Book 1

Challenges

Contents

One Hundred Test

1 2 3 4 5 6 7 8 9

Arrange the figures 1 to 9 so that they amount to one hundred.

100

Draw 6 Vertical Lines,

Vertical Lines Challenge

Add 5 lines to make the whole form 9.

Piano Keys

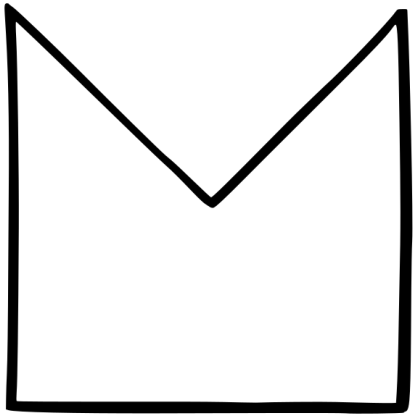
In how many different orders can 7 piano keys be pressed so that each note is different?

Drum Beat Maker

If a drum beat maker produces 360 drum beats per minute, after ten minutes, how many drum beats will have been produced?

The Quarto Test

Divide this figure into four equal parts, each of the same figure.



3 Equation Test

Solve:

$$\begin{array}{r} 12345679 \\ \times \quad 18 \\ \hline \end{array}$$

$$\begin{array}{r} 12345679 \\ \times \quad 36 \\ \hline \end{array}$$

$$\begin{array}{r} 12345679 \\ \times \quad 27 \\ \hline \end{array}$$

The Japanese Maze Garden

A CYPHER

Use Fig. 11 to decode the cypher and solve.

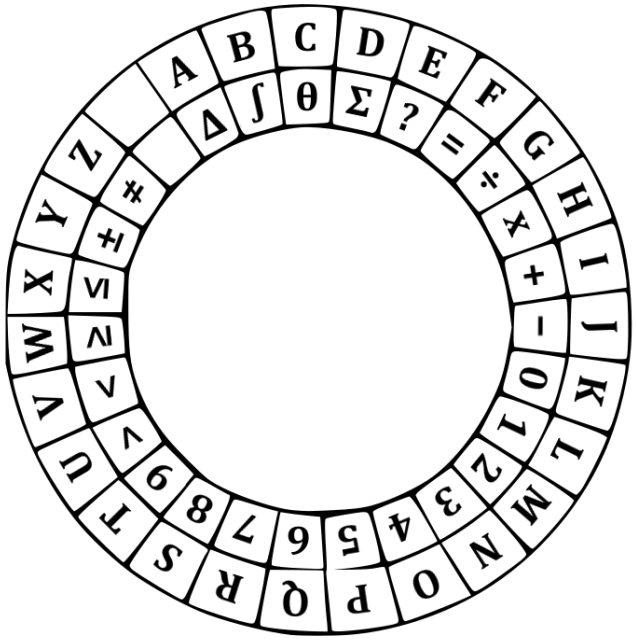


Fig. 11

T

M

I PK

11s Challenge

How fast can you solve these equations by hand?

11 x 1

11 x 2

11 x 3

11 x 4

11 x 5

11 x 6

11 x 7

11 x 8

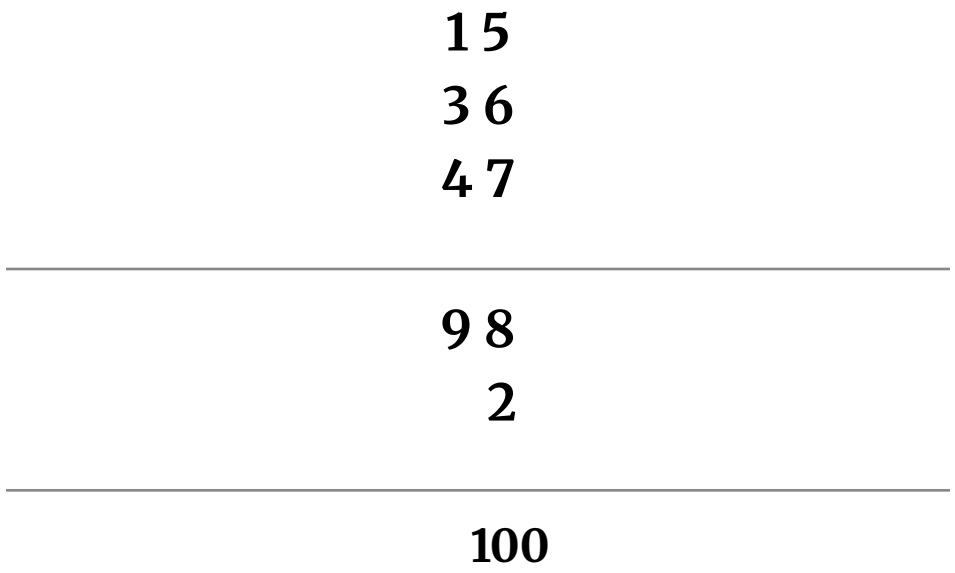
11 x 9

ANSWERS

One Hundred Test

The arrangement of figures 1 to 9 which amounts to 100 is shown.

Add 15, 36, and 47 to 98. Add 98 and 2 to 100.

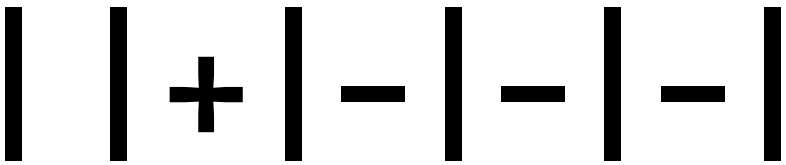


Vertical Lines Challenge

Add 5 Lines to 6 Vertical Lines to make the whole form nine.

Two solutions,

NINE



Piano Keys

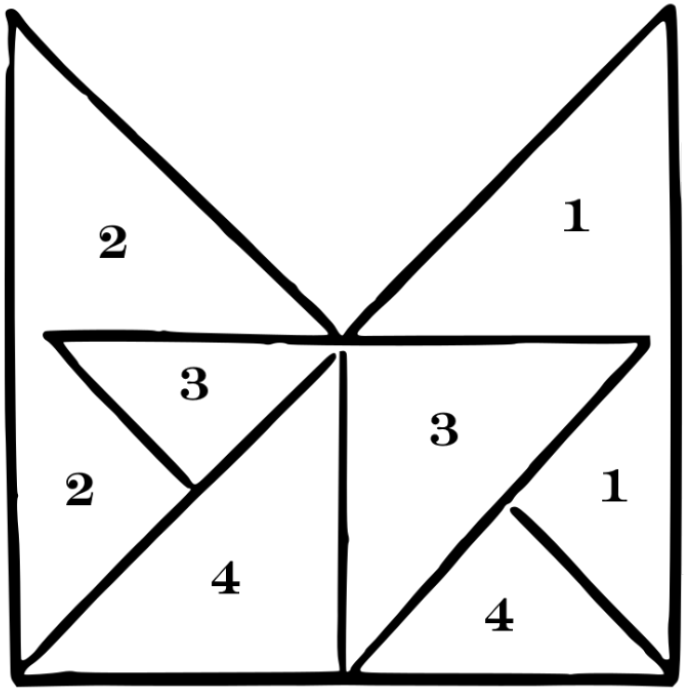
Answer:
7 x 6 x 5 x 4 x 3 x 2 x 1

5,040 different orders of notes for playing 7 keys of a piano

Drum Beat Maker

At 360 bpm, 3,600 drum beat patterns will be produced in ten minutes.

The Quarto Puzzle Solution



3 Equations Answer

12345679

x 18

```
  1 1 1 1 1 1
  1 9 8 7 6 5 4 3 2
+ 1 2 3 4 5 6 7 9 0
-----------------
  2 2 2 2 2 2 2 2 2
```

12345679

x 36

```
    1     1
  1 7 4 0 7 4 0 7 4
+ 3 7 0 3 7 0 3 7 0
-----------------
  4 4 4 4 4 4 4 4 4
```

12345679

x 27

```
    1 1 1 1 1
  1 8 6 4 1 9 7 5 3
+ 2 4 6 9 1 3 5 8 0
-----------------
  3 3 3 3 3 3 3 3 3
```

The Japanese Maze Garden

Mark a pathway to the center of the maze.

A CYPHER

Directions: Using the key (Fig. 11), translate each symbol of the cypher by matching the letter with the adjacent symbol.

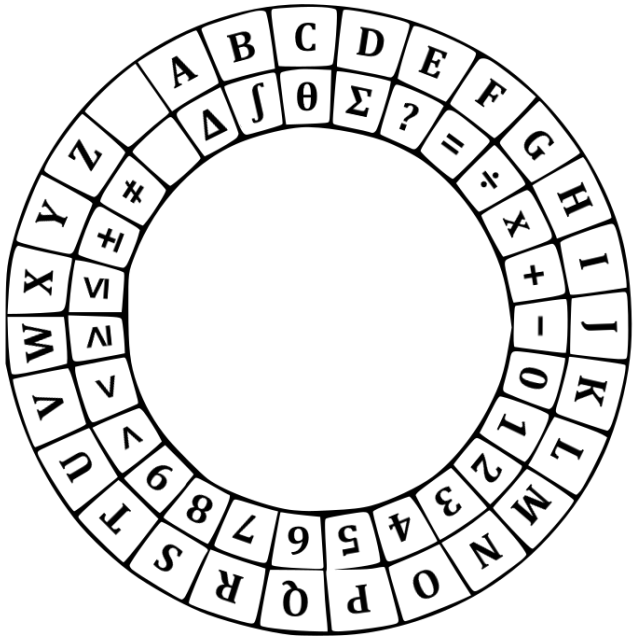


Fig. 11

The cypher reads,

9

2

+ 50

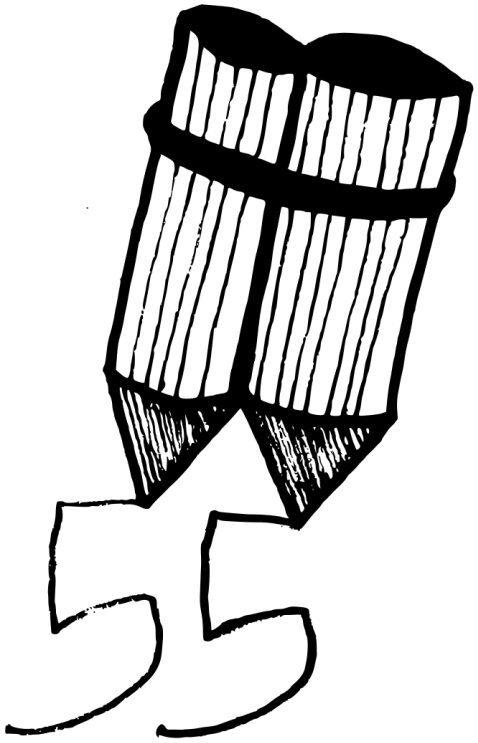
which equals 61

11s Challenge

The pattern of solutions is 11, 22, 33, 44, 55, 66, 77, 88, 99.

Each digit repeats. To reach a faster speed in writing the answers, a dual-stylus or double-marker can be built by connecting two ordinary styluses or markers together in the same direction.

The stylus will produce a double-mark, so that you will only have to write each number once to solve each equation.



Dual-Stylus