Planning Overview
Year 1 Addition and Subtraction within 10

Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs
Represent and use number bonds and related subtraction facts within 20
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.

1AS–1 Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers.
1AS–2 Read, write and interpret equations containing addition (+), subtraction (–) and equals (=) symbols, and relate additive expressions and equations to real-life contexts.
1NF–1 Develop fluency in addition and subtraction facts within 10

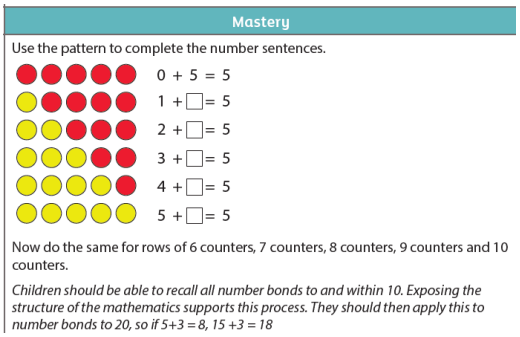
This is the first of 2 units on addition and subtraction – the second unit will progress to cover bonds to 20, the effect of adding 0 and more complex calculation strategies such as bridging with partitioning.

	Teaching and Learning
Introduction	Have a range of resources on the table and have some addition calculations, + signs, - signs, = signs, part/whole models, ten frames and number cards available. Do children recognise addition calculations? Do they recognise the -/+/= signs? Are they familiar with ten frames and part/whole models? Can they create addition calculations involving addition/subtraction? Throughout the unit continue counting forwards and backwards to 10 and encourage children to remember that a full ten frame is worth 10.
Addition facts to 10 **Systematic approach** **Understand addition is commutative** **Aggregation – combining 2 parts to make 1 whole**	Create number bracelets to explore composition of each number to ten. How could you arrange the beads?  Can children explore different ways of recording number sentences for each bracelet. Can they work systematically to try and find all of the number facts for one of the bracelets?

Repeat with a range of different resources if appropriate e.g.

- Exploring 5. Can children show 5 counters between 2 people? How many different ways could you split them between you? Discuss different ways of making 5 with 2 colours of counter on a ten frame or a part/whole model. Can we record this using an addition sentence? Using double sided counters start to explore how to develop a systematic approach to finding all possible ways of 5 and record. How would we show this on a part/whole model, number track or a ten frame?
- Using a coat hanger with red and yellow pegs repeat the process but turn the hanger to show related facts e.g. 2 yellow and 3 red 2 + 3 = 5 then turn the hanger to show 3 red and 2 yellow 3 + 2 = 5. What is the same and what is different? Try with 4 + 1 = 1 + 4. 5 + 0 = 0 + 5. How would we show this on a part/whole model, number track or a ten frame? Repeat with numbers to 10. How could we arrange 6 pegs on our hanger? What facts could we make? How would we show this on a part/whole model, number track or a ten frame?

Fluency questions involving finding number bonds using images and resources to support.



Mastery

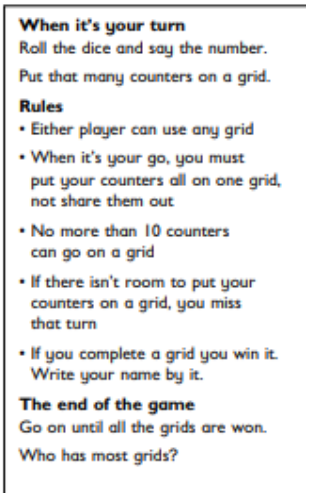
Use the pattern to complete the number sentences.

0 + 5 = 5
1 + □ = 5
2 + □ = 5
3 + □ = 5
4 + □ = 5
5 + □ = 5

Now do the same for rows of 6 counters, 7 counters, 8 counters, 9 counters and 10 counters.

Children should be able to recall all number bonds to and within 10. Exposing the structure of the mathematics supports this process. They should then apply this to number bonds to 20, so if 5+3 = 8, 15 +3 = 18

BEAM 5-7 Making up tens



When it's your turn

Roll the dice and say the number.

Put that many counters on a grid.

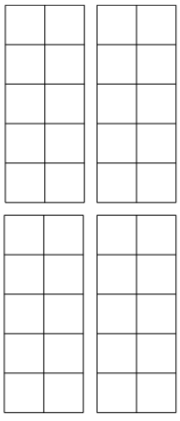
Rules

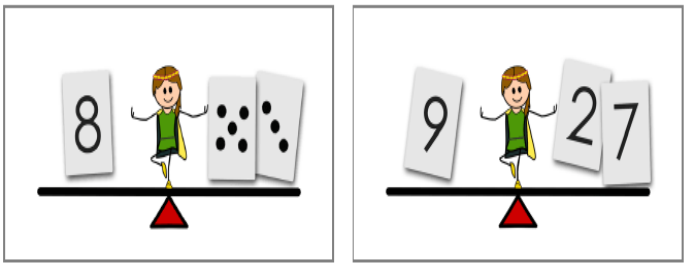
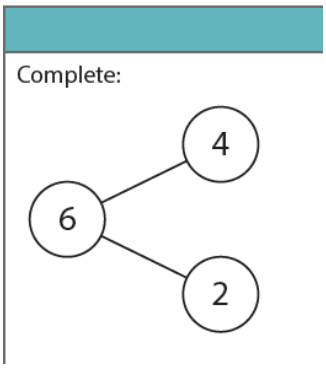
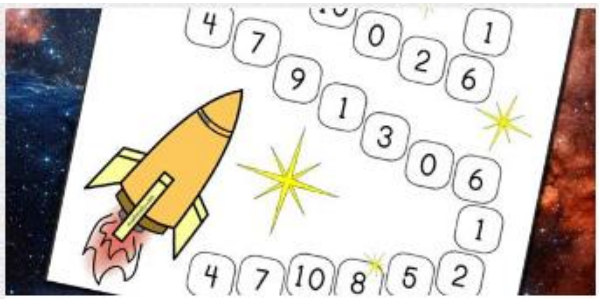
- Either player can use any grid
- When it's your go, you must put your counters all on one grid, not share them out
- No more than 10 counters can go on a grid
- If there isn't room to put your counters on a grid, you miss that turn
- If you complete a grid you win it. Write your name by it.

The end of the game

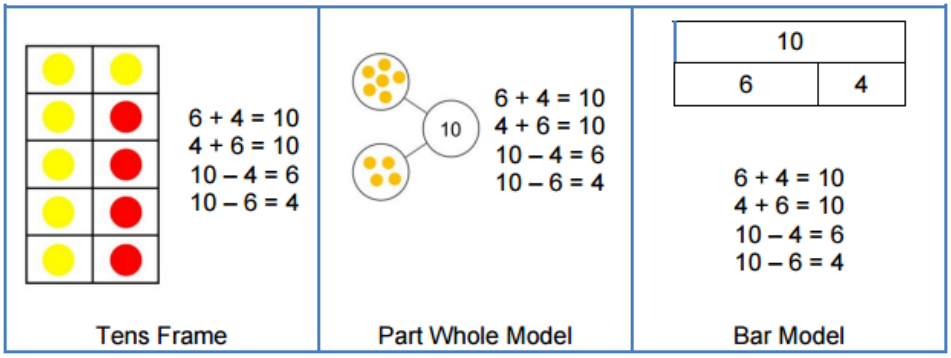
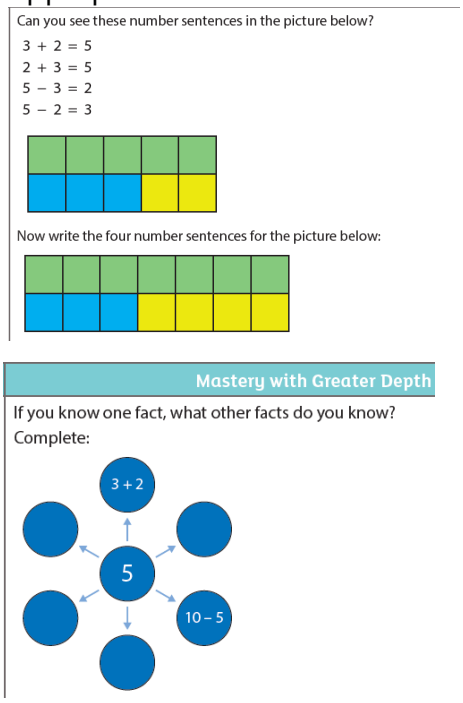
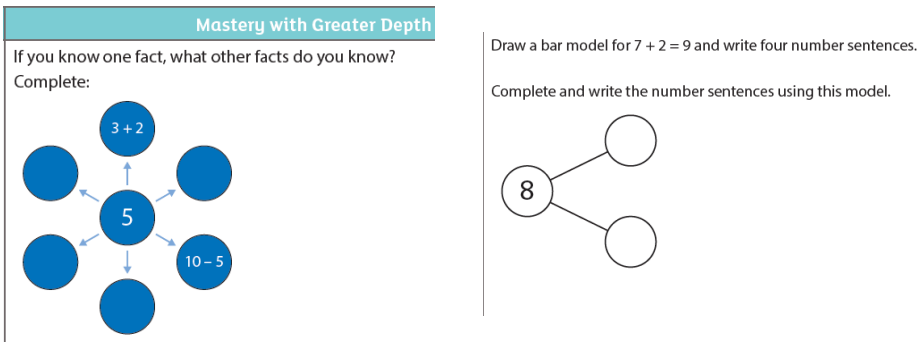
Go on until all the grids are won.

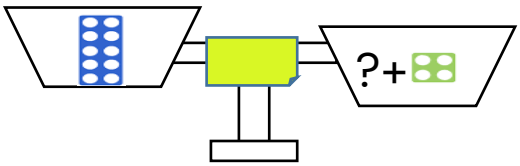
Who has most grids?

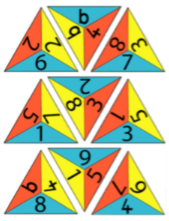


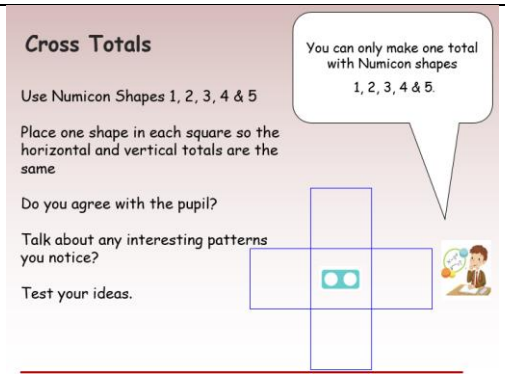
	Mathsticks – number balances   Mastery assessment – this will move onto number bonds within 20 in the next unit. Use this unit to make sure that children are confident with the use of the Part Whole Model. Mathsticks - Rocket bonds 10  What would 4+ 2 look like with resources? What would 3+2 look like? What's the same? What's different? Greater depth assessment I know that 4+2=6 how could I work out 5 + 2?
Adding 2 amounts **Augmentation – increasing a quantity by adding more**	Show 4 red counters or objects on 1 ten frame and 5 red counters or objects on another ten frame. How can we find the total? Shall we start with the frame with 5 or 4 on? At this stage children may say that it doesn't matter which way around they go which is correct but we want to start to encourage children working from the bigger number. Move counters from one ten frame to the other and discuss which is quicker. Children to become fluent at adding 2 amounts using resources to support. Use contexts relevant to the children to provide word problems linked to adding 2 amounts.

	Show children what this would look like on a number track – show 5 counters and add the 4 counters one at a time, encouraging children to count on. How do we know when to stop? How do we know what the total is? Can the children show this on a number line? Circle the number that you are starting on and count on.
Solving addition word problems	Using objects and bar model look at a range of addition word problems and explore the language involved. E.g. combining two quantities or increasing an amount. How would we show this with resources? What would this look like with a drawing? What is the calculation? How shall we work it out? Refer to the Ready to Progress Materials to support with creating questions at a mastery level. **1NF–1 Example assessment questions** 1. I cycled 4km to get to my friend's house, and then cycled another 3km with my friend. How far have I cycled?
Partitioning a number to find subtraction facts. **Partitioning – Separating 1 whole into 2 parts**	 Using the number bracelets, move one of the beads and model the number sentence that this represents e.g. 8 subtract 1 leaves 7 (8 – 1 = 7). Children to systematically find all of the subtraction facts for one of their bracelets. Use contexts such as the children in the class to model questions where all the parts are still visible but something distinguishes each part '– there are 6 children in this group, 4 children have brown hair, how many do **not** have brown hair. This is sometimes called the 'not' structure.
How many left? **Subtraction by reduction – decreasing a quantity by taking some away**	Sing 5 speckled frogs/ten green bottles. Model and record the steps at each stage taking away one to reinforce from Place Value unit. Move onto say what if two frogs jumped away at the same time? How would we record this, show this on a number track, number line? Children to become fluent in completing these calculations, first practically using resources, tens frames and number tracks. Progress onto number lines as appropriate.

Related Facts	Use whichever representation the children are familiar with from work on addition by aggregation and subtraction by partitioning to help them to see related number facts. E.g. Use counters on a part whole model. and move them into each part and back together again in the whole. 
Inverse Operations	Show two numicon pieces e.g. 3 and 2 what calculation is this? 3 + 2 = 5. Swap them over show that this is 2 + 3 = 5. Hide one piece behind your back. What is this calculation e.g. 5 – 2 = 3, bring it back 3 + 2 = 5. Hide the other piece, 5 – 3 = 2, bring it back 2 + 3 = 5. Show how one operation undoes the other. Record them as these pairs of inverse operations. 5–3=2 5–2=3 2+3=5 3+2=5 Move onto look at this on a number track or number line as appropriate  

Finding a missing number	Chose a resource that you have already used within this unit of work to introduce the children to missing numbers, e.g. bracelets, Numicon, coat hanger. If we want the scales to balance, what would we need to put with the 4?  Continue with other bonds to 10 e.g. put 6 in one side of a pan balance and 10 in the other side. What would we need to add to make it balance? 6 + ? = 10. Show how this would be represented in the part/whole model or bar model. Show 6 pegs on a coat hanger, tell the children that there are 10 in total and some are hidden. How would we find out how many are hidden? – link this to counting on using a number line. Use the 10 bracelet, show 6 beads. Tell the children that there are 10 in total and some are hidden. How would we find out how many are hidden? Use these resources and a range of fluency questions until the children can confidently answer the mastery questions below. **Mastery** Use the first number sentence to complete the second number sentence. 4 + 3 = ☐ 7 + ☐ = 9 7 − ☐ = 4 9 − ☐ = 7 5 + 2 = ☐ ☐ + 3 = 9 ☐ − ☐ = 2 ☐ − ☐ = ☐ Adapt question below to use numbers to 10 **Mastery with Greater Depth** I'm thinking of a number. I've subtracted 5 and the answer is 7. What number was I thinking of? Explain how you know. I'm thinking of a number. I've added 8 and the answer is 19. What number was I thinking of? Explain how you know.

Finding the difference	Ask the children to make towers 1 – 10 with multilink. Can they choose two towers and say what is the same and different about them? Use a context such as sweets or toys to say if I have 4 and you have 6, how many more do you have? Complete fluency questions with two objects to compare. Can children cross out the bit that is the same and count the extra part? Can they place two sets of counters on the number track and count the bit that is different? Can they circle the two numbers on a number line and count the difference between?
Application through substantial problems	These problems can be built in throughout the unit of work or used at the end to consolidate learning. NRICH – One big triangle **Age 5 to 7** **Challenge Level** ★ Here are nine triangles. Each one has three numbers on it.  Your challenge is to arrange these triangles to make one big triangle, so the numbers that touch add up to 10. NRICH – Eggs in Baskets **Age 5 to 7** **Challenge Level** ★★  There are three baskets, a brown one, a red one and a pink one, holding a total of ten eggs. The Brown basket has one more egg in it than the Red basket. The Red basket has three fewer eggs than the Pink basket. How many eggs are in each basket? Secret Number


Cross Totals
Use Numicon Shapes 1, 2, 3, 4 & 5
Place one shape in each square so the horizontal and vertical totals are the same
Do you agree with the pupil?
Talk about any interesting patterns you notice?
Test your ideas.
You can only make one total with Numicon shapes
1, 2, 3, 4 & 5.