

Unit 3
Understanding addition, subtraction and mental calculations
Year 2
Spring term
Unit Objectives
Year 2

- Understand that more than two numbers can be added. Begin to add three single-digit numbers mentally (totals up to about 20) or three two-digit numbers with the help of apparatus (totals up to 100).
- **Use knowledge that addition can be done in any order to do mental calculations more efficiently.** For example: put the larger number first and count on in tens or ones; add three numbers by putting the largest number first and/or find a pair totalling 10; partition into '5 and a bit' when adding 6, 7, 8, or 9, then recombine (e.g. $16 + 8 = 15 + 1 + 5 + 3 = 20 + 4 = 24$).

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Year 1
Link Objectives

- Begin to recognise that more than two numbers can be added together.
- Use knowledge that addition can be done in any order to do mental calculations more efficiently. For example: put the larger number first and count on in ones, including beyond 10 (e.g. $7 + 5$); begin to partition into '5 and a bit' when adding 6, 7, 8 or 9, then recombine (e.g. $6 + 8 = 5 + 1 + 5 + 3 = 10 + 4 = 14$).

Year 3

- Extend understanding that more than two numbers can be added; add three or four single-digit numbers mentally or three or four two-digit numbers with the help of apparatus or pencil and paper.
- Use knowledge that addition can be done in any order to do mental calculations more efficiently. For example: put the larger number first and count on; add three or four small numbers by putting the largest number first and/or by finding pairs totalling 9, 10 or 11; partition into '5 and a bit' when adding 6, 7, 8 or 9, (e.g. $47 + 8 = 45 + 2 + 5 + 3 = 50 + 5 = 55$); partition into tens and units, then recombine (e.g. $34 + 53 = 30 + 50 + 4 + 3 = 87$).

(Key objectives in bold)

This Unit Plan is designed to guide your teaching.

You will need to adapt it to meet the needs of your class.

Resources needed to teach this unit:

- Resource sheet 3.1
 - Resource sheet 3.2
 - Activity sheet 3.1
 - Activity sheet 3.2
 - Activity sheet 3.3
 - Box/bag
 - Two sets of 0–15 number cards
 - Number fans/digit cards
 - Whiteboards
 - Coat hanger and pegs
 - Objects for a shop with price tags (1p–9p)
 - Place value cards
 - Calculators
 - Mega money
 - Three cards, one with two faces, one with five and one with eight arranged as on the Models and Images Chart
- Addition and subtraction facts to 20.*


Also see Models and Images Charts:

- Addition and subtraction facts to 20;
- Understanding addition and subtraction.

Planning sheet	Day One	Unit 3 <i>Understanding addition, subtraction and mental calculations</i>	Term: <i>Spring</i>	Year Group: 2
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
<p>Partition a two-digit number into tens and ones.</p> <p>VOCABULARY partition recombine even less greater than less than</p> <p>RESOURCES Whiteboards Place value cards</p>	<ul style="list-style-type: none"> Ask for an even number less than 10 and greater than 3 to give the starting number and then count on in tens. Stop after a while and look at the number they have arrived at e.g. 56. Using the place value cards ask the children to find 56 and partition it. <div>Q What number sentence can you make using the two place value cards?</div> <p>Draw out that $50 + 6 = 56$.</p> <ul style="list-style-type: none"> Repeat with other numbers. Write the following numbers on the board: 70, 4, 30, 80, 6, 2. <p>Ask the children, in pairs, to make as many two-digit numbers as they can using these and write them on their whiteboards.</p> <p>Collect the answers.</p> <div>Q How can we tell if we've got them all?</div> <p>Show how you could start with 70 and make all possible two-digit numbers, then 30 and so on.</p>	<p>Use the knowledge that addition can be done in any order to do mental calculations more efficiently by partitioning into '5 and a bit' when adding 6, 7, 8 or 9 then recombine.</p> <p>VOCABULARY partition recombine calculation add</p> <p>RESOURCES Mega money (large coins) Calculators Resource sheet 3.1 cut up into cards.</p>	<ul style="list-style-type: none"> Demonstrate partitioning 6, 7, 8 and 9 into '5 and a bit'. Put up 6 fingers, 5 in one hand and 1 in the other. Record: $6 = 5 + 1$. Put up 7 fingers, 5 in one hand and 2 in the other. Record: $7 = 5 + 2$. Repeat for 8 and 9. Then write on the board $6 + 7$ <div>Q How would you work this out?</div> <p>Collect answers and demonstrate the partitioning into '5 and a bit'.</p> <div> $\begin{array}{c} 6 + 7 \\ \swarrow \quad \searrow \\ 5 + 1 \quad 5 + 2 \\ \\ 5 + 1 + 5 + 2 \\ 5 + 5 = 10 \\ 1 + 2 = 3 \\ 10 + 3 = 13 \end{array}$ </div> <p>Use coins to show $5p + 1p + 5p + 2p = 10p + 1p + 2p$:</p> <ul style="list-style-type: none"> Now write $6 + 8$. Ask the children to work this out on the whiteboards and show their partner. Ask them to use the partitioning into '5 and a bit'. Share answers. Possible strategies may include: $\begin{array}{l} 5 + 1 + 5 + 3 \\ 10 + 4 \\ = 14 \end{array}$ Write $15 + 7$ on the board. <div>Q How might you work this out?</div> <p>Draw out $15 + 7 = 15 + 5 + 2 = 20 + 2$.</p> <ul style="list-style-type: none"> Repeat with $15 + 8$. Write $16 + 7$ on the board. Show how this can be done as $15 + 1 + 5 + 2 = 20 + 3 = 23$. In pairs play 'Beat the calculator'. Give each pair of children a set of cards from the Resource sheet 3.1 in order. First child takes the first card and puts the calculation into the calculator. If the other child says the answer before it comes up on the calculator then this child keeps the card. <div> $\begin{array}{ccc} 5 + 7 & 15 + 5 & 17 + 5 \\ 8 + 5 & 15 + 8 & 16 + 8 \end{array}$ </div>	<div>Q Which calculations were most difficult?</div> <ul style="list-style-type: none"> List these on the board. Ask the children for methods of getting the answers quickly. <div>Q What other strategies did you use? What other strategy could you use for adding 9?</div> <div>By the end of the lesson children should be able to:</div> <ul style="list-style-type: none"> partition units of 6, 7, 8, 9 into '5 and a bit' to work out, for example, $9 + 8 = (5 + 4) \text{ plus } (5 + 3) = 5 + 5 + 4 + 3 = 10 + 7 = 17$ <p>(Refer to supplement of examples, section 5, page 33.)</p>

Planning sheet		Day Two	Unit 3 <i>Understanding addition, subtraction and mental calculations</i>	Term: <i>Spring</i>	Year Group: 2
Oral and Mental			Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities		
<p>Know by heart all addition facts for each number to at least 10.</p> <p>VOCABULARY double pair</p> <p>RESOURCES Number fans/digit cards A box or bag two sets of 0–10 number cards Whiteboards</p>	<ul style="list-style-type: none"> Sit the children in a circle. Use the 'Magic Bag/Box' – a box with two sets of 0–10 number cards inside. Ask a child to come and take two cards out of the box. Ask the children to add the numbers and show the total with fans/digit cards. Ask the children to stand up if the answer is a double when showing the answer or kneel if the two numbers have a total of 10. Repeat with other pairs of cards. 	<p>Understand that more than two numbers can be added. Begin to add three single-digit numbers mentally (totals up to about 20).</p> <p>Add three numbers mentally by putting the larger number first and/or finding a pair that make 10.</p> <p>VOCABULARY addition add strategy mental calculation pair</p> <p>RESOURCES Activity sheet 3.1 Three cards, one with two faces, one with five and one with eight (see Addition and Subtraction facts to 20 Models and Images chart) Whiteboards</p>	<ul style="list-style-type: none"> Write on the board $5 + 24$ Tell the children to work it out and then explain to their partner how they did it. Draw out the strategy of starting with the largest number. Repeat with similar calculations, where one number is noticeably bigger than the other. Show the three cards in this order: <div style="display: flex; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 5px;">00</div> <div style="border: 1px solid black; padding: 2px 5px;">00000</div> <div style="border: 1px solid black; padding: 2px 5px;">00000 000</div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> Q Which two cards go together to make 10? </div> <p>Discuss how you could rearrange the cards but the total will remain the same.</p> Write on the board $5 + 2 + 8$ Read it together. Ask if someone can make up a number story for this sentence, e.g. There are 3 pencil pots. One has 5 pencils in, one has 2 in and the last has 8 in. How many pencils are there altogether? Ask the children to add these three numbers together, recording their answers on their whiteboards. Tell them to turn to a partner, show them their working and explain how they worked it out. <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> Q Would it help to change the order? </div> <ul style="list-style-type: none"> Collect a few replies and ask some children to show and explain to the class how they worked it out. Encourage the children to record the calculations as they explain, or record for them. Remind them to start a new line for each calculation so that errors are not made such as $8 + 5 = 13 + 2 = 15$. Remind them about the correct use of the = sign and that $8 + 5$ does not equal $13 + 2$. Write on the board $5 + 9 + 1$ Read together. Ask the children to add these three numbers together and show their recording on their whiteboards. Tell them to turn to a partner to show them their working and explain how they worked it out. <p>Collect a few replies and ask some children to show and explain to the class how they worked it out. Draw out the strategy of finding a pair to 10.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> Q What number story could we make with this number sentence? </div> <ul style="list-style-type: none"> Ask children to use the grid from Activity sheet 3.1 to choose three numbers to add together. They should use all the numbers, trying to have no totals greater than 20. They should find pairs of numbers which total 10 and underline these when they write their number sentences. 		
			<ul style="list-style-type: none"> Review the activity and establish if anyone managed to use all the numbers and have no totals greater than 20. Ask them to tell the class their strategies. Write on the board $2 + ? + 8 = 20$ Ask the children to find the missing number. Ask how they worked it out. Possible strategy: $8 + 2 = 10$. $10 + 10 = 20$ using knowledge of doubles. Record: $2 + 10 + 8 = 20$. Write on the board: $? + 4 + 7 = 20$ $? + 3 + 5 = 20$ $? + ? + 9 = 20$ Ask the children to find the missing numbers and write them on their whiteboards. <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> Q How did you work them out? </div> <p>Discuss possible strategies for the last ones. Count on 11 from 9 to 20. Choose two numbers which total 11 e.g. 3 and 8, $3 + 8 + 9 = 20$. Point out how there is more than one answer.</p> <p>Finally write $? + ? + ? = 20$.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> Q Is there just one answer to this? Why? Why not? </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> By the end of the lesson, children should be able to: <ul style="list-style-type: none"> add three numbers finding a pair that make 10. <p>(Refer to supplement of examples, section 5, page 33.)</p> </div>		

Planning sheet	Day Three	Unit 3 <i>Understanding addition, subtraction and mental calculations</i>	Term: <i>Spring</i>	Year Group: 2
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
<p>Know by heart all pairs of numbers with a total of 10.</p> <p>Know by heart all pairs of numbers with a total of 20.</p> <p>VOCABULARY pair total</p> <p>RESOURCES Coat hanger and ten pegs (refer to the Addition and subtraction facts to 20 'Models and Images Chart')</p>	<ul style="list-style-type: none"> Put 10 pegs on a coat hanger. Count them to establish that there are 10. Cover up 3. Write the sentence $10 = 7 + \square$. <p>Q How many are showing and how many are hidden?</p> <p>Complete the sentence: $10 = 7 + 3$.</p> <ul style="list-style-type: none"> Show the same sentence using fingers. Put 7 fingers up. <p>Q How many are down?</p> <p>Point to the sentence $10 = 7 + 3$.</p> <ul style="list-style-type: none"> Cover up 7 pegs. <p>Q How many pegs are hidden?</p> <ul style="list-style-type: none"> Write the sentence $10 = 3 + \square$. Hold up 3 fingers. <p>Q How many fingers are down? How many altogether?</p> <p>Complete the sentence.</p> <ul style="list-style-type: none"> Repeat with other pairs to 10. Ask the children to complete the sentence: $20 = 3 + \square$. Compare this with $10 = 3 + 7$ to allow the children to see the pattern. Rewrite it as $20 = 3 + 7 + 10$. Ask the children to complete the sentence $20 = 13 + \square$. Rewrite it as $20 = 10 + 3 + 7$, drawing attention to the pair of numbers with a total of 10 and reminding children that $10 + 10 = 20$. Repeat using other pairs to 20, encouraging the children to see the connection with the pairs to 10. 	<p>Understand that more than two numbers can be added.</p> <p>Begin to add three single-digit numbers mentally (rewrite totals up to about 20).</p> <p>Add three numbers mentally by putting the larger number first and/or finding a pair that make 10.</p> <p>VOCABULARY double near double mental calculation strategy</p> <p>RESOURCES Whiteboards Activity sheet 3.2</p>	<p>Q I ate 3 peas and then 8 peas and then 7 peas. How many had I eaten altogether?</p> <p>Q What calculation are we doing?</p> <ul style="list-style-type: none"> Ask children to record the calculation on their whiteboards. Ask a child to explain how they found the answer. Model recording what the child has done. <p>Show that the calculation was $3 + 8 + 7$ and it includes a pair of numbers with a total of 10.</p> <p>Q There are 3 pencil pots. One has 5 pencils in, one has 2 in and the last has 8 in. How many pencils are there altogether?</p> <ul style="list-style-type: none"> Ask the children to record the calculation on their whiteboards. Ask some children to explain how they worked it out and to show how they recorded this. <p>Remind them to start a new line for each calculation so that errors are not made, such as $7 + 3 = 10 + 8 = 18$.</p> <ul style="list-style-type: none"> Write $8 + 3 + 5 + 8$ Read together. <p>Q What is different about this calculation?</p> <p>Ask for possible strategies. Either use $3 + 5 = 8$ and double 8 or start with 8 as the largest number.</p> <p>Q What strategies can we use for adding three or four numbers?</p> <ul style="list-style-type: none"> Emphasise using doubles or near doubles, using pairs to 10 and adding the larger number first. Explain how to complete Activity sheet 3.2. They should make up at least three calculations to write in each balloon. 	<ul style="list-style-type: none"> Write on the board: $5 + 15 + 3$ Ask the children to work out the answer. Collect answers and strategies and find out if anyone noticed that there was a pair to 20 as they practised in the oral and mental part of the lesson. Write: $4 + 3 + 16$ Collect answers and strategies. Ask the children to think of a calculation adding three numbers using the pairs to 20 and write it on their whiteboards. <p>Collect calculations and help the class find the answers to some of them.</p> <p>HOMEWORK – Write down five calculations adding three prices using the pairs to 10 e.g. $3p + 4p + 6p = 13p$.</p> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> add three single-digit numbers mentally using the strategies of starting with the larger number, using doubles, or pairs which make 10. <p>(Refer to supplement of examples, section 5, page 33.)</p>

Planning sheet	Day Four	Unit 3 <i>Understanding addition, subtraction and mental calculations</i>	Term: <i>Spring</i>	Year Group: 2
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
<p>Know by heart all pairs of numbers with a total of 10.</p> <p>Know by heart all pairs of numbers with a total of 20.</p> <p>VOCABULARY pair penny pence</p> <p>RESOURCES Whiteboards</p>	<p>Q What is $3p + 7p$?</p> <ul style="list-style-type: none"> Draw out that it is a pair to 10, so the answer is 10p. Draw a 5p coin and a 1p coin on the board. <p>Q How much more do we need to make 10p?</p> <p>Write on the board: $6p + \square = 10p$. Ask children to draw the coins they would use.</p> <p>Q What coins have you drawn? Could you have drawn different coins?</p> <ul style="list-style-type: none"> Repeat with other similar number sentences asking children to draw the coins on their whiteboards. Draw 16p on the board:  <p>Q How much more do we need to make 20p?</p> <p>Ask the children to draw the coins on their whiteboards. Draw attention to the coins with a total of 10p adding to the 10p coin to make 20p altogether.</p> <ul style="list-style-type: none"> Repeat with 13p. 	<p>Understand that more than two numbers can be added. Begin to add three single-digit numbers mentally (totals up to about 20).</p> <p>Add three numbers mentally by putting the largest number first and/or finding a pair that make 10.</p> <p>VOCABULARY addition money penny pence cost total</p> <p>RESOURCES Objects for a shop with price tags (prices 1p–9p) Mega Money (large coins) Resource sheet 3.2</p>	<ul style="list-style-type: none"> Discuss the homework and ask one or two children to write up some of their calculations on the board. Tell the children that you are going to add prices like these in today's lesson. Lay out a 'shop' with priced objects where the prices are under 10p e.g. fruit or pencils, rubbers etc. <p>In pairs ask the children to choose three objects and add the prices together and write the calculations in their books.</p> <p>Q Who added their prices by starting with the largest number first?</p> <p>Q Who spotted a pair with a total of 10p?</p> <p>Q Was there a double or a near double?</p> <p>Ask a few children to record their calculations on the board in the order they added the numbers together.</p> <ul style="list-style-type: none"> Give out Resource sheet 3.2. <p>Q Can you see any pairs with a total of 10?</p> <p>Ask the children to choose three items with a total of less than 20p. They should then find the change from 20p. Demonstrate one example and show how to record it, e.g. $9p + 1p + 3p = 13p$, $20p - 13p = 7p$.</p>	<ul style="list-style-type: none"> Take some answers from the activity. Ask a few children to find the coins to make the totals, and then the change. <p>Q Can you find four items with a total of 20p? What number facts could you use to help?</p> <ul style="list-style-type: none"> Draw out that you could find two pairs with a total of 10p. <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> add three single-digit numbers mentally (totals up to about 20); add three numbers mentally by putting the largest number first and/or finding a pair that make 10 in the context of money. <p>(Refer to supplement of examples, section 5, page 33.)</p>

Planning sheet		Day Five	Unit 3 <i>Understanding addition, subtraction and mental calculations</i>		Term: <i>Spring</i>	Year Group: 2											
Oral and Mental			Main Teaching			Plenary											
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities		Teaching Activities/ Focus Questions												
<p>Know by heart all addition facts for each number to at least 10.</p> <p>VOCABULARY add double pair</p> <p>RESOURCES A box/bag Two sets of 0–15 number cards Number fans/ digit cards</p>	<ul style="list-style-type: none">Sit the children in a circle. Use the ‘magic’ bag/box – a box with two sets of 0–15 number cards inside.Ask a child to come and take two cards out of the box. The children add the numbers and show the total with fans/digit cards.If they added them together by putting the larger number first they should kneel down. If they spotted a pair that made 10, they should stand up.Repeat for other pairs of numbers.	<p>Use the knowledge that addition can be done in any order to do mental calculations more efficiently.</p> <p>Partitioning into ‘5 and a bit’ when adding 6, 7, 8 or 9, then recombine.</p> <p>VOCABULARY partition recombine pair strategy</p> <p>RESOURCES Activity sheet 3.3 An A3 version of Activity sheet 3.3</p>	<ul style="list-style-type: none">Ask the children to tell their partner which strategies they have learned this week: put the larger number first; find a pair that makes 10; partition into ‘5 and a bit’ and recombine.Write on the board $8 + 4 + 2 = \square$ and $5 + 7 = \square$. <p>Ask the children to tell their partner how they would work each out. Collect answers. Ask a child to explain and write their strategy. Ask if anyone worked it out using a different strategy and ask for another explanation.</p> <p>Possible strategies might include:</p> <table><tr><td>$8 + 4 + 2$</td><td>$5 + 7$</td></tr><tr><td>$= 8 + 2 + 4$</td><td>$= 5 + 5 + 2$</td></tr><tr><td>$= 10 + 4$</td><td>$= 10 + 2$</td></tr><tr><td>$= 14$</td><td>$= 12$</td></tr></table> <ul style="list-style-type: none">Write on the board $6 + 3 + 6 = \square$ <p>Ask the children to tell their partner how they would work it out. Collect answers. Ask a child to explain and write their strategy. Ask if anyone worked it out using a different strategy and ask for another explanation.</p> <p>Possible strategies might include:</p> <table><tr><td>double 6 + 3</td></tr><tr><td>$= 12 + 3$</td></tr><tr><td>$= 15$</td></tr></table> <ul style="list-style-type: none">Give out Activity sheet 3.3. <p>In pairs, the children should write the calculations in the balloon with the strategy they would use. They do not have to work out answers. After they have written the calculations in the balloons, they then work out one or two calculations from each balloon.</p> <div>Q What other strategies might you use?</div> <div>Q If you used a double, near double, or added 9 by adding 10 and taking away 1, where would you put that calculation?</div>		$8 + 4 + 2$	$5 + 7$	$= 8 + 2 + 4$	$= 5 + 5 + 2$	$= 10 + 4$	$= 10 + 2$	$= 14$	$= 12$	double 6 + 3	$= 12 + 3$	$= 15$	<ul style="list-style-type: none">Use the enlarged A3 Activity sheet. Ring a calculation and ask in which balloon it should go. Discuss and take explanations and then write it in the agreed balloon.Repeat for several more.Write $13 + 6 + 7 = \square$ on the board. <p>Ask children to discuss in pairs how they would do it. e.g. $13 + 7 = 20$ (pair to 20) $20 + 6 = 26$</p> <p>$6 + 7 = 13$ (known fact) $13 + 13 = 26$ (double)</p> <div>By the end of the lesson, children should be able to:<ul style="list-style-type: none">recognise when to use the addition strategies of partitioning into ‘5 and a bit’ and recombining using pairs to 10, using doubles, and putting the larger number first.(Refer to supplement of examples, section 5, page 33.)</div>	
$8 + 4 + 2$	$5 + 7$																
$= 8 + 2 + 4$	$= 5 + 5 + 2$																
$= 10 + 4$	$= 10 + 2$																
$= 14$	$= 12$																
double 6 + 3																	
$= 12 + 3$																	
$= 15$																	



$$5 + 7$$

$$8 + 5$$



$$15 + 5$$

$$17 + 5$$



$$15 + 6$$

$$16 + 8$$



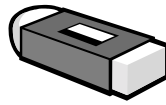
$$5 + 16$$

$$15 + 9$$

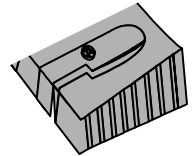
The Stationery Shop



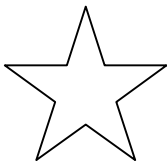
8p



7p



5p



2p



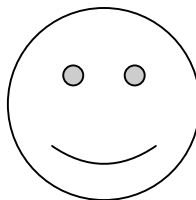
1p



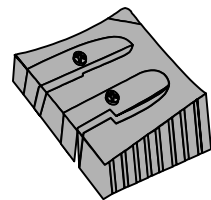
6p



4p



3p



9p

Adding three numbers

1	7	8	4
4	3	9	6
5	2	5	0

Choose three numbers to add together. Totals cannot be greater than 20. Try to find a pair to 10 each time you pick the three numbers and underline it. You could cross off the numbers as you use them.

Here is one to start you off:

$$1 + \underline{2} + \underline{8} = 11$$

Adding 3 numbers
using **pairs to 10**,
e.g. $3 + 7 + 4 = 14$

Adding 3 numbers using
doubles or near doubles,
e.g. $6 + 6 + 7 = 19$

Adding 3 numbers where
there is **no double or
pair, starting with the
largest number** e.g.
 $9 + 5 + 3 = 17$

Fill in the 'addition
balloons'. Make up
calculations to go in
each balloon.

With your partner, write the sums in the balloon labelled with the strategy you would use.

When you have done this, work out one sum from each balloon and if you have time, do more!

$$6 + 2 + 4$$

$$3 + 8 + 5$$

$$9 + 7 + 2$$

$$5 + 8 + 3$$

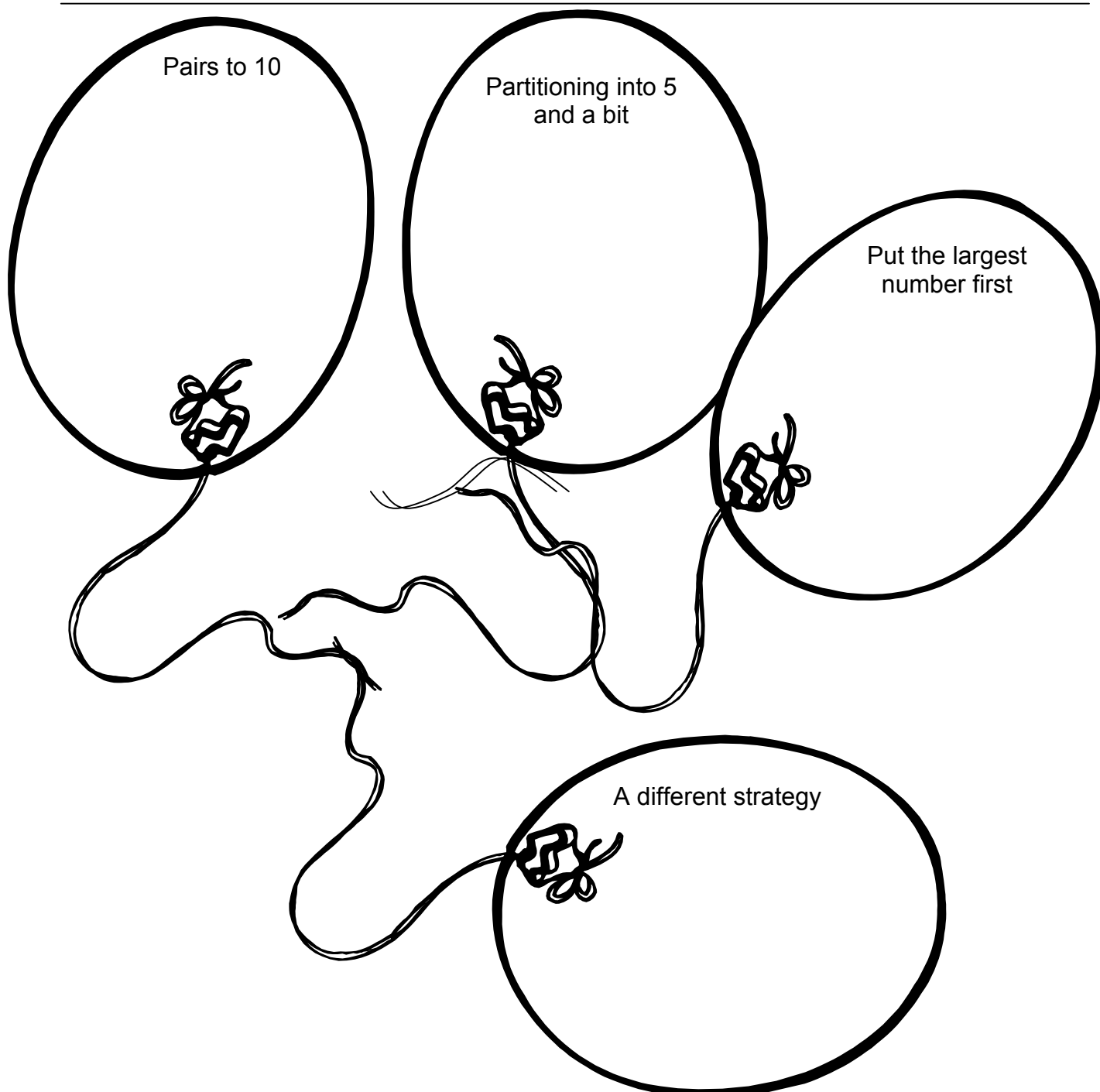
$$6 + 8$$

$$9 + 4$$

$$2 + 9 + 8$$

$$7 + 5 + 3$$

$$5 + 6 + 5$$



Year 2 Unit 3 (Spring term) Support Session 1

Using known facts to add mentally

Objectives

Know by heart all pairs of numbers that total 10.

Add three numbers mentally by finding pairs that total 10.

Vocabulary

strategy
add together

Resources

Tin
10 pennies
OHP
OHP counters
(or counters and re-usable adhesive)

Oral and mental starter

Ask group to close their eyes and to listen and count as you drop 10 pennies into a tin.

Q How many pennies are in the tin?

Remove the pennies, now drop 6 pennies into the tin.

Q How many more do I need to put into the tin to make 10?

Repeat.

Main activity

Stick counters to the board (or use an OHP and OHP counters) to illustrate an addition calculation, for example:

$$\begin{array}{ccccccc} \text{OO} & + & \text{OOOOOO} & + & \text{OOOOOOOO} \\ 2 & + & 5 & + & 8 \end{array}$$

Q Which two numbers will total 10? How does this help us with the calculation?

Move the 2 counters to join the 8 counters to make 10.

$$\begin{array}{l} \text{Write } 2 + 8 = 10 \\ \quad \quad 10 + 5 = 15 \end{array}$$

Repeat the above using:

$$\begin{array}{ccccccc} \text{OOO} & + & \text{OOOO} & + & \text{OOOOOOOO} \\ 3 & + & 4 & + & 7 \end{array}$$

$$\begin{array}{ccccccc} \text{OOOO} & + & \text{OO} & + & \text{OOOOOO} \\ 4 & + & 2 & + & 6 \end{array}$$

Ask individuals to rearrange counters and to record the calculations on their boards.

Plenary

Write a selection of calculations on the board, for example,

$$\begin{array}{ll} 1 + 3 + 9 & 7 + 5 + 3 \\ 2 + 6 + 8 & 5 + 2 + 5 \\ 4 + 5 + 6 & 3 + 7 + 2 \end{array}$$

Explain that when we have to add three numbers together a useful strategy is to look for pairs that total 10.

Ask individuals to circle the two numbers that total 10 in the calculations.

Solve a few of the calculations as a group.

Year 2 Unit 3 (Spring term) Support Session 2

Using known facts to add mentally

Objectives

Recall double facts to $10 + 10$

Identify near doubles using doubles already known

Vocabulary

double
near double
add together
one more
consecutive
numbers

Resources

Models and Images chart (Addition and subtraction facts to 20)
Interlocking cubes
Number cards 1-10

Oral and mental starter

See Models and Images Chart *Addition and subtraction facts to 20*

Ask the children to recall double facts up to $5 + 5$ using fingers.
Say that we run out of fingers to help us when we double 6, 7, 8 and 9.

Demonstrate using cubes to partition these numbers into 5 and a bit - double 6 is double 5 and double 1.
Repeat for double 7, 8 and 9.

Main activity

Use a 1-10 washing line or stick 1-10 number cards on the board.

Point to different numbers on the line and ask the class to double the number pointed at.

Q How can we work out double 8?

Remind children to view it as double 5 add double 3.

Take two consecutive numbers from the line and use them to make a calculation, for example 4 and 5 to make $4 + 5$.

Q How can we use what we know about doubles to help us add these two numbers?

Hold up two towers of 4, saying 'double 4 is 8 but we need to add 4 and 5'. Add one more cube to a tower of 4 saying 'now we have 4 add 5, we can add 4 and 4 and 1 more. 4 add 4 is 8 and one more is 10'.

Repeat for other consecutive numbers using pairs of towers to demonstrate near doubles.

Give each child a whiteboard and ask them to write some near double calculations for their partner to solve.

Plenary

Write some calculations on the board, for example:

$$6 + 2 + 7 \quad 5 + 2 + 6 \quad 9 + 2 + 3$$

Explain that in Session 1 we looked for pairs of numbers that made 10 to help us add three numbers.

Say that another useful strategy is to look for near doubles.

Ask the group to identify the near doubles in each calculation.

Solve one or two of the calculations as a group.