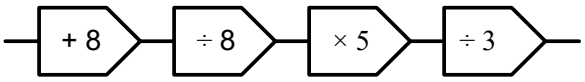
Maths Challenge

1 $\frac{16!\div\sqrt{16}}{16^2} - 16 =$

2 $\frac{\sqrt[3]{64}\times\sqrt[2]{64}\times 64}{64^2} =$

3 $64^{-\frac{1}{3}} \times 16^2 \times 64^{-\frac{1}{2}} \times 16^3 =$

4 Find the lowest natural number that will give an integer output for the following function machine.



5 Billy was born on the Saturday 12th August 1995. On what day of the week was his 18th birthday?

6 How many days are there between 28th February 1999 and the 30th November 2024?

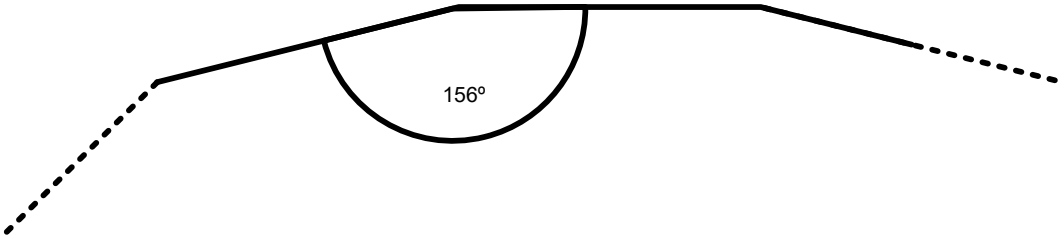
7 What is the value of a? $\frac{\sqrt[3]{a}\times\sqrt[2]{a}\times a}{a^2} = \frac{1}{3}$

8 Solve the Sudoku below.

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

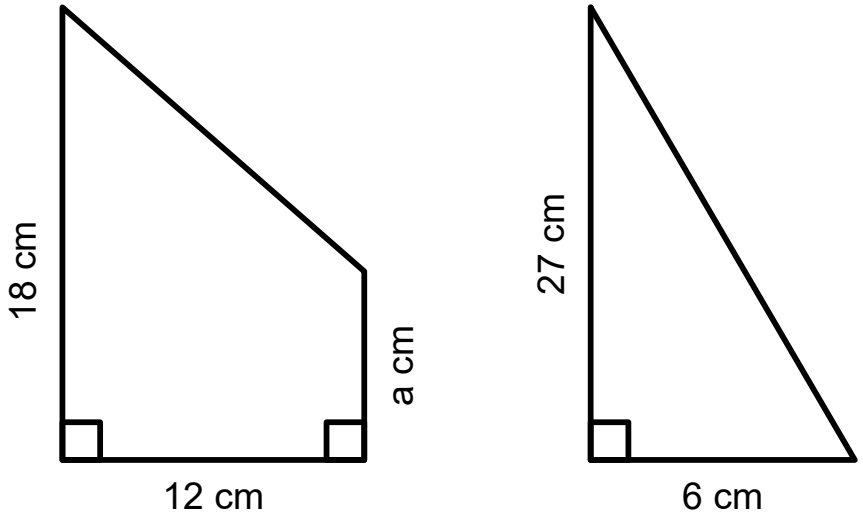
9 $\sum_{n=4}^{12}(n^2+n)^3$ means that for n=4, you work out $(n^2+n)^3, (4^2+4)^3 = 8000$. You then increment n by 1 (ie n=5) and then calculate the value of that and so on until you have calculated the 8th iteration (where n=12). When you have calculated all these values, you add them all together.

10 The diagram below shows part of a regular polygon.



Name the shape.

11 The two shapes below have the same area. Calculate the length of side a.



12 $\sum_{n=1}^{100} x_n = \frac{n(n+1)}{2} = \frac{100(101)}{2} = \frac{10100}{2} = 5050$ is the sum of all the integers between 1 and 100.

a. Calculate the sum of integers between 5000 and 10000
b. Calculate the sum of integers between 10000 and 25000
c. Calculate the sum of integers between 8392 and 39921