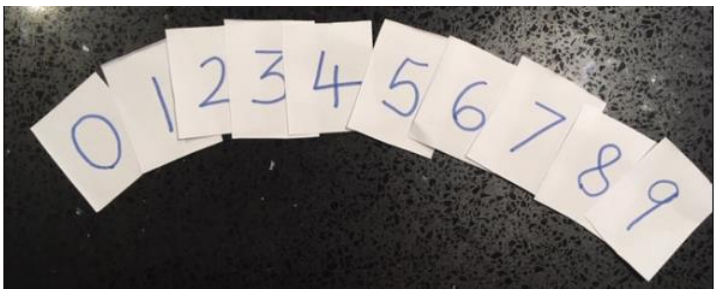
Balancing Numbers Week – Additive Reasoning Y5/6

This week you will need:

- Paper and pencil/ pen
- To record and keep your work each day because you will need to look back at it during the week. You could use the sheet provided or just record on paper.
- A piece of paper cut into ten small pieces and numbered 0 to 9 so you can move the numbers around during the tasks to help your thinking.



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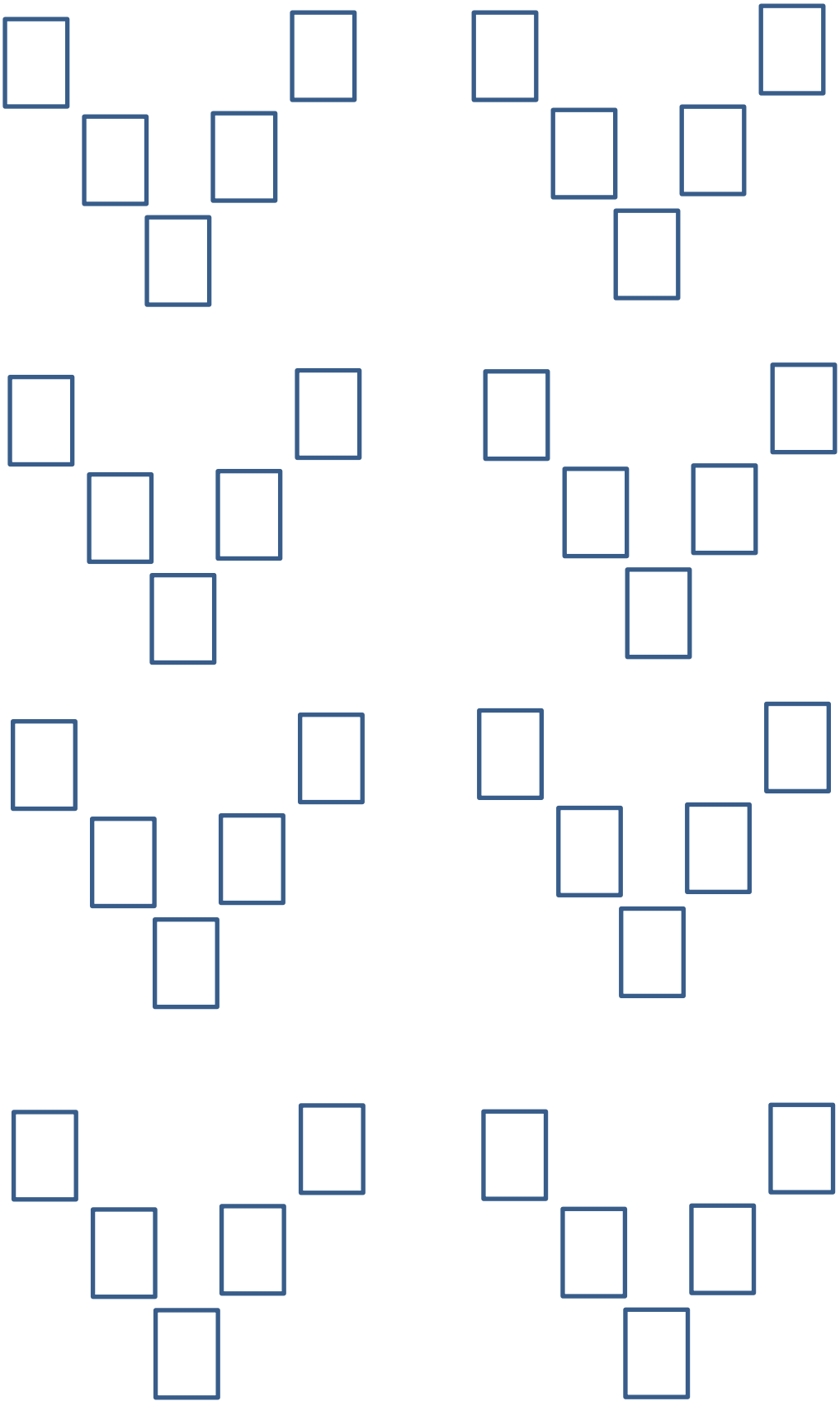

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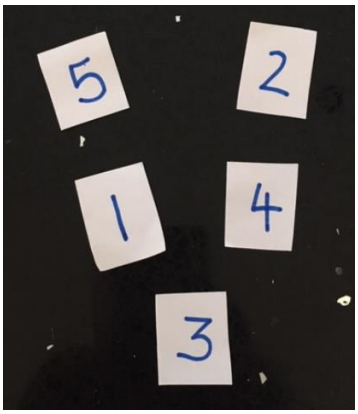
Day 1

- The numbers 1, 2, 3, 4 and 5 are consecutive numbers because they follow on from each other when you are counting in ones.
- Using the consecutive numbers 1, 2, 3, 4 and 5 we can create a Magic V.



- This is a **'Magic V'** because both arms have the same total:

  5 + 1 + 3 = 9

  2 + 4 + 3 = 9.
- Using the same five numbers how many different Magic Vs can you find? Record your solutions.
- Which numbers are at the bottom of the Magic Vs? Which numbers don't appear at the bottom of the Magic Vs?
- Now use the set of five consecutive numbers 2, 3, 4, 5, 6 to make Magic Vs. Record your solutions.
- What do you notice about the bottom numbers this time?
- Can you explain what you have noticed?

Notes for adults working with groups of children

- Ensure the children record their findings so that they can compare work on different days.

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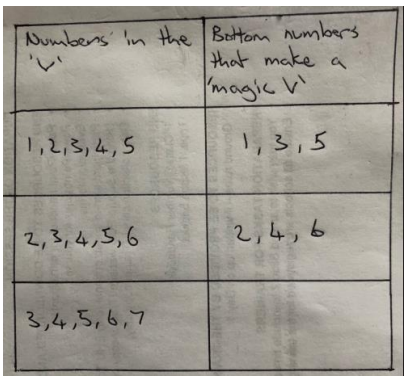
Day 2

- Look at the bottom numbers in the Magic Vs you made yesterday.
- Put them in a table like this:



Numbers in the 'V'	Bottom numbers that make a 'magic V'
1, 2, 3, 4, 5	1, 3, 5
2, 3, 4, 5, 6	2, 4, 6
3, 4, 5, 6, 7	

- Which bottom numbers do you think will make Magic Vs using the numbers 3, 4, 5, 6, 7? Why?
- Test out your ideas and put the numbers that work in the table.
- What do you notice?
- What do you think will happen if you use the numbers 0, 1, 2, 3, 4? Which numbers will be at the bottom of the Magic Vs?
- Test out your ideas. Were you right?
- Think of your own set of five consecutive numbers. For example: 10, 11, 12, 13, 14. Predict which numbers will be at the bottom of the Magic Vs and then test your predictions.
- What if you now use five numbers that go up in twos, for example: 2, 4, 6, 8, 10 or 3, 5, 7, 9, 11? Which numbers do you think will be at the bottom of the Magic Vs for these sets of numbers? Test out your ideas.
- Explain what you have noticed to somebody else in your house. You might want to share your table when you explain.

Notes for adults working with groups of children

- Ensure the children record their findings so that they can compare work on different days.
- Encourage the children to work systematically and predict what might happen with other sets of numbers, explaining their thinking.

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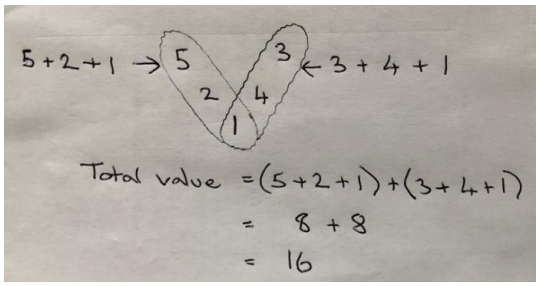
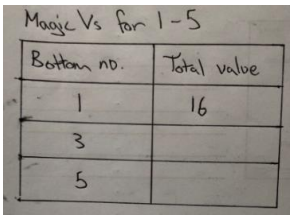
Day 3

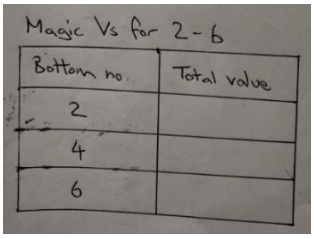
- You will need your Magic Vs for the numbers 1, 2, 3, 4, 5.
- The **total** value of a Magic V is the sum of both arms.



- The total of the consecutive numbers from 1 to 5 is 15 (1 + 2 + 3 + 4 + 5 = 15) but the total value of a Magic V with 1 as the bottom number is 16. Why do you think this might be?
- Find the total values of the Magic Vs with 3 and 5 as the bottom numbers. Record your findings in a table like this:



- What do you notice about the total value of your Magic Vs and the total of the numbers 1 to 5?
- Now repeat this with the set of five consecutive numbers 2 to 6 and record in a table. What do you notice?



- What do you predict might happen if you used the numbers 3 to 7?
- Test your prediction. Try for other Magic Vs using different sets of five consecutive numbers. What do you notice?

Notes for adults working with groups of children

- Ensure the children record their findings so that they can compare work on different days.
- Encourage the children to work systematically and predict what might happen with other sets of numbers, explaining their thinking.
- Some children might need help drawing the table.

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Day 4

- Which Magic Vs can you make with the numbers 2, 4, 6, 8, 10? You may have some of these available from Day 2.
- Work out their total values and record in a table like you did on Day 3.
- What do you notice?
- Now find the total values for Magic Vs using the numbers 4, 8, 12, 16, 20 and record in a table.
- What do you notice about the total values of the two sets of Magic Vs?
- What do you think would happen for the numbers 8, 16, 24, 32, 40? Test out your ideas.
- Explain what you've noticed to somebody else in your house. You might want to share your tables when you explain.
- Are there any other sets of numbers you want to try?

Notes for adults working with groups of children

- Ensure the children record their findings so that they can compare work on different days.
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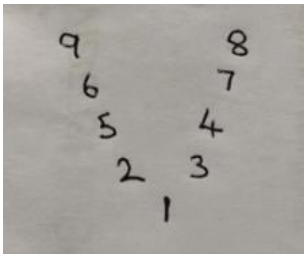
Day 5

There are lots of ways you can explore Magic Vs. Here are some you could try today:

- Find the Magic Vs for the sets of five consecutive numbers 4 to 8, 14 to 18 and 24 to 28. Explore the total values of the Magic Vs for each set of numbers. What do you notice?
- Find the Magic Vs for the sets of numbers 40, 50, 60, 70, 80 and 140, 150, 160, 170, 180. Explore the total values of the Magic Vs for each set of numbers. What do you notice?
- Explore a sequence of five consecutive numbers that includes negative numbers. For example -1, 0, 1, 2, 3 or -3, -2, -1, 0, 1.
- Explore a sequence with numbers from a decimal count. For example: 0.5, 1, 1.5, 2, 2.5 (counting in steps of zero point five).
- Explore a sequence from a fraction count. For example: $^{1}/_{3}$, $^{2}/_{3}$, $^{3}/_{3}$, $^{4}/_{3}$, $^{5}/_{3}$ (counting in steps of one third).
- Explore a sequence of seven, nine or eleven consecutive numbers, making a larger V with four, five or six numbers in each arm.



Notes for adults working with groups of children

- Ensure the children record their findings so that they can compare work on different days.
- Encourage the children to work systematically and predict what might happen with other sets of numbers, explaining their thinking.
- Encourage the children to explore numbers of interest to them.

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