

**WALT:** apply key Number skills to complete maths puzzles

**Success Criteria:** I know . . .

- The order of operations
- Place value
- Addition and subtraction

**1** Complete these magic squares. Each row, column and main diagonal add up to the same magic total.

**a**

15		
	16	18
		17

**b**

		9
	12	14
		13

**c**

3	17		6
	8		11
		13	
15		4	18

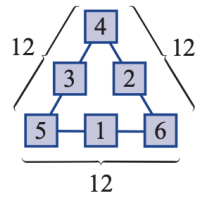
**2** Decide where brackets should go to make each statement true.

**a**  $5 + 2 \times 3 = 21$

**b**  $16 - 8 + 10 - 6 = 2$

**c**  $4 + 2 \times 7 - 1 \times 3 = 43$

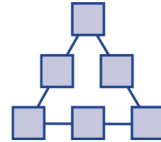
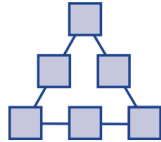
- 3** Each side on a magic triangle adds up to the same number, as shown in this example with a sum of 12 on each side.



- a** Place the digits 1 to 6 in a magic triangle with three digits along each side so that each side adds up to the given number.

**i** 9

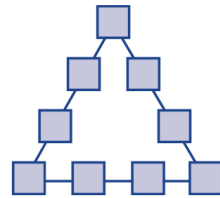
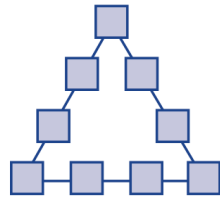
**ii** 10



- b** Place the digits 1 to 9 in a magic triangle with four digits along each side so that each side adds up to the given number.

**i** 20

**ii** 23

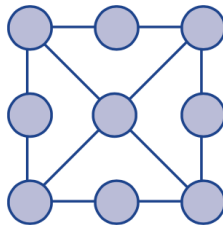


- 4 Sudoku is a popular logic number puzzle made up of a 9 by 9 square, where each column and row can use the digits 1, 2, 3, 4, 5, 6, 7, 8 and 9 only once. Also, each digit is to be used only once in each 3 by 3 square. Solve these puzzles.

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

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

- 5 The sum along each line is 15. Can you place each of the digits 1, 2, 3, 4, 5, 6, 7, 8 and 9 to make this true?



- 6 Find all the missing digits in these products.

**a**

$$\begin{array}{r} \square 1 \square \\ \times \quad 7 \\ \hline \square 5 1 \square \end{array}$$

**b**

$$\begin{array}{r} 29\square \\ \times \quad 3 \\ \hline 8\square\square \end{array}$$

## Multiple-choice questions

- 1 Which of the following is *not* true?  
A  $2 < 3$                       B  $12 \leq 9$                       C  $15 > 2$   
D  $13 \geq 13$                       E  $7 \neq 8$
- 2 The place value of 7 in 2713 is :  
A 7                                  B 70                                  C 700  
D 7000                              E 100
- 3 Which of the following is *not* true?  
A  $2 + 3 = 3 + 2$                   B  $2 \times 3 = 3 \times 2$                   C  $(2 \times 3) \times 4 = 2 \times (3 \times 4)$   
D  $5 \div 2 \neq 2 \div 5$                   E  $7 - 2 = 2 - 7$
- 4 The sum of 198 and 103 is:  
A 301                                  B 304                                  C 299  
D 199                                  E 95
- 5 The difference between 126 and 29 is:  
A 102                                  B 97                                  C 103  
D 98                                  E 99
- 6 The product of 7 and 21 is:  
A 147                                  B 141                                  C 21  
D 140                                  E 207
- 7 The missing digit in this division is: 
$$3 \overline{) 4 \overset{\square}{3} 7} 1$$
  
A 2                                  B 0                                  C 4  
D 1                                  E 3
- 8 The remainder when 317 is divided by 9 is:  
A 7                                  B 5                                  C 2  
D 1                                  E 0
- 9 458 rounded to the nearest 100 is:  
A 400                                  B 500                                  C 460  
D 450                                  E 1000
- 10 The answer to  $4 \times 3 - 26 \div 13$  is:  
A 10                                  B 25                                  C 6  
D 12                                  E 14



## Extended-response questions

- 1 A city tower construction uses 450 tonnes of cement. The cement is trucked from a factory that is 2 kilometres from the construction site. Each cement mixer can carry 5 tonnes of cement. The cement costs \$350 per truck load for the first 10 loads and \$300 per load after that.



- a How many loads of cement are needed?  
b Find the total distance travelled by the cement mixers to deliver all loads. They need to return to the factory after each load.  
c Find the total cost of cement needed to make concrete for the tower construction.  
d If the price of concrete was always \$350 regardless of the number of loads, how much more would it cost for the concrete?
- 2 One night Ricky and her brother Micky decide to have some fun at their father's sweet shop. In the shop they collected 3 tins of 25 jelly beans, 4 packets of 32 choc buds, 5 boxes of 10 smarties and 12 packets of 5 liquorice sticks.
- a Find the total number of sweets.  
b Find the difference between the number of choc buds and the number of smarties.  
c Ricky and Micky decide to divide each type of sweet into groups of 7 and then eat any remainder. Which type of sweet will they eat the most of and how many?



ANswers

## Puzzles and games

1 a

15	20	13
14	16	18
19	12	17

b

11	16	9
10	12	14
15	8	13

c

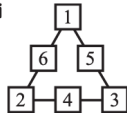
3	17	16	6
14	8	9	11
10	12	13	7
15	5	4	18

2 a  $(5 + 2) \times 3 = 21$

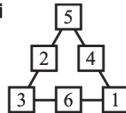
b  $(16 - 8) \div (10 - 6) = 2$

c  $4 + (2 \times 7 - 1) \times 3 = 43$

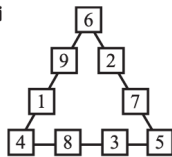
3 a i



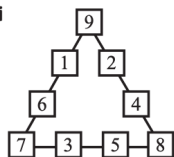
ii



b i



ii

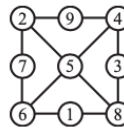


4

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

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

5



6 Answers may vary; e.g.

a 
$$\begin{array}{r} 217 \\ \times 7 \\ \hline 1519 \end{array}$$

b 
$$\begin{array}{r} 295 \\ \times 3 \\ \hline 885 \end{array}$$

### Multiple-choice questions

- 1 B    2 C    3 E    4 A    5 B  
6 A    7 D    8 C    9 B    10 A

### Short-answer questions

- 1 a 137, 173, 317, 371, 713, 731  
b 199, 999, 1000, 1001, 1010, 1090, 1900  
2 a 50    b 5000    c 50000  
3 a 459    b 363    c 95    d 217  
4 a 128    b 355    c 191    d 739