

Up and away

Learning Objectives

(Y2) Explain how a problem was solved orally and, where appropriate, in writing.

(Y3) Explain methods and reasoning orally and, where appropriate, in writing.

Mental Starter

See the starter activity, 'Number families (3)' on page 23.

You will need

Photocopiable page 109 (one copy per child); large number tiles 1-6 (demonstration set); glue.

Moving On

● Consider modifying the sheet to include larger numbers. Any such set can be created by establishing a start number and adding on in regular steps. For example: 2, 4, 6, 8, 10, 12 or 2, 5, 8, 11, 14, 17.

Whole class work

- Present the number 100 in a circle. Radiate a number of 'legs' from the circumference of the circle to create a spider diagram.
- Invite the children to give you an addition number sentence with the answer of 100. Encourage the class to derive new examples by adjusting/modifying earlier ones. Move to sentences involving subtraction. Encourage individuals to explain methods and to reason.
- Consider 'simple' multiplication facts that could lead to strategies such as 'doubling and halving' (for example knowing that 50 times 2 equals 100 could lead to 25 times 4 having the same outcome).

Group work

- Present the number tiles in a random order and ask the group to help you find the total. Invite individuals to choose two numbers to combine in order to begin the calculation (such as: 4 and 6 makes 10).
- Continue adding the remaining numbers to give a total of 21. Ask: *Will it give a different answer if we add them in a different order?* Try out some different orders to demonstrate how the total is 'conserved'.

Individual work

- Provide each child with some glue, pencils and a copy of page 109 (the upper section and the cut-out numeral cards from the lower section). Read the instructions together, ensuring that all the children are familiar with the term 'total'. Explain that they may need to 'trial and improve' before they get the correct solution.
- When a solution has been found, encourage each child to identify any specific strategies that were used, such as:
 - matching numbers at the 'extremes'
 - working to a specific total and realising that it is too large/small for others pairs to be created
 - finding the total of all the numbers (21) and recognising that these have to be shared between 3 groups

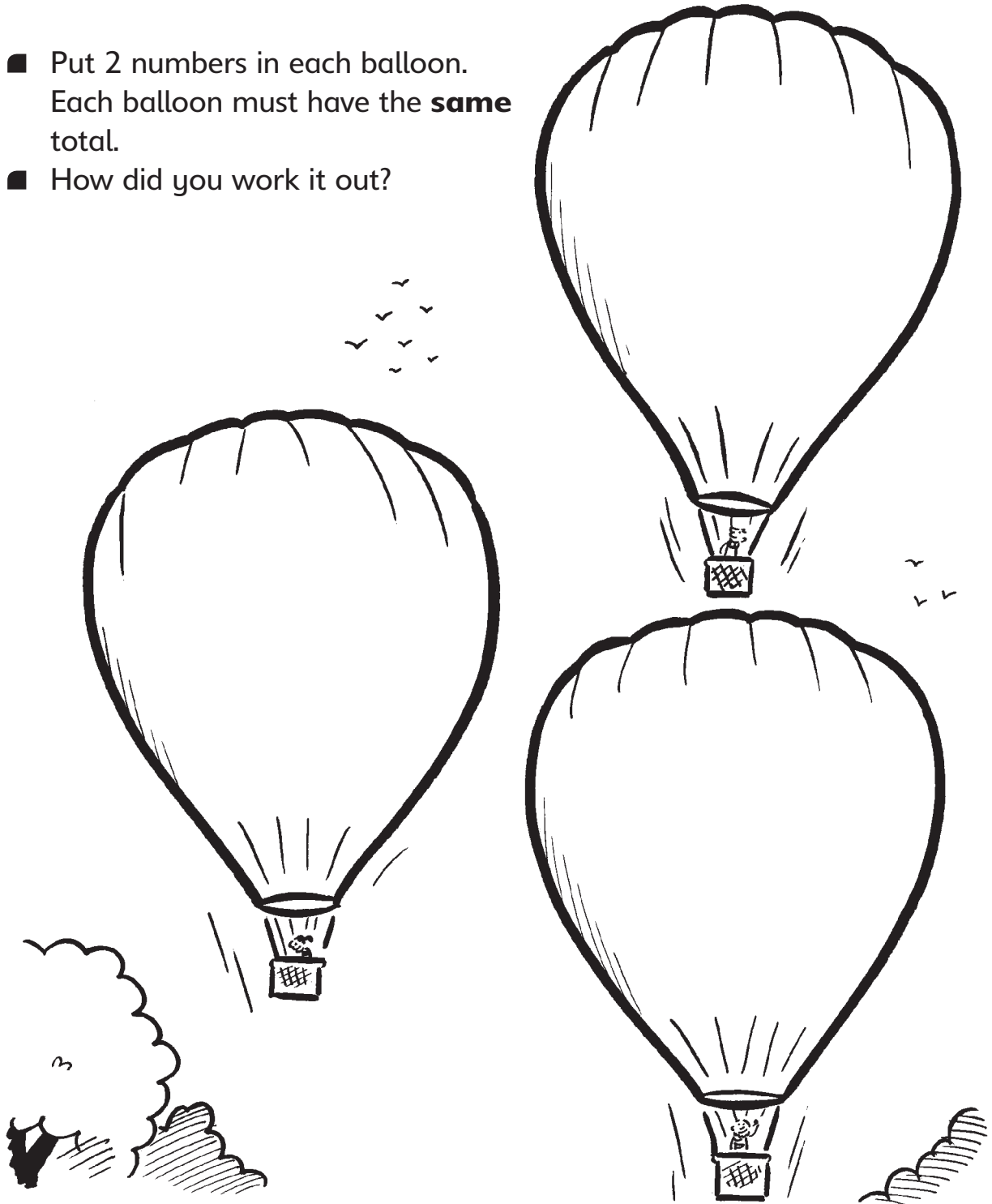
Plenary

- The correct solution gives a total of seven in each balloon. Relate this back to the 'group work' where a total of 21 was calculated.
- Extend this initial activity, incorporating additional tiles to cover the range 1-8. Place the tiles in ascending order and explore the idea of matching totals by drawing from the outside extremes (1 and 8) through to 4 and 5. Establish that the total is equivalent to 4 groups of 9.

Potential difficulties	Further support
The task is insufficiently visual.	Provide differently-coloured towers featuring 1, 2, 3, 4, 5 and 6 cubes. This will offer a valuable visual reinforcement of the solution when the towers are appropriately paired.
Individuals can sometimes be reluctant or unable to declare their strategies for problem solving.	Observe the child engaging in the task, providing a related activity if this was missed first time.

Up and away

- Put 2 numbers in each balloon. Each balloon must have the **same** total.
- How did you work it out?



1	2	3	4	5	6	✂
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