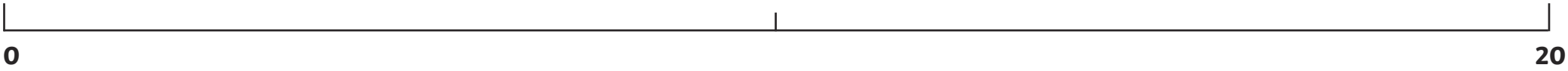
Number Lines

0-20 Number line



Blank Number line

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Show Me Game Cards

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

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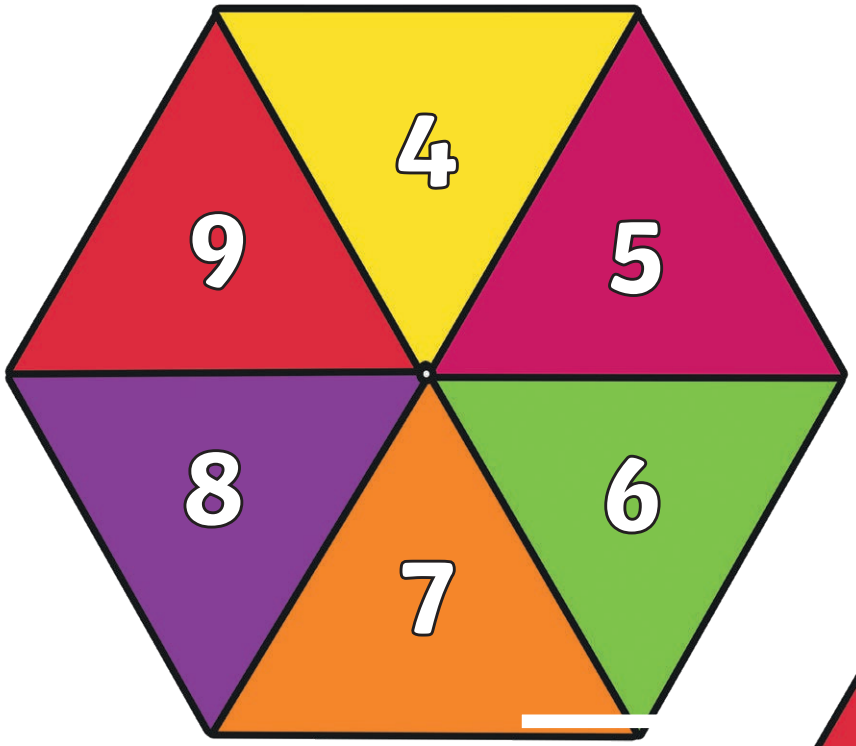

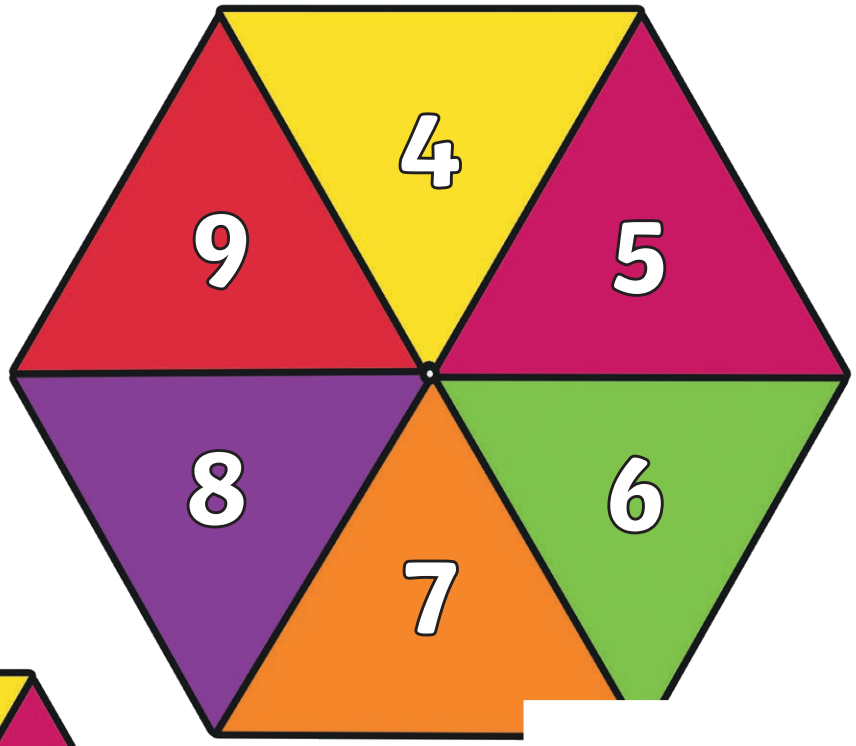

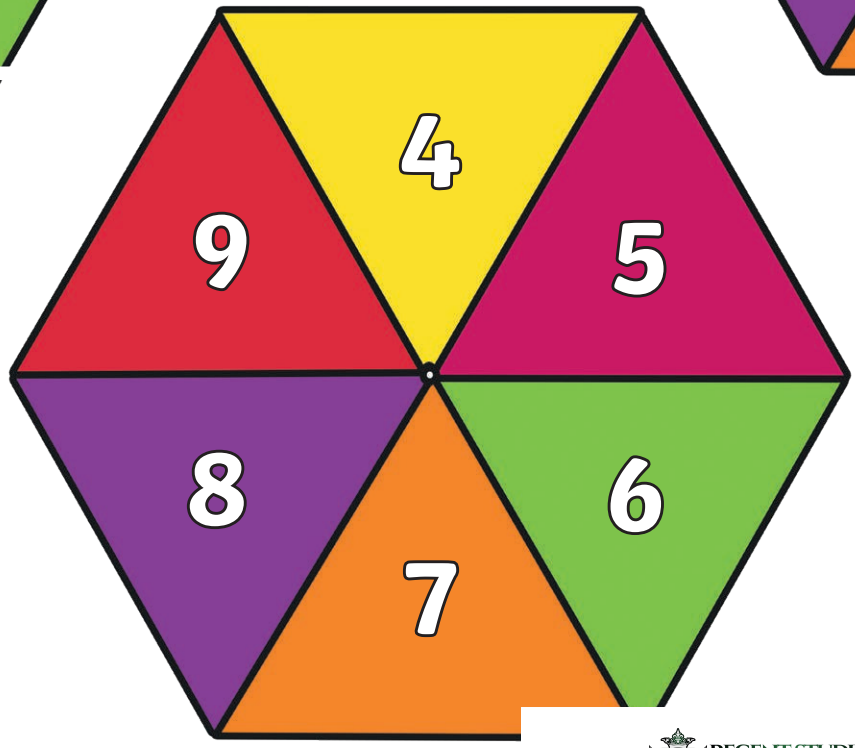

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Adult:	Pupil/s:	Date:

Key Questions for Deepening Understanding	Comments
• What did you do? Why? • Was there a different way to do it? • Which number did you add to 6 to get to 10? What number bond did you use to help you? • What did you do with the remainder? • Why is it a good idea to use this method? • What similarities to addition does the subtraction method have? (partition the single-digit number) • What did you do irst? Why did you jump to 80? • Which number did you add to 75 to get to 80? What number bond did you use to help you? What was left? • How did you get that answer? • What was your irst step? Why? How did you know to do that? (add 3 to get to 360) • What was the second step? (add the remaining 3 to reach 363) • Which columns changed? Why? • What is the greatest digit that can go in a column? Why? • When you reach 9 ones and you have more to add, what do you need to do? • Why did I need to exchange? • How many ones do we exchange for 1 ten? • Which columns changed? Why?	

Adult:	Pupil/s:	Date:

Key Questions for Deepening Understanding	Comments
• When you add or subtract ones to or from a three-digit number, does it always change the tens column? How do you know? • What did you do first? Why? • What did you then do? • How did your number bond knowledge help here? • Why do you think it is a good method to do for these maths problems?	

Additional Notes

Same-Day Intervention: **Adding and Subtracting a One-Digit Number to and from a Three-Digit Number**

Children will learn how to add and subtract a one-digit number to or from any given three-digit number.

Pre-Intervention Check

To access this intervention, can the children...

*Tick as appropriate.

...recall number bonds of 10?*

...add or subtract a one-digit number to or from any two-digit number by counting on or back?*

Explaining the Gap in Mathematical Understanding

Being able to fluently add and subtract one-digit numbers to or from three-digit numbers is a key skill for year 3 children to master. They can, however, sometimes encounter difficulties using and applying known facts. As a result, they may revert to using a less efficient method, such as column addition or try counting on in ones.

For example, if calculating 236 + 7, the most efficient method would be to use known facts knowledge to partition 7 into 4 and 3 to arrive at the next multiple of 10. Next, 4 can be added mentally and then 3: 236 + 4 + 3 = 243. However, a child may use column addition or count in ones, rather than apply their knowledge of known facts.

Continuing to use concrete resources, such as base ten blocks and place value counters on a place value chart, alongside abstract representations will enable children to develop fluency with their mental addition and subtraction. Ensuring children can confidently calculate and apply their place value knowledge to adding and subtracting one-digit numbers to and from three-digit numbers is vital if they are to become proficient in mental calculation methods.

Preparation

- **Number lines** (three, laminated)
- **Show me game cards** (three sets)
- **Spinners** (one set)
- Whiteboards and pens
- Base ten

Key Vocabulary

- One-digit, two-digit and three-digit number
- Ones
- Add, subtract
- Number bonds of 10
- Partition
- Number facts

Addressing the Gap

Children will start by recapping their understanding of number bonds of 10. Then, they will use their knowledge to add and subtract a one-digit number to or from a two-digit number, including crossing the tens boundary. After that, children will be using base ten, number lines and whiteboards to add and subtract one-digit numbers that cross through ten boundaries. Finally, children will play a fun matching cards game to further consolidate their knowledge.

Key Questions for Deepening Understanding

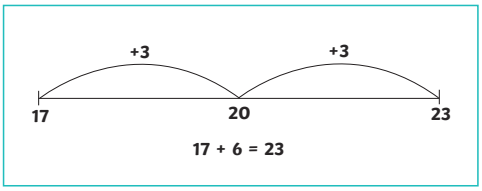
Explain that children will be learning to add and subtract one-digit numbers to and from three-digit numbers (for example, 347 + 5 and 753 − 6). First, they need to show their understanding of number bonds of 10.

Say any one-digit number. Children write its complement to 10 on their boards and show the group. Work through all the number bonds of 10 so children can quickly recall without having to count on in ones.

Next, children use number bonds to add and subtract a one-digit number to or from another two-digit number that involves crossing the tens boundary. Give each pair the **number lines** sheet. Ask them to look at the 0 to 20 number line and then work out 17 + 6.

- **What did you do? Why?**
- **Was there a different way to do it?**

Model how to carry out these calculations using the blank number line by partitioning the second number and using number bonds of 10 knowledge (see image).



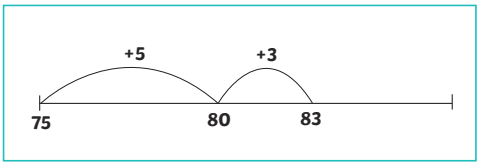
Ask children to use their blank number lines to work out 26 + 8.

- **Which number did you add to 6 to get to 10? What number bond did you use to help you?**
- **What did you do with the remainder?**
- **Why is it a good idea to use this method?**

As a group, repeat the above activity with similar questions for the subtraction calculation 13 − 6. Model to the group how to work out the subtraction calculation.

- **What similarities to addition does the subtraction method have?** (partition the single-digit number).

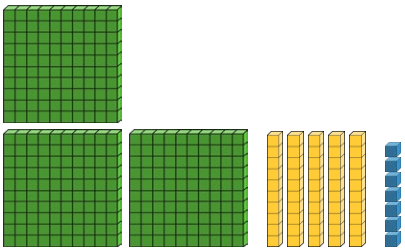
Emphasise that it is the same strategy, but in reverse. Ask each pair to write 75 at the start of their blank number line and then use the partitioning method to work out 75 + 8 (see image).



- **What did you do first? Why did you jump to 80?**
- **Which number did you add to 75 to get to 80? What number bond did you use to help you? What was left?**
- **How did you get that answer?**

Repeat with 67 + 6 and 85 − 9. For the subtraction, ask children to write the two-digit number at the right hand side of the line on their boards so they can jump back when they carry out their workings.

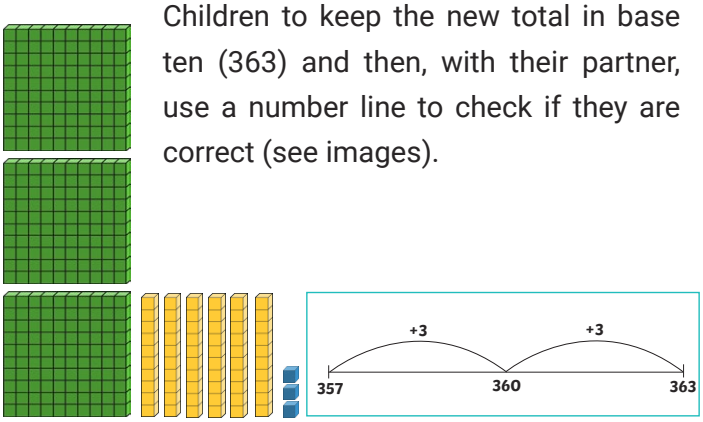
Check children are using the partition method practised earlier. Give each pair a selection of base ten equipment, including hundreds, tens and ones. Ask them to create the number 357 (see image).



Ask children to add 6 to 357 using base ten.

- **What was your first step? Why? How did you know to do that?** (add 3 to get to 360)
- **What was the second step?** (add the remaining 3 to reach 363)
- **Which columns changed? Why?**
- **What is the greatest digit that can go in a column? Why?**
- **When you reach 9 ones and you have more to add, what do you need to do?**

Key Questions for Deepening Understanding (Continued)



Children to keep the new total in base ten (363) and then, with their partner, use a number line to check if they are correct (see images).

This time, ask children to make 254 with base ten. Explain that they need to subtract 6 from this number, so they will need to exchange. Check that they are confident with exchanging once they have made the first step of taking 4 ones away from 254. Using the base ten equipment, show children how 1 of the 5 tens is exchanged for 10 ones and how the remaining 2 ones can then be taken away to leave 248.

Ask children to again use a number line to check that their answer is correct.

- **Why did I need to exchange?**
- **How many ones do we exchange for 1 ten?**
- **Which columns changed? Why?**

Repeat using base ten and a number line with the following calculations: 453 − 5, 245 + 8, 676 − 9 and 583 + 9. Ask similar questions from activity above.

- **When you add or subtract ones to or from a three-digit number, does it always change the tens column? How do you know?**

On the board, write 268 + 4. In pairs, children use number bonds to mentally work out the answer.

- **What did you do first? Why?**
- **What did you then do?**
- **How did your number bond knowledge help here?**
- **Why do you think it is a good method to do for these maths problems?**

Repeat using the same method and questions for the following calculations: 364 + 8, 572 − 4, 736 + 7 and 883 − 9.

Show Me Game

Give each team (pairs) a set of the **show me game cards** and ask children to spread them out on the desk in front of them, face up.

These cards need to be cut out separately for this activity.

1	2	3
4	5	6
7	8	9

Teams try to be the first to find the missing digit needed to complete a given number statement. On the whiteboard, write an addition or subtraction with the single digit missing. Each of the number statements should start with a three-digit number followed by an addition or subtraction sign and the answer must be no more than 9 above or below that number. Try to include questions that involve children needing to cross a tens boundary.

An example of this is 346 + = 352 or 542 − = 536. (Both of these would require children to hold up the 6 digit card.)

The first pair to hold up the card that has the correct missing digit wins a point. The first team to reach five points is the winner.

Additional Opportunities to Reinforce Learning

In pairs, give children a three-digit number, for example, 573. Ask them to write it on their boards. Then, they spin the **spinner** and whatever number it lands on, children need to add that digit to their three-digit number and then subtract it as well.

For example, if they land on 9, they will mentally (or using number line if needed) 747 + 9 = 756 and 747 − 9 = 737.

The first pair to get five of these completed correctly is the winning team.

Home Learning Slip

Today, at school, your child has been working on how to add and subtract a one-digit number to and from a three-digit number. Examples of this are 247 + 6 and 562 − 8. Here, we would encourage children to complete this addition in two steps. First, they would use number bonds of ten knowledge to add 3 to 247 (7 and 3 are bonds of ten) and then and then add the remaining 3 to 250, to reach the correct answer of 253. The same would apply to 562 − 8 but subtracting, not adding.

To help your child consolidate their learning, you could complete the following activity with them at home. To work out 458 + 5, your child stands at one end of the room and solves it with jumps. In this case, the first jump is 2 to get them to 460, and then a second jump of 3 to get to 463. Ask them to explain why they did it that way. They should only ever make two jumps for each question you give them. Repeat this with 646 + 8, 233 − 6, 775 + 9, 894− 7, 482 + 9.

Thank you for your support with this. Your help will really make a difference to your child.

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