Alphametics

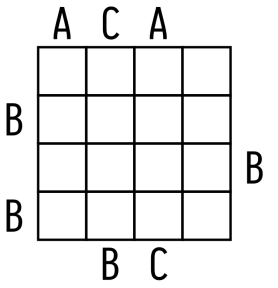
Substitute each letter for a decimal digit 0 through 9 so that the resulting addition expression is mathematically correct. Within each puzzle, two letters that are the same must map to the same digit, and two letters that are different must map to different digits. None of the numbers start with the digit 0.

```
  SEND
+ MORE
------
 MONEY
```

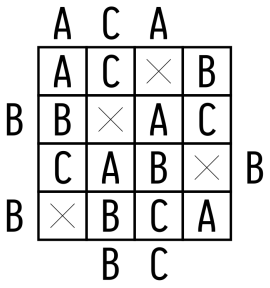
```
  9567
+ 1085
------
 10652
```

ABC

Fill in the first few letters of the alphabet into each row and column of the grid. The number of letters to use is given alongside the puzzle. Each row and column must contain all of the needed letters without repeats. There will be some blank spaces left over. The letters outside the grid tell you the first letter you would find closest to that side of the grid in that row or column.

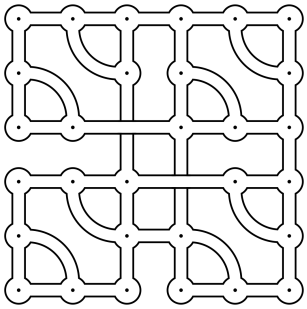


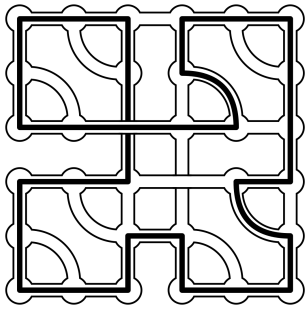
use letters A, B, C



Hamilton Maze

Draw a single closed loop that visits every node (dot) exactly once. Each connection between two adjacent nodes can be used at most once. Some mazes contain bridges where the path is allowed to cross over itself. The path cannot turn or hop to a different layer in the middle of a bridge.





1 Alphametics

1. [*4 points*]

$$\begin{array}{r} \text{DOG} \\ +\ \text{LOG} \\ \hline \text{GOOD} \end{array} \qquad \begin{array}{r} \square\square\square \\ +\ \square\square\square \\ \hline \square\square\square\square \end{array}$$

2. [*7 points*]

$$\begin{array}{r} \text{UN} \\ \text{UN} \\ +\ \text{NEUF} \\ \hline \text{ONZE} \end{array} \qquad \begin{array}{r} \square\square \\ \square\square \\ +\ \square\square\square\square \\ \hline \square\square\square\square \end{array}$$

3. [*10 points*]

$$\begin{array}{r} \text{STEVE} \\ +\ \text{STEVE} \\ \hline \text{APPLES} \end{array} \qquad \begin{array}{r} \square\square\square\square\square \\ +\ \square\square\square\square\square \\ \hline \square\square\square\square\square\square \end{array}$$

4. [*13 points*]

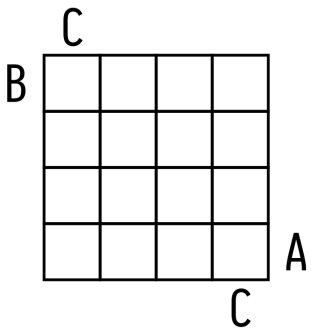
$$\begin{array}{r} \text{COMPLEX} \\ +\ \text{LAPLACE} \\ \hline \text{CALCULUS} \end{array} \qquad \begin{array}{r} \square\square\square\square\square\square\square \\ +\ \square\square\square\square\square\square\square \\ \hline \square\square\square\square\square\square\square\square \end{array}$$

5. [*16 points*]

$$\begin{array}{r} \text{BEARLIKE} \\ \text{YELLOW} \\ +\ \text{BEAR} \\ \hline \text{BERKELEY} \end{array} \qquad \begin{array}{r} \square\square\square\square\square\square\square\square \\ \square\square\square\square\square\square\square \\ +\ \square\square\square\square \\ \hline \square\square\square\square\square\square\square\square \end{array}$$

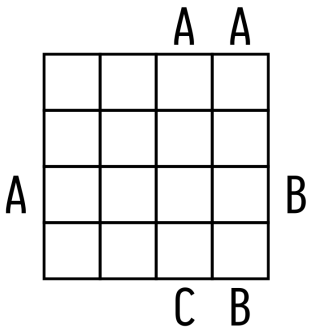
2 ABC

1. [*4 points*]



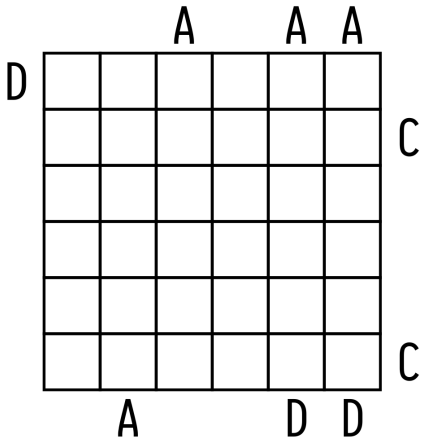
use letters
A, B, C

2. [*7 points*]



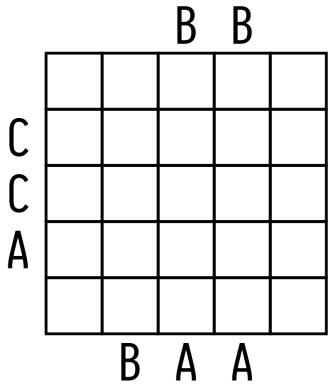
use letters
A, B, C

3. [*10 points*]



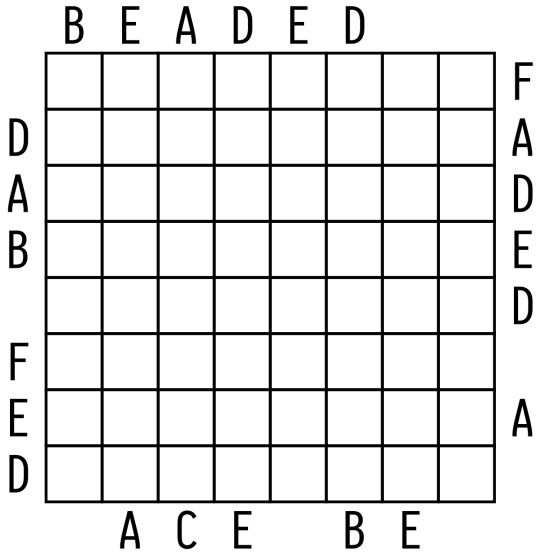
use letters
A, B, C, D

4. [*13 points*]



use letters
A, B, C

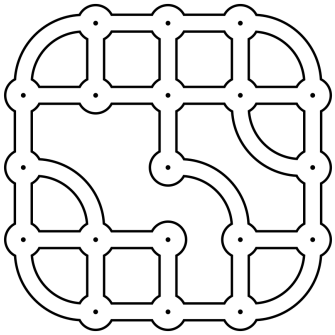
5. [*16 points*]



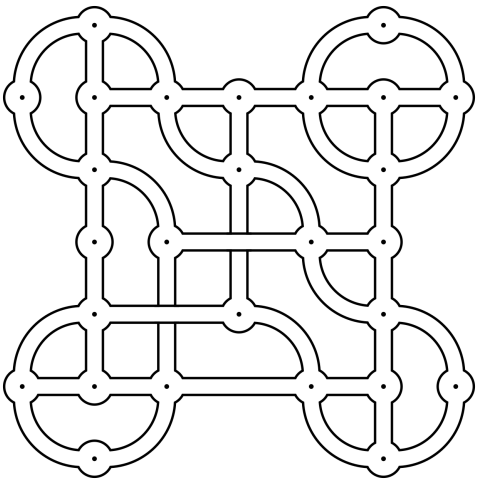
use letters
A, B, C, D, E, F

3 Hamilton Maze

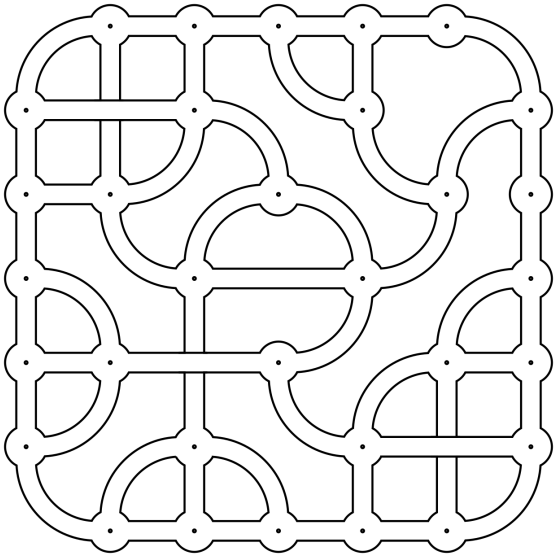
1. [*4 points*]



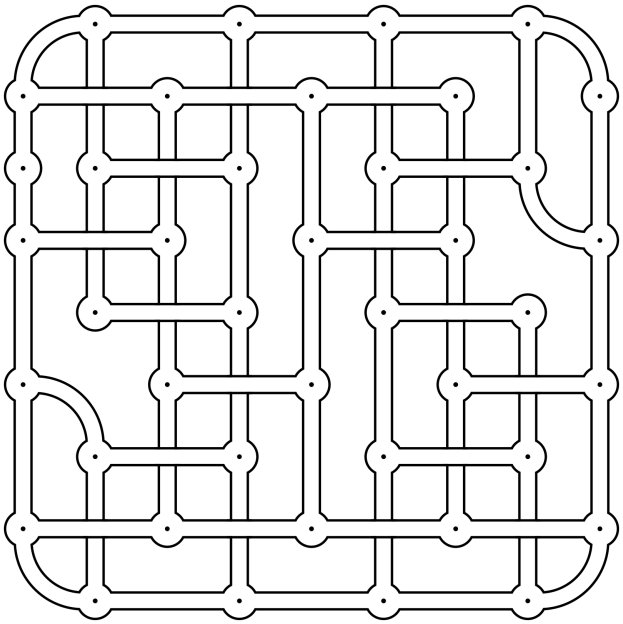
2. [*7 points*]



3. [*10 points*]



4. [*13 points*]



5. [*16 points*]