

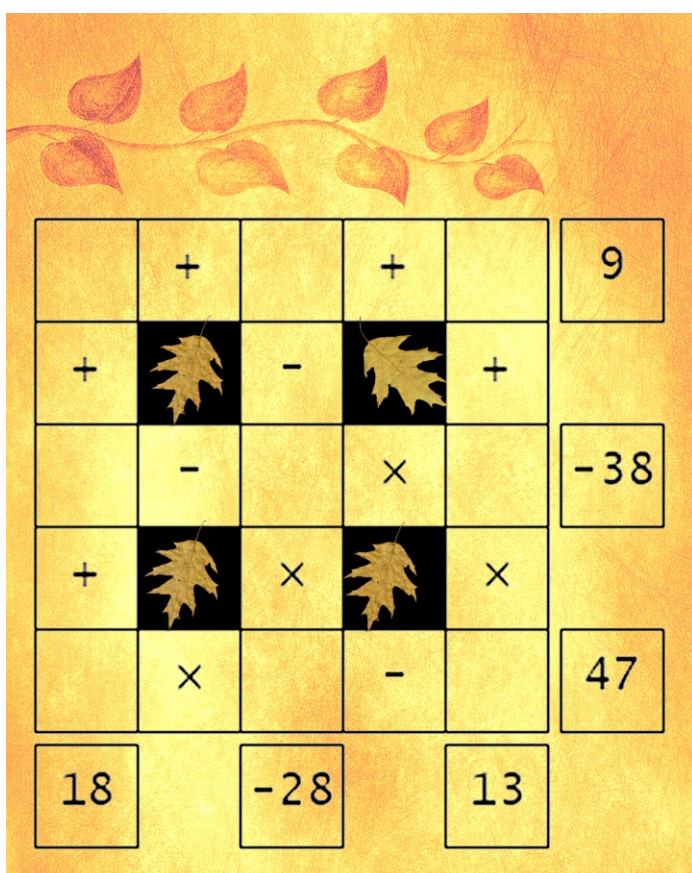
数字谜题

来源：

<https://twitter.com/pickover/status/1594027819809624067>

Fill in the missing numbers, selecting from 1, 2, 3, 4, 5, 6, 7, 8, and 9, without repeating a number

Each row and each column represents an equation . Remember that multiplication is performed before addition and subtraction .



暴力穷举法

In[1]:= 9 !

Out[1]= 362 880

```

In[4]:= f[x_] := ({x1, x2, x3, x4, x5, x6, x7, x8, x9} = x; And @@ {x1 + x2 + x3 == 9,
                                                                    逻辑与
                                                                    x4 - x5 * x6 == -38,
                                                                    x7 * x8 - x9 == 47,
                                                                    x1 + x4 + x7 == 18,
                                                                    x2 - x5 * x8 == -28,
                                                                    x3 + x6 * x9 == 13})
SelectFirst[Permutations[Range[9]], f]
选择第一个 排列 范围
Out[5]= {3, 2, 4, 7, 5, 9, 8, 6, 1}

```

尝试解方程-失败

```

In[21]:= Reduce[{x1 + x2 + x3 == 9,
                  x4 - x5 * x6 == -38,
                  x7 * x8 - x9 == 47,
                  x1 + x4 + x7 == 18,
                  x2 - x5 * x8 == -28,
                  x3 + x6 * x9 == 13,
                  x1 != x2 != x3 != x4 != x5 != x6 != x7 != x8 != x9, 1 <= x1 <= 9 && 1 <= x2 <= 9 && 1 <= x3 <= 9 && 1 <= x4
                  <= 9 && 1 <= x5 <= 9 && 1 <= x6 <= 9 && 1 <= x7 <= 9 && 1 <= x8 <= 9 && 1 <= x9 <= 9
                  },
                  {x1, x2, x3, x4, x5, x6, x7, x8, x9}, Integers]
Out[21]= $Aborted

In[12]:= Clear["Global`*"]
清除

In[23]:= Reduce[{x1 + x2 + x3 == 9, 1 <= x1 <= 9 && 1 <= x2 <= 9 && 1 <= x3 <= 9, x1 != x2 != x3},
                  {x1, x2, x3}, Integers]
约化 整数域
Out[23]=
(x1 == 1 && x2 == 2 && x3 == 6) || (x1 == 1 && x2 == 3 && x3 == 5) || (x1 == 1 && x2 == 5 && x3 == 3) ||
(x1 == 1 && x2 == 6 && x3 == 2) || (x1 == 2 && x2 == 1 && x3 == 6) || (x1 == 2 && x2 == 3 && x3 == 4) ||
(x1 == 2 && x2 == 4 && x3 == 3) || (x1 == 2 && x2 == 6 && x3 == 1) || (x1 == 3 && x2 == 1 && x3 == 5) ||
(x1 == 3 && x2 == 2 && x3 == 4) || (x1 == 3 && x2 == 4 && x3 == 2) || (x1 == 3 && x2 == 5 && x3 == 1) ||
(x1 == 4 && x2 == 2 && x3 == 3) || (x1 == 4 && x2 == 3 && x3 == 2) || (x1 == 5 && x2 == 1 && x3 == 3) ||
(x1 == 5 && x2 == 3 && x3 == 1) || (x1 == 6 && x2 == 1 && x3 == 2) || (x1 == 6 && x2 == 2 && x3 == 1)

```