

How to solve a magic square

Each row (↔), column (↑↓) and diagonal (↖↗) should add to **15**

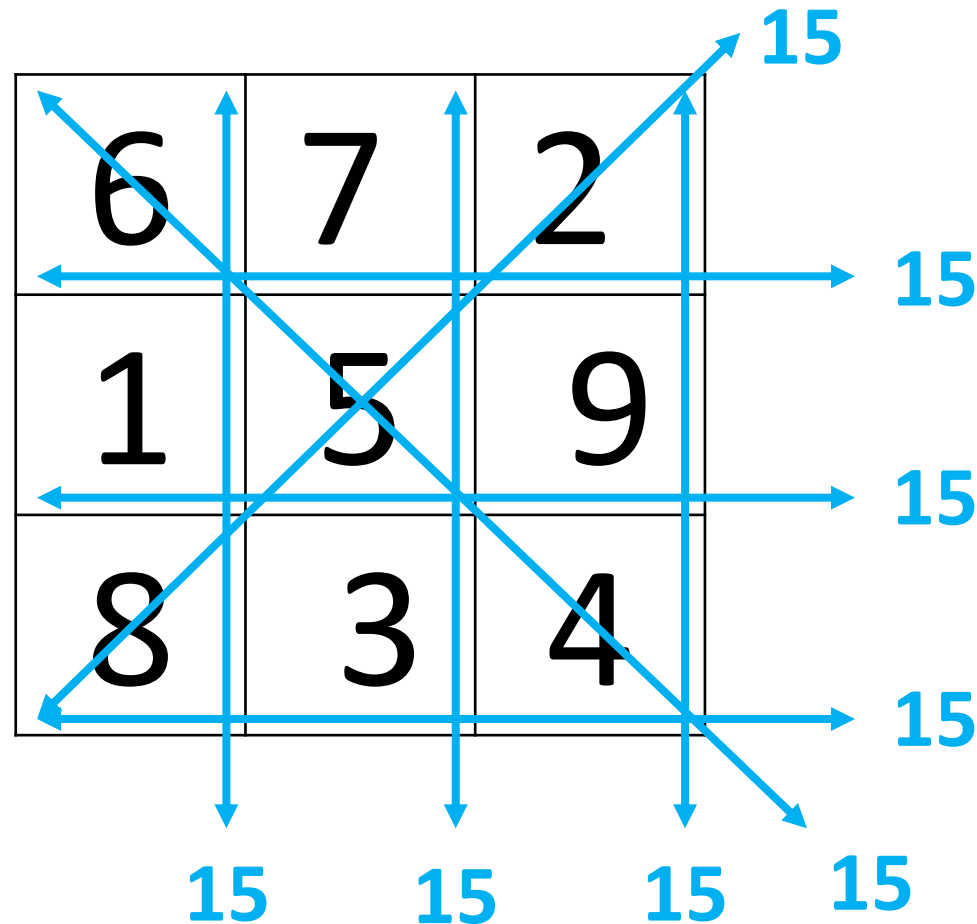
You can only use the digits

1	2	3	4	5	6	7	8	9
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 once.

It doesn't matter which order you add the final numbers, as long as the total is always 15 for each row, column and diagonal.

6		
	5	
8		



To solve magic squares you need to use your understanding of addition and subtraction.

If you're a more visual learner (like me), then have a look at the last slide first, for different ways to adapt this to different needs.

Each row (↔), column (↑↓) and diagonal (↖↗) should add to **15**
 You can only use the digits

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

once.

To solve magic squares you need to use your understanding of addition and subtraction.

6		?
	5	
8		

We take away from 15 because that should be the total for each row, column and diagonal!

1. Start by trying to solve a line where you already have two numbers in a line.

Let's use the '8' and '5' to work out '?'

$$8 + 5 = 13$$

$$15 - 13 = ? \quad \text{so...} \quad 15 - 13 = 2$$

$$? = 2$$

6		2
	5	
8		

Each row (↔), column (↑↓) and diagonal (↖↗) should add to **15**
 You can only use the digits

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

once.

To solve magic squares you need to use your understanding of addition and subtraction.

6	?	2
	5	
8		

We take away from 15 because that should be the total for each row, column and diagonal!

2. Next, pick another two numbers that are in a line.

Let's use the '6' and '2' to work out '?'

$$6 + 2 = 8$$

$$15 - 8 = ? \quad \text{so...} \quad 15 - 8 = 7$$

$$? = 7$$

6	7	2
	5	
8		

Each row (↔), column (↑↓) and diagonal (↖↗) should add to **15**
 You can only use the digits

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

once.

To solve magic squares you need to use your understanding of addition and subtraction.

6	7	2
	5	
8	?	

We take away from 15 because that should be the total for each row, column and diagonal!

3. Next, pick another two numbers that are in a line.

Let's use the '7' and '5' to work out '?'

$$7 + 5 = 12$$

$$15 - 12 = ? \quad \text{so...} \quad 15 - 12 = 3$$

$$? = 3$$

6	7	2
	5	
8	3	

Each row (\longleftrightarrow), column (\updownarrow) and diagonal (\times) should add to **15**
 You can only use the digits

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

 once.

To solve magic squares you need to use your understanding of addition and subtraction.

6	7	2
	5	
8	3	?

We take away from 15 because that should be the total for each row, column and diagonal!

Before you put the answer for '?' in, check that it is a number you can use. Your answer can only be a

1

4

 or a

9

Now it's your turn! Pick another two numbers that are in a line.

Let's use the '8' and '3' to work out '?'

$$8 + 3 = \bigcirc$$

$$15 - \underline{\quad} = ? \quad \text{so...} \quad 15 - \underline{\quad} = \underline{\quad}$$

$$? = \square$$

6	7	2
	5	
8	3	

Each row (↔), column (↑↓) and diagonal (↖↗) should add to **15**
You can only use the digits



My completed magic square...

6	7	2
	5	
8	3	

Keep going until your magic square is complete!

Once you have finished, check your answers with the completed square on the very first slide. Were you correct?

If you think you can do it yourself, why not try and solve the magic squares on the next slide.

Remember:

- You can only use the digits 1 – 9 once
- Every row, column and diagonal should always add up to 15

Each row (\longleftrightarrow), column (\updownarrow) and diagonal (\times) should add to **15**

You can only use the digits **1 2 3 4 5 6 7 8 9** once.

1

4		
	5	7
	1	

2

	9	2
8		

3

4		
	5	
2		

4

	7	
9		
4		

5

6		
	5	
8		

6

8		
1	5	
	7	

7

		7
	9	2

8

		8
	5	
	7	

9

	1	
4		2

10

2	7	
9		
	3	

Different ways to workout magic squares

1
You could write each digit (1 – 9) on a different post-it and move them around as you work things out.

You could also work backwards.

8		
1	5	?
	7	

Start with 15 counters, in the green oval, to work out this line. Put the number of counters that the square says. Whatever is left in the green oval is the answer to '?'

2

8		
1	5	?
	7	

You can make the grid using masking tape, string, ribbon – whatever you need. Then use different items as counters instead of writing the digits. Remember there should be a maximum of 15 counters. Items in each row, column and diagonal.

3

- How many pasta shells do I have in total, in this diagonal line?
- How many more pasta shells do I need to make 15? This will be your answer.