| 6 |  |  |  | 1 | 3 |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathbf{4 0}$ SKYSCRAPERS |  |  |  |  |  |  |  |

Fill the grid with digits 1 through 8 ,every row and column must have different digits.Digits inside the $6 \times 6$ outlined grid reperesent buildings of heights 1 through 8 . Digits inside circles indicate the number of buildings seen in the corresponding row or column.For the remaining rows/columns,the digits appearing outside must not be equal to the number of buildings visible in that direction. Key:Contents of both diagonals.

## QUINTUPLETS

## 20 points

Place five identical figures ,same area and shape,so that every figure contains two circles. Figures cannot overlap each other or the grey cell.You may rotate/reflect the figures.One cut is already made.
Key:Number of sides of the figure.



## CORAL 21

## 55 points

Cut the grid to the complete pentamino set.Every pentamino must occupy a circle.All the unoccupied cells must form a single edge-connected group with no $2 \times 2$ regions or loops. None of the 21 unoccupied cells can be connected to more than two unoccupied cells.
Key:Contents of both main diagonals, using the corresponding letter for a pentamino and C for the coral.


## OPTIMAL PLACING

## 100 points or less

Place all the given figures ,twice each,without touching,not even diagonally.Then draw a path through the centres of unoccupied cells ,moving horizontally or vertically, not inersecting or retracing itself.The path cannot visit any cell that shares its side with any of the cells that are occupied by a circle.Maximize the length of your path. Best solution gets 100 and others get 10 less. Key: Contents of every row from left to right.Use $F$ for figure, $P$ for path and $B$ for empty and unvisited cell.

|  |  |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |



