

1. SIMULTANEOUS EQUATIONS

$$A + B + C = 12$$

$$B + C + D = 14$$

$$C + D + A = 16$$

$$D + A + B = 18.$$

Find $ABCD$.

2. ARITHMETIC SQUARE

Put the digits 1 to 9 (using each digit exactly once) in the boxes so that the sums are correct. The sums should be read left to right and top to bottom ignoring the usual order of operations.

For example, $4 + 3 \times 2$ is 14, not 10.

$$\begin{array}{ccccccc} \square & + & \square & - & \square & = & 7 \\ \div & & - & & \div & & \\ \square & + & \square & \div & \square & = & 8 \\ \times & & \times & & \times & & \\ \square & + & \square & - & \square & = & 7 \\ = & & = & & = & & \\ 12 & & 5 & & 28 & & \end{array}$$

Calculate the product of the largest 4 numbers in the boxes.

3. TO THE PLAYGROUND

At the playground with 53 logs around it, count the number of:

- Seats on the horse
- Tires on the ground
- Fairy Doors in the tree (50 meters NW from the playground)

4. HIGHER POWERS

$$x + y = 6$$

$$x^2 + y^2 = 22$$

$$x^3 + y^3 = 90$$

$$x^4 + y^4 = 386$$

$$x^5 + y^5 = \text{????}$$

5. CROSS NUMBER

1	2		3	4	5
6			7		
8		9			
		10		11	
12	13			14	
15					

Across:

- 1 An anagram of 5D
- 6 A Fibonacci number
- 7 Harshad number (it is divisible by the sum of its digits)
- 8 A palindrome
- 10 The reverse of the digits of 3D
- 12 Has 3 letters in roman numerals
- 14 In binary this is 0b110111
- 15 Every digit of this number is equal

Down:

- 1 The reverse of the digits of 5D
- 2 In hexadecimal this is 0x22B
- 3 The sum the digits is 20
- 4 A triangular number
- 5 A multiple of 3, 5, 7, 11 and 13.
- 9 A factor of 5555
- 11 The square root of 308025
- 13 The tenth Fibonacci number

What is the product of all digits in the second row?

6. TO THE BMX TRACK

- How many conditions on each BMX track sign?
- How many BMX track signs?
- How many logs around the playground nearest to the BMX track?

7. ROSS' NUMBER

Ross picks a number then reverses its digits to make a second number with the same number of digits. Ross adds his two numbers together; the result is 3982. What was Ross' original number?

8. CUBE SUM OF CUBES

Find positive integers a , b , c and d such that

$$a^3 + b^3 + c^3 = d^3.$$

What is the smallest possible value of d^3 ?

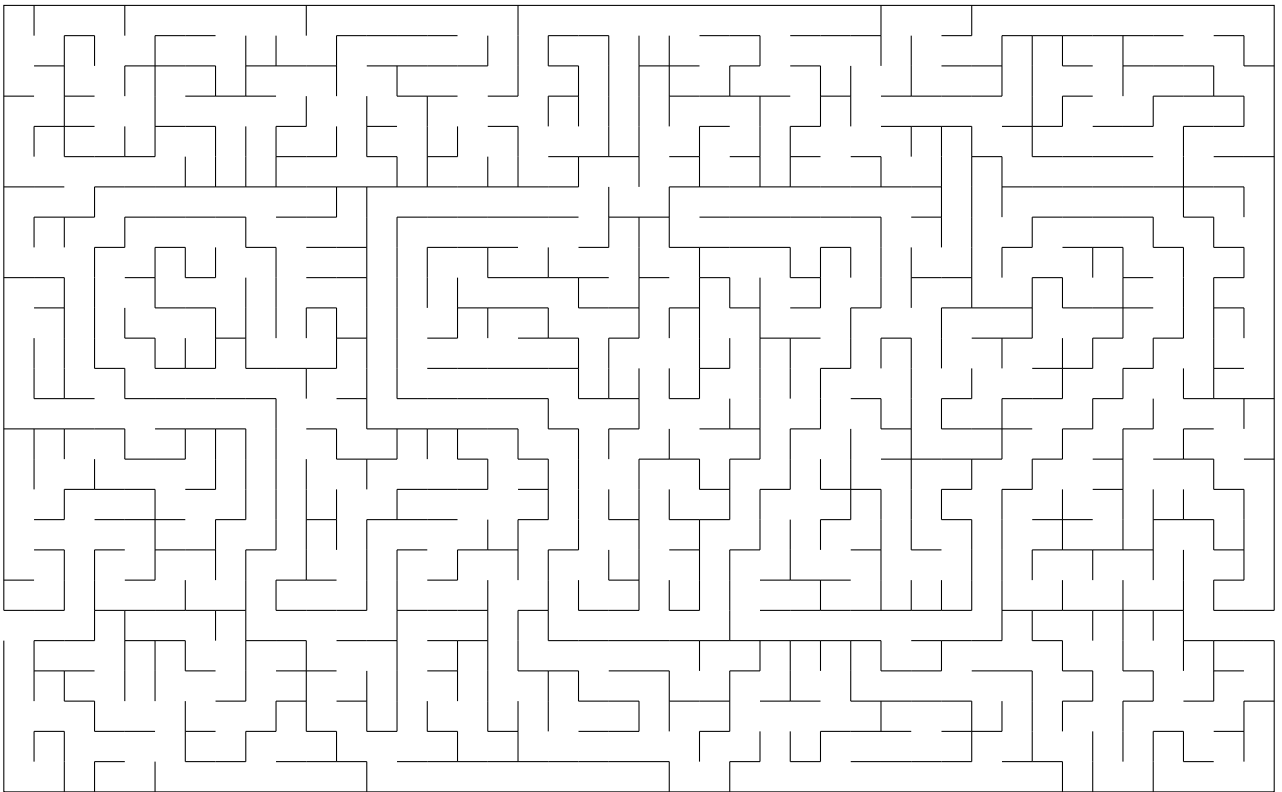
Express your answer in base d .

9. TRI-ALPHAMETIC

$$\begin{array}{r} \text{DAD} \\ + \text{TILE} \\ \hline \text{TAIL} \end{array}$$
$$\begin{array}{r} \text{LOG} \\ + \text{NOT} \\ \hline \text{DOLL} \end{array}$$
$$\begin{array}{r} \text{DIE} \\ + \text{AREA} \\ \hline \text{TIER} \end{array}$$

L O N G

10. MAZE



PUZZLE HUNT ANSWER SHEET

Name: _____

Puzzle	Answer
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

PUZZLE HUNT ANSWER SHEET

Name: _____

Puzzle	Answer
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Puzzle	Answer
1	6428
2	3024
3	5377
4	1686
5	3125
6	7422
7	1991
8	1000
9	8465
10	9572