at how many are on the floor. Astrid prompts children to represent the two groups with double-sided counters or counters in two colours that can be placed in a ten frame. It is important to spend time mastering these steps to embed and strengthen understanding of the composition of 10.

In Question 1, draw out that the bottles on the wall are one group and the bottles on the floor are another group. Ash's question is an important prompt to help children to realise that a full ten frame always holds 10, no matter what the combination of red and yellow counters.

### ASK

- Question 1: *What can you see here? How many bottles are on the wall? Can you see another group? [Bottles on the floor.] How could you show how many are in each group? How many bottles are in each group?*

**Think together**

1 How many are on the wall? 2 How many are there altogether?

I will put on on

Does a always have 10?

- Question 2: *What could you use to help you count all of the bottles? Can you show this on a ten frame? Can you see how many altogether?*
- Question 2: Refer to Ash's question. *If a ten frame is full, will it always show 10?*

### DEEPEEN

Extend thinking from Ash's question using the **Ten frame teaching tool**. Fill the ten frame with 10 counters in two colours. Ask: *How many?* Next, remove a counter. Ask: *Is this still 10? Why not? How do you know?* Repeat the activity using various combinations of counters, sometimes showing 10 to ensure children are confident that a full ten frame shows 10 and a ten frame that is not full will always show less than 10.

## Practice: Journal 1

### WAYS OF WORKING

Independent thinking

### IN FOCUS

The focus of this **Practice** activity is to reinforce and embed the two-step method laid out in **Discover** and **Share**, and practised in **Think together**, to support children when working out how many altogether, based on number bonds to 10. The composition of 10 is a key learning objective to master in this unit.

### MASTERY CHECKPOINT

Children who have mastered this concept can identify pairs of numbers that make 10, confidently using the two-step method of combining number bonds to 10 and counting and/or showing them in a ten frame to accurately work out how many altogether.

Unit 11: Number bonds to 10, Week 7: Using a ten frame

**Practice**

How many are in each group?

How many are there altogether?

There are \_\_\_\_\_ altogether.

**Number ELG:** Have a deep understanding of number to 10, including the composition of each number  
 Subitise (recognise quantities without counting) up to 5  
 Automatically recall number bonds up to 5 and some number bonds to 10, including double facts

**Ash** **Strengthen:** What could you use to help you count the standing bottles? [Counters.] How many have you got? Choose something different to help you count the fallen bottles. Move all the counters into a ten frame. How many have you got altogether?  
**Deepen:** Do you know any other pairs of numbers which make 10? Can you say them all? If you put 2 counters on a ten frame, how many more do you need to fill it? What about if you put 9 on the ten frame?

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# Day 4

## Learning focus

Using knowledge of number bonds to 10 to work out how many more

## Challenge

**WAYS OF WORKING** Whole class or small groups

**IN FOCUS** This **Challenge** activity requires children to find a missing number in the context of bonds to 10. Children will need to use the knowledge they have built up, that a full ten frame always totals 10, and begin to be able to use number bonds to 10 flexibly. If children need a starting point, remind them of the two-step method they have been using with counters and a ten frame.

### ASK

- What can you see in the picture?
- What can you use to represent the bottles? [Counters.]
- Refer children to what Flo is saying. Do you think a ten frame can help you? How?
- Now you can see how many bottles you have, how many **more** do you need to make 10? How many empty spaces are there in the ten frame?
- What numeral matches this amount?

**STRENGTHEN** For children who are finding it hard to visualise the concept of missing numbers and 'how many more', use yellow counters in the ten frame to represent what is missing. Showing children a complete ten frame, with 7 red counters representing the bottles in the picture, and 3 yellow counters representing the missing amount, will help children to see what is missing, and therefore 'how many more' are needed to make 10.

**DEEPEN** Help to embed understanding of the concept of missing numbers by varying the amounts shown in the ten frame. Use the **Ten frame teaching tool** to display a number of red counters, asking: *How many counters are shown here? How many more do you need to make 10?* Repeat this, each time using a different number of red counters in the ten frame.

**GET ACTIVE** Children roll a dice to see how many counters they can put in the ten frame and then work out how many more they need to fill the ten frame. How many different pairs of numbers can they find to make 10? Allow children to use 10 counters for support where necessary. Children can also use bead strings to explore number bonds to 10, hiding some beads and getting a partner to say how many are hidden.

# Day 5

## Learning focus

Consolidating number bonds to 10

## Practical activities

### WAYS OF WORKING Whole class

Display the number bonds rhyme to provide support for children who need it.

### IN FOCUS

Children should now be getting more familiar with the pairs of numbers which make 10 and be relying less on counting. This group activity will help to develop quick recall. Having the number bonds rhyme displayed will support those children still needing to check.

### GET ACTIVE

#### Number bonds rhyme

Chant the rhyme together, encouraging children to show each number with their fingers.

*5 and 5 they add to 10, 6 and 4 make 10 again.  
7 and 3, they make 10 too, Guess what? So do 8 and 2.  
9 and 1, 10 and 0,  
Learn them all, be a number bond hero.*

#### Pairs to 10

Give each child a digit card to 10 and ask them to find their number-bond partner (for example, the child with 6 finds the child with 4). Pair children up to provide some peer support, where necessary. Once children have found their partners, they can sit down together.

## Reflect: Journal 2

### WAYS OF WORKING Independent thinking

### IN FOCUS

This **Reflect** activity gives children the opportunity to show they have understood and are confident with what they have learnt. Encourage children to make or draw number bonds to 10 in a way that they choose. This could include placing, or drawing, real life objects in the ten frame, or placing then drawing counters in the ten frame.

### MASTERY CHECKPOINT

#### Children who have mastered this

**concept** can represent number bonds to 10 in a variety of ways and, with some support, can use ten frames to help them work out how many altogether and how many more.

**Children who have not yet mastered this concept** can represent some number bonds to 10 but need support when deciding which number bonds to represent and prompts for how to represent them.

**Children who fully understand this concept** may want to demonstrate the two-step approach for working out how many altogether, and can use a ten frame to help them work out how many more to make 10.

### 10 fingers

Show children a number on your fingers, saying the number aloud. Children show the number which goes with it to make 10. For example, if you show and say 9, children show and say 1.



### Bunny ears

Show children how to create bunny ears by placing their hands above their heads. Get the children to tap their knees following a set rhythm. At random points, shout a number from 0 to 10. The children must then make its bond to 10 and show it on their hands and head as bunny ears. For example, you may shout 7 then children will make 3. After each number bond, encourage children to look at the range of ways the numbers have been made. One child may have made 3 with 2 fingers on their left hand and 1 finger on their right but another child may have done the opposite. Children who struggle to create numbers on their heads may need to look at their hands and make the relevant number before making them into bunny ears.

Reflect

Unit 11: Number bonds to 10, Week 7: Using a ten frame

How many ways can you make 10?


Use  and .

**Strengthen:** What number could you start with? Put it in the ten frame. How many more do you need to make 10? What are the two groups that make 10? Can you say it as a number sentence? [For example, 2 and 8 make 10.] What if you start with one more?

**Deepen:** How many different ways can you find to show the number bonds to 10? Encourage children to be methodical: start with 1 and 9, then 2 and 8. How many different pairs of numbers do you know which make 10? Have you found them all? How do you know?

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# The part-whole model to 10

## Learning focus

This week, children will explore all the different ways to make 10 on a part-whole model, and gain confidence with the concept and vocabulary of *parts* and *wholes*: that the whole can be made up of two or more parts, and that the parts are combined to make the whole.

## Small steps

- Previous step: Using a ten frame
- **This step: The part-whole model to 10**
- Next step: Subtraction

## COMMON MISCONCEPTIONS

Children may not see that the whole is the sum of the parts. Using counters, encourage children to lay the number in each part out in a long line or in a ten frame to compare the sum of the two parts with the total in the whole. Ask:

- *How many are in each part? How many are there altogether? What do you notice?*

Children may use a random approach to finding number bonds to 10, missing some of them. To encourage a consistent strategy, use a bead string starting with 5 and 5 and moving one bead at a time to show 6 and 4, 7 and 3 and so on. Ask:

- *Can you show me 6 and 4 on the bead string? If you move one bead across, how many will be on that side now? How many will there be on the other side?*

## KEY LANGUAGE

**In lesson:** count, group, counters, how many, altogether, more, each, part-whole model, whole, part

**Other language to be used by the teacher:** how many more, how many fewer, number bond to 10, bead string, add, one more, one less

## STRUCTURES AND REPRESENTATIONS

part-whole model, counters

## RESOURCES

**Mandatory:** counters in two colours, blank part-whole model, multilink cubes

**Optional:** bead strings, 0–10 digit cards, buttons, paper plates, glue, paper shapes, hula hoops, bean bags, small part-whole models (photocopiable 25), toy fish, bowls

## EXPLORE

Taking every opportunity throughout the school day to build and reinforce mathematical concepts gives children's learning purpose and meaning in the wider context of their lives.

ACTIVITY	AREA	DESCRIPTION	RESOURCES
Bead strings	Classroom	In pairs, children use a bead string to show and record all the number bonds to 10. They should start with 10 and 0, move one bead to show 9 and 1 then 8 and 2. Continue to 1 and 9 and finally 0 and 10. They can record each bond using digit cards.	Bead strings, 0–10 digit cards
Hoops	Outside or hall	Give pairs or small groups of children 10 bean bags and 2 hoops. They take turns to throw the bean bags into either hula hoop until all the bean bags are in the hoops. They use digit cards to record the number bond shown. Repeat.	Hula hoops, bean bags, 0–10 digit cards
Plates of fish	Art area	Give pairs of children 3 plates and some shapes to stick on to represent the fish. They make a part-whole model to show a bond to 10 in the two parts and 10 in the whole. Use to make a display.	Paper plates, glue, paper shapes

# Day 1

## Learning focus

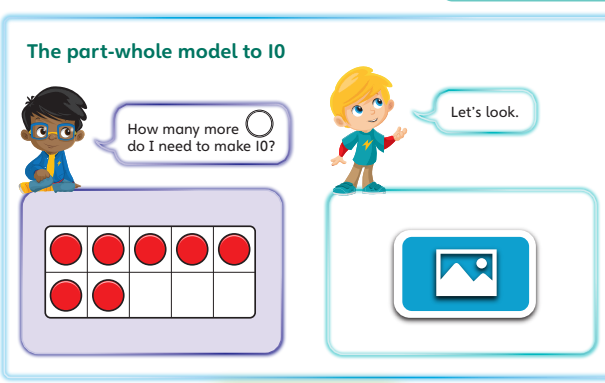
Composition of 10

## Before you teach

- Can children count up to 10 objects?
- Do children understand that numbers can be partitioned into pairs or groups of smaller numbers?
- Can children show a bond to 10 on a ten frame using two colours of counters?

## Starter

The part-whole model to 10



How many more do I need to make 10?

Let's look.

**PREREQUISITE CHECK**

**PREREQUISITE CHECK** Horizontal ten frame with 7 counters in and 3 empty spaces.

**WAYS OF WORKING** Whole class

**IN FOCUS** Children use knowledge of number bonds and ten frames to determine how many more counters are needed to make 10.

### ASK

- How many counters are in the ten frame? Do you need to count them all?
- How many counters are in the top row? How do you know?
- How many empty spaces are there? So how many more are needed to make 10?
- When you add one more counter to this ten frame, how many more do you need to fill it now?
- If you take one counter away, how many more do you need to fill it now?



**STIMULUS**

**STIMULUS** Photograph to prompt an activity. The photograph shows a child with 8 fingers up and 2 fingers folded over to show the number bond 8 and 2 or 2 and 8.

**WAYS OF WORKING** Whole class

Children can use their fingers to represent the number bonds but, if they need to, could use counters or a stick of multilink cubes.

**IN FOCUS** This **Stimulus** prompts an activity using fingers to reinforce number bonds to 10. Discuss what children can see in the photograph, asking them to show this with their own fingers or counters. Ensure that children understand that the child in the photograph has 10 fingers so is showing a number bond to 10. Encourage children to say what they see as a number bond to 10: *8 and 2 make 10*. Ask children to show a different pair of numbers and to say the bond to 10.

### ASK

- How many fingers are pointing up? How many fingers are folded down?
- How many fingers are there altogether? How can you say this? [8 and 2 make 10]
- When 3 fingers are up, how many will be folded down?

**GET ACTIVE** Children play with a partner, taking it in turns to show a number bond on their fingers or using counters. The partner should say what they see: *7 fingers up and 3 fingers down is 10 fingers altogether*. Children who need to can count the folded fingers, but some may be starting to learn the number bonds and be able to answer without counting. They could also complete the bond: one child shows a number 0–10 and other child shows how many complete to 10.

# Day 2

## Learning focus

Using the part-whole model to break 10 into two parts

## Discover

**WAYS OF WORKING** Whole class or small groups

**IN FOCUS** The **Discover** is set in an aquatic shop, which will be the focus for the whole week. There are 10 fish in the large tank, showing the number bond 6 and 4. Ensure children understand that Aidan will carry all the red fish home in his bag, and that Ella will carry all the yellow fish in her bag. Encourage any discussion around fairness and whether they should have the same number of fish, always coming back to how many there would be in total (10), to help children explore the different number bonds to 10.

### ASK

- How many fish are in the tank altogether? How do you know?
- What could the two parts be? [yellow fish and red fish]
- How many fish are in each part?
- Aidan wants red fish. How many fish will he get?
- Ella wants yellow fish. How many will she get?

### STRENGTHEN

To help children to visualise how many fish there are altogether, use red and yellow counters to represent the fish, placing them either in a long line or in a



ten frame on the **Ten frame teaching tool** to show that the total of 6 and 4 is 10.

**DEEPEN** Ask children to consider there being one less red fish and one more yellow fish. Ask: *Will there still be 10 fish in the tank? How many of each colour fish would there have to be for the twins to get the same number of fish each?*

## Share

**WAYS OF WORKING** Whole class

Ensure counters in two colours and blank part-whole models are available.

**IN FOCUS** The focus of **Share** is to represent the number bond of 6 and 4 in a part-whole model, shown by the tank and the two bags of water used to carry the fish home safely. The progression from concrete to pictorial is shown by representing the fish in the tank (concrete) with counters in a part-whole model (pictorial). Having the counters set up in a dice pattern can help children start to subitise. Use the **Part whole teaching tool** to model placing the counters into the parts and the whole, and to show the numerals.

### ASK

- What are the parts? Can you count them?
- Are there more yellow fish or more red fish? Who wants yellow fish? Who wants red fish?
- Who will get more fish, Aidan or Ella?
- How many more fish will Aidan have than Ella?
- What are the bags of water for? Why do they need to take the fish home in bags of water?
- How many fish will be left in the tank if Mum buys 10?

### STRENGTHEN

Encourage children to play with a part-whole model, first showing the two separate parts using red and yellow counters as in **Share**, then combining them into the whole. *Are there still the same amount of counters? How many?*



Encourage children to say the number bond: *6 and 4 make 10*. Ask children to swap the parts around. Ask: *Are there still 10? What is this number bond? 4 and 6 make 10*. The **Part whole teaching tool** can also be used.

**DEEPEN** Ask children to use a part-whole model to show that 6 and 4 has the same total as 4 and 6. Can they show a different inverse pair, such as 8 and 2 with 2 and 8? Provide copies of small part-whole models (photocopiable 25) for them to record the bonds they find.

**GET ACTIVE** Play the Hoops game from **Explore** (page 76). Can children start by showing the number bond 6 and 4 first?

# Day 3

## Learning focus

Identifying whole and parts when variation is a factor

## Think together

### WAYS OF WORKING Whole class

Ensure that two colours of counters and blank part-whole models are available for children to use today, to support their answers. Use single page mode to view the flashcard to help children focus on each question.

**IN FOCUS** In Question 1, the whole is broken into two parts, where both parts have an equal number of plants if they are split by the type of plant (as shown in the picture).

In Question 2, different parts (the fish) are put back together into a whole. Reinforce this using the **Part whole teaching tool**, and demonstrate breaking a whole into parts, then combining the parts back into the whole and recounting.

### ASK

- Question 1: *What can you see here? What is the same and what is different about the plants? How could you break the plants into two parts? If you break the plants like this (by plant type), how many will go in each bag?*
- Question 2: *What can you see here? How many fish are in each bag? What will happen if both the bags (both parts) are emptied into one tank (the whole)? Where will all the fish go? How many fish will go in the whole tank?*

## Practice: Journal 1

### WAYS OF WORKING Independent thinking

**IN FOCUS** The focus of this **Practice** activity is to reinforce that 7 and 3 make 10 using two colours of fish, 7 red and 3 yellow. This is the same bond children met in the **Prerequisite check** on a ten frame, but now it is shown on fish tanks in the same formation as a part-whole model. Encourage children to think about how they will break the fish into two smaller tanks (parts). Remind children that it is the same number bond, however it is shown.

**MASTERY CHECKPOINT** Children who have mastered this concept can confidently break a whole to 10 into two parts, where the two parts have been clearly differentiated by colour.

Unit 11: Number bonds to 10, Week 8: The part-whole model to 10

**Think together**

1 How many plants will go in each bag?

2 How many fish will go in the whole tank?

The bags show the parts.

I can work it out by counting the parts.

**STRENGTHEN** Ask children to put a set of 10 counters in the whole of a blank part-whole model, break them up into two parts, then recombine them into the whole to check that there are still 10.

**DEEPEN** Ask children if the plants could be broken up in a different way. They may need reassurance that the plants do not have to be divided by type.

Unit 11: Number bonds to 10, Week 8: The part-whole model to 10

**Practice**

Draw the fish in the 2 smaller tanks.

**Number ELG:** Have a deep understanding of number to 10, including the composition of each number  
 Subitise (recognise quantities without counting) up to 5  
 Automatically recall number bonds up to 5 and some number bonds to 10, including double facts

**Strengthen:** How many fish are there in the whole group? How could you break the whole into two parts? What could you use to help you? How many are in each part? What happens if you put them all back into the big tank? How many are there now? If children find it hard to draw the fish, encourage them to represent them in a different way instead. They could place and then draw around counters.

**Deepen:** Is there more than one way to sort the fish? Can you find a different way?

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# Day 4

## Learning focus

Using number bonds to 10 to break a whole into parts

## Challenge

**WAYS OF WORKING** Whole class or small groups

**IN FOCUS** This **Challenge** encourages children to explore all the options for number bonds to 10. The whole shows 10 identical fish in a ten-frame layout, so that children can identify quickly that the total is 10. There are no clues as to how the fish should be broken into the two empty tanks, so encourage children to find all the ways to break the whole into two parts.

### ASK

- What can you see in the picture? What do you notice about the fish?
- How could you break the fish into two groups?
- How can you make sure you have found all the possible ways?
- If there are 8 in this tank, how many will go in this tank? If you put 8 in the other tank, can you say without counting how many will go in this tank?
- Is it possible to have the same number of fish in each tank?

**STRENGTHEN** Children work in a small group with an adult. They have 10 toy fish to put into two bowls. Give them a methodical starting point for each number bond (using physical objects). Ask: *If 9 go in this bowl, how many will be in this bowl?* Record the bond using digit cards. *If 8 go in this bowl, how many will be in this bowl?* Remember to include 10 and 0.

**DEEPEN** Children draw their own part-whole models to show all the bonds to 10 or use small blank part-whole models (photocopiable 25). They can use blank part-whole models to manipulate 10 counters if necessary. Ask: *Have you found all the possible pairs to 10? How can you check? If there are 0 counters in one part, what will be in the other part? Can you show the part-whole models with numerals as well?*

**CHALLENGE** Put 10 fish in the 2 tanks.

Use ○ and ○ and

What if all the fish go in the same tank?

**GET ACTIVE** Attach large 0–10 digit cards to the board and ask pairs of children to choose numbers that show a bond to 10.

# Day 5

## Learning focus

Exploring all the different number bonds to 10 to consolidate understanding

## Practical activities

**WAYS OF WORKING** Whole class

**IN FOCUS** Encourage children to recall the number bonds to 10 rather than having to count.

**GET ACTIVE** **Number bond matching**

Children take it in turns to call out a number from 0 to 10. The class responds with the number bond to 10. For example, a child calls out '4' and the class responds with '6'. Give all children a chance to think before asking them to respond after you say *ready, steady, go* or similar. Avoid leading in with the numbers 1, 2, 3 as these numbers may or may not be the answer!

### Ten!

Using large digit cards 0–10, show pairs of numbers. When children spot a bond to 10, they stand up or shout '10'.

### Sharks in the water

Put children in groups of 10. Tell children that they are pirates in the sea and that they must watch out for sharks. Get the children to move around the area in a specified manner, for example, swimming motion, side stepping, hopping. At random intervals shout, "SHARKS!". Children must 'get out of the water' as quickly as possible and jump onto one of two ships. Ships can be made up of building equipment or chalked on the ground. Have the ships on either side of the playing area so that there are two separate groups. Once 'safe', get the children to identify what number bond to 10 they have created.

To reinforce the understanding of ten frames you could chalk two ten frames on either side of the playing area and tell the children that they are the ships.

## Reflect: Journal 2

**WAYS OF WORKING** Independent thinking  
Have buttons or counters available.

**IN FOCUS** This **Reflect** activity gives children the opportunity to explore all the number bonds to 10 again. They should first count out 10 buttons or objects from a larger group to represent the buttons, to help them with the activity and to practise their counting skills, and place one on top of each item in the picture. When children have moved the buttons into the bowls, reassure them that the whole is still 10 – there is the same number of buttons, but they have been moved into the two parts. Moving them back into the whole should reinforce the concept of the whole being the total of the parts.

**MASTERY CHECKPOINT** **Children who have mastered this concept** can confidently represent number bonds to 10 in a part-whole model and understand that the whole is the total of the parts.

**Children who have not yet mastered this concept** can say or work out some number bonds to 10 but may need support to represent them in a part-whole model.

**Children who fully understand this concept** may want to begin to use a more systematic approach to show that they have found all the ways to show number bonds to 10.

Unit 11: Number bonds to 10, Week 8: The part-whole model to 10

Reflect

Split the  into the 2 .



**Aim** **Strengthen:** How many are in the whole collection? Can you count out 10 buttons or counters to use to help you? Put some in this bowl. How many are in this part? How many can go in the other part? How many are in the whole? What if you put one more in this part? How many are there in each part now? How many are in the whole?

**Deepen:** Is there more than one way to sort the buttons? How many different ways can you split 10 into two parts? What about if you had three bowls?

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