Title: Magic Square Challenge

Prior Knowledge: Multiplication, Division, Addition, Subtraction.

Learning objective:

- Use operations such as division, multiplication, addition and subtraction to solve problems.
- Identify patterns within the magic square.
- Devise a formula for the magic square.
- Appreciate the use of symbols in solving problems.

9	4	5	
8	2	7	
7	4	9	
9	6	8	

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Mental Maths Challenge:

What is the missing number?

9	4	5	25
8	2	7	?
7	4	9	27
9	6	8	24

Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.

Formula:

Last column = (3rd column) x (1st column – 2nd column)

Answer:

(7) x (8 - 2) = **42**

Mental Maths Challenge:

What is the missing number?

8	4	5	20
7	6	9	9
9	1	7	?
9	6	8	24

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Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.

Formula:

Last column = (3rd column) x (1st column – 2nd column)

Answer:

(7) x (9 - 1) = **56**

Mental Maths Challenge:

What is the missing number?

9	5	4	?
8	4	3	12
7	3	2	8
6	2	1	4

Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.

Formula:

Last column = (3rd column) x (1st column – 2nd column)

Answer:

(4) x (9 - 5) = **16**

Mental Maths Challenge:

What is the missing number?

5	2	3	9
6	4	9	18
9	1	6	48
12	4	9	?

Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.

Formula:

Last column = (3rd column) x (1st column – 2nd column)

Answer:

(9) x (12 - 4) = **72**

Mental Maths Challenge:

What is the missing number?

5	2	3	9
10	3	?	35
15	5	2	20
6	4	9	18

Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.
This time we need to calculate the third column.
y is the unknown in the formula below

Formula:

Last column = (third column) x (1^{st} column – 2^{nd} column)

35 = (y) x (10 - 3)

35 = (y) x (7)

35 ÷ 7 = y

5 = y

Answer = 5

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Mental Maths Challenge:

What is the missing number?

13	4	?	81
17	5	12	48
24	12	?	108
23	11	12	144

Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.
This time we need to calculate the third column.
y is the unknown in the formula below

Formula:

Last column = (third column) x (1^{st} column – 2^{nd} column)

$81 = (y) \times (13 - 4)$

$81 = (y) \times (9)$

$81 \div 9 = y$

$9 = y$

Answer = 9

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Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.
This time we need to calculate the third column.
y is the unknown in the formula below

Formula:

Last column = (third column) x (1^{st} column – 2^{nd} column)

$108 = (y) \times (24 - 12)$

$108 = (y) \times (12)$

$108 \div 12 = y$

$9 = y$

Answer = 9

Mental Maths Challenge:

What is the missing number?

15	2	5	65
21	6	2	30
8	1	11	77
6	?	4	12

Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.
This time we need to calculate the second column.
y is the unknown in the formula below

Formula:

Last column = (third column) x (1^{st} column – 2^{nd} column)

12 = (4) x (6 - y)

12 ÷ 4 = (6 – y)

3 = (6 – y)

3– 6 = - y

-3 = - y *(Change signs all across)*

Answer = 3

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Mental Maths Challenge:

What is the missing number?

15	?	8	56
12	8	5	20
14	9	6	30
20	3	4	68

Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.
This time we need to calculate the second column.
y is the unknown in the formula below

Formula:

Last column = (third column) x (1^{st} column – 2^{nd} column)

56 = (8) x (15 - y)

56 ÷ 8 = (15 – y)

7 = (15 – y)

7– 15 = - y

-8 = - y *(Change signs all across)*

Answer = 8

Mental Maths Challenge:

What is the missing number?

22	5	2	34
30	15	4	60
43	21	3	66
50	?	2	28

Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.
This time we need to calculate the second column.
y is the unknown in the formula below

Formula:

Last column = (third column) x (1^{st} column – 2^{nd} column)

28 = (2) x (50 - y)

28 ÷ 2 = (50 – y)

14 = (50 – y)

14– 50 = - y

-36 = - y *(Change signs all across)*

Answer = 36

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Mental Maths Challenge:

What is the missing number?

?	8	4	56
32	20	5	60
34	22	6	72
45	23	2	44

Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.

This time we need to calculate the second column.

y is the unknown in the formula below

Formula:

Last column = (third column) x (1^{st} column – 2^{nd} column)

$56 = (4) \times (y - 8)$

$56 \div 4 = (y - 8)$

$14 = (y - 8)$

$14 + 8 = y$

$22 = y$ *(Change signs all across)*

Answer = 22

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Mental Maths Challenge:

What is the missing number?

55	41	5	70
32	12	4	80
62	32	5	150
?	30	2	32

Mental Maths Challenge:

Solution:

The last column is the product of the third column and the difference between the first two columns.

This time we need to calculate the second column.

y is the unknown in the formula below

Formula:

Last column = (third column) x (1^{st} column – 2^{nd} column)

$32 = (2) \times (y - 30)$

$32 \div 2 = (y - 30)$

$16 = (y - 30)$

$16 + 30 = y$

$46 = y$ *(Change signs all across)*

Answer = 46

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Mental Maths Challenge:

Make your own mental maths square…

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Mental Maths Challenge:

Swap your magic squares...Time how long it takes to solve the puzzle

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Download PPT to customise for your class

9	4	5	
8	2	7	
7	4	9	
9	6	8	

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