

### Die tetradisch-tetramischen Zeichenklassen als zelluläre Automaten 3

1. In Toth (2018) hatten wir die theoretischen Voraussetzungen besprochen, die nötig sind, um tetradisch-tetramische Zeichenklassen in der Form ihrer Abbildungen auf Tetratomien als zelluläre Automaten (ECA) darzustellen. Wir hatten gesetzt

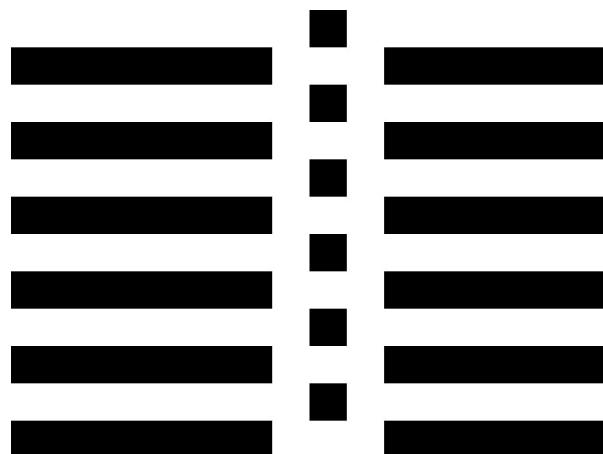
$$1 = \blacksquare, 2 = \square, 3 = \blacksquare, 4 = \blacksquare.$$

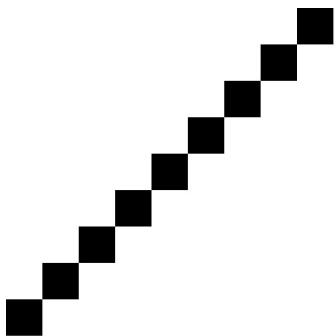
Nun gibt es bekanntlich  $4^4 = 256$  solcher tetramischer Relationen, also die gleiche Anzahl wie diejenige der Regeln von ECA, nämlich  $2^8$ . Obwohl natürlich jede ECA-Regel auf jede der 256 tetramischen Relationen anwendbar ist, d.h. obwohl selbstverständlich keine Bijektion zwischen einer ECA-Regel und einem ECA-Schema der tetramischen Relationen besteht, kann man die Regeln und Schemata in diesem speziellen Falle 1:1 aufeinander abbilden – was etwa bei den triadisch-trichotomischen Relationen und ihren Trichotomien nicht möglich ist.

2. Die Abbildung der 256 ECA-Regeln auf die 256 Tetratomien.

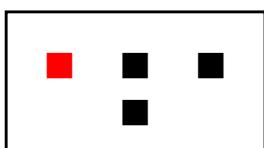
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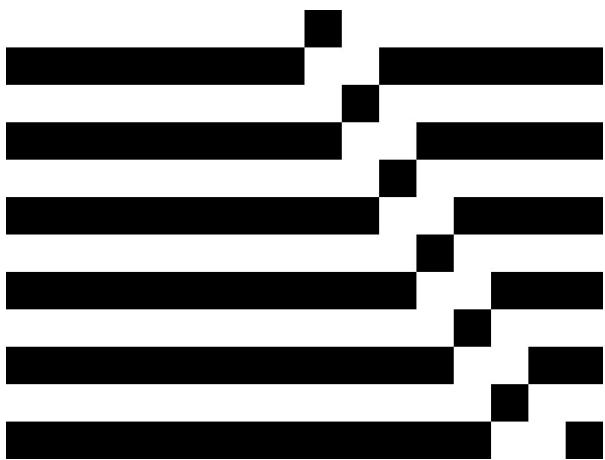
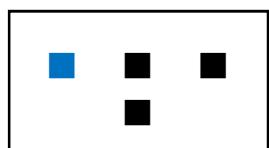




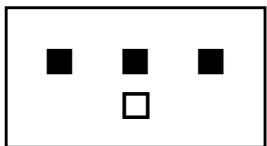
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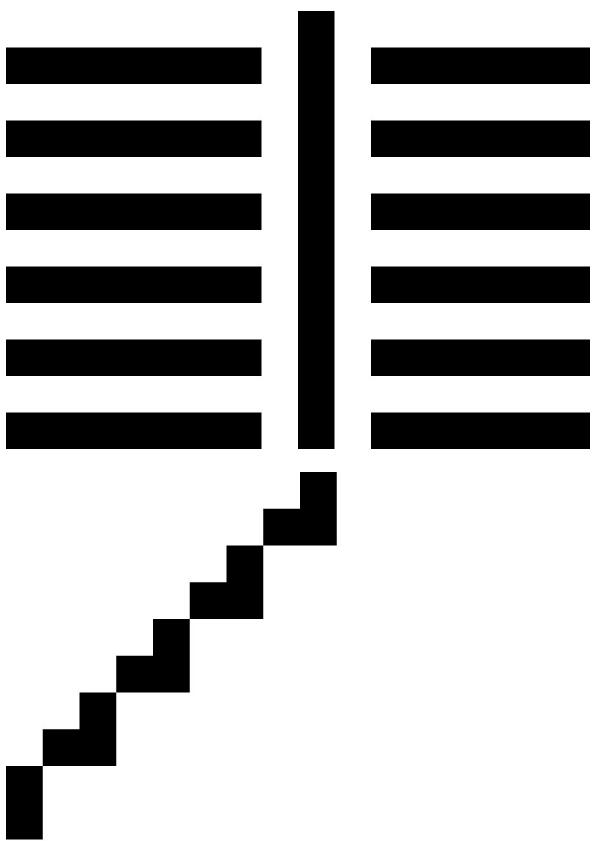
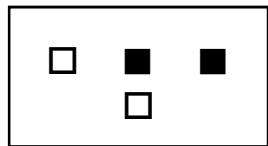
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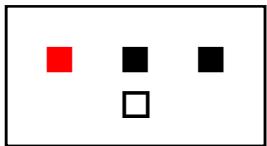
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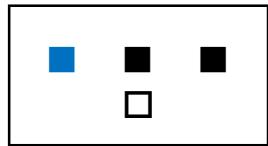
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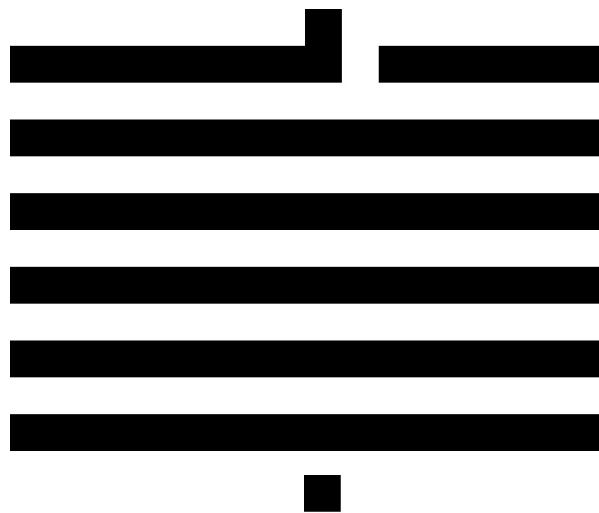


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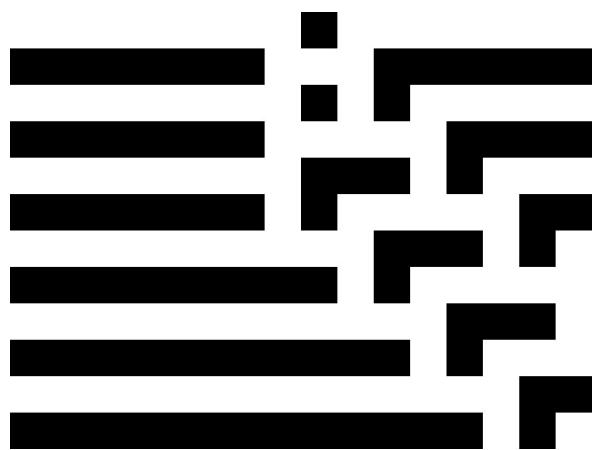
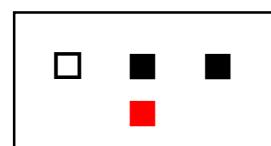
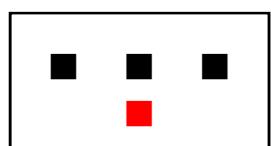
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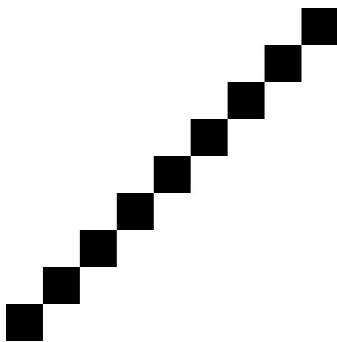




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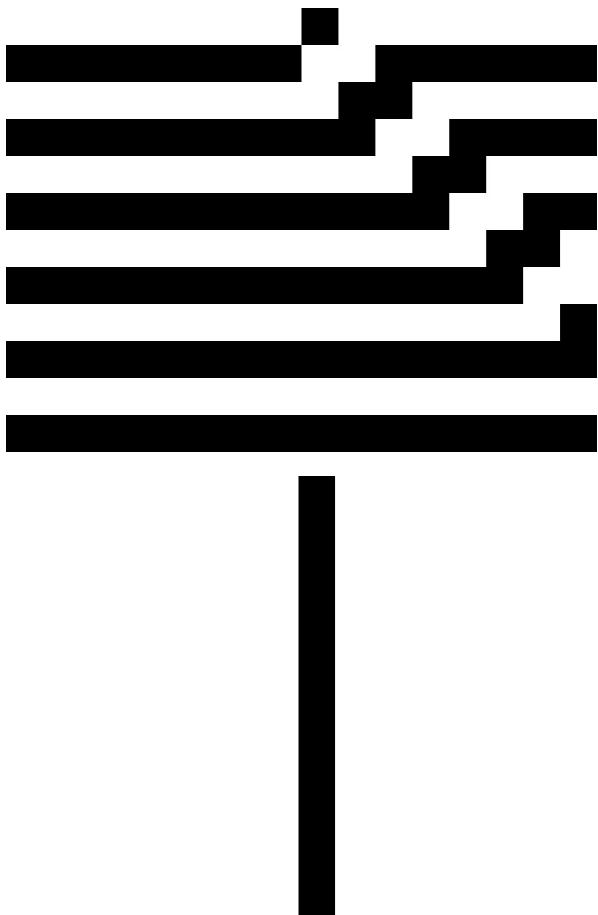
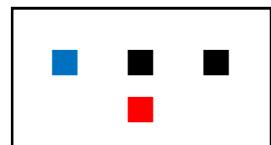
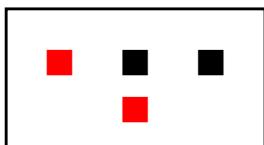
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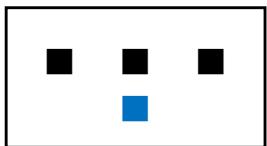


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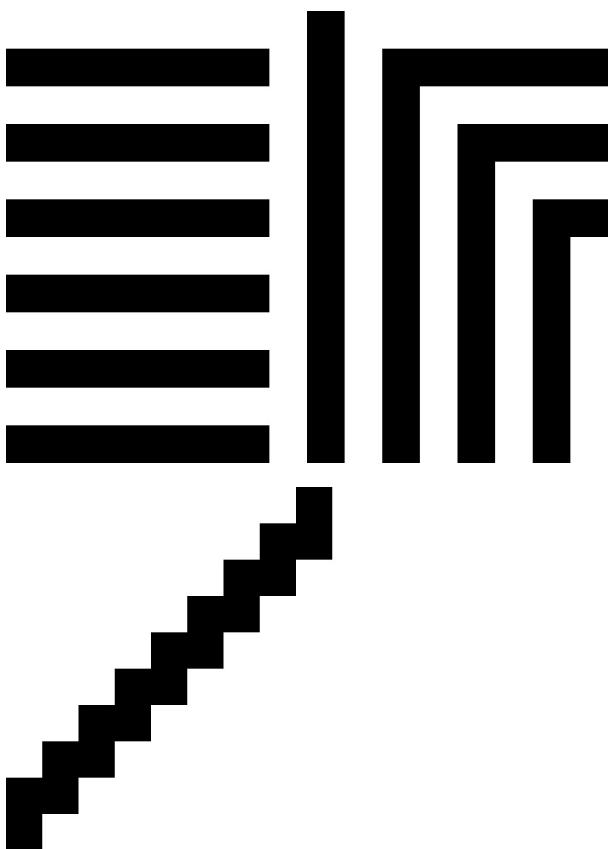
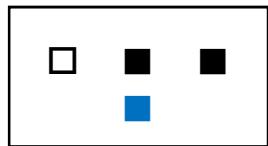
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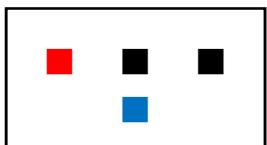
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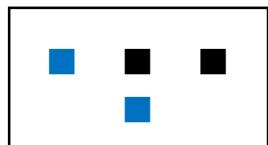
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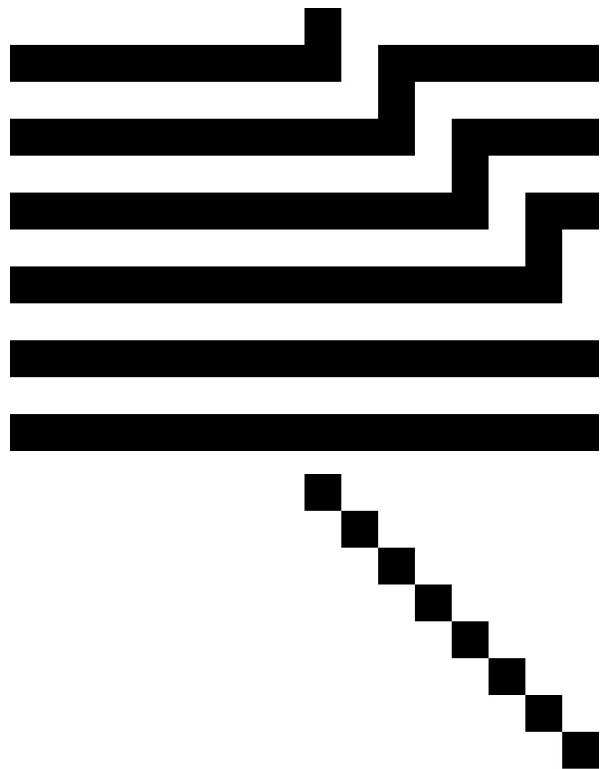


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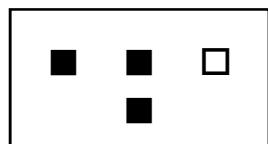


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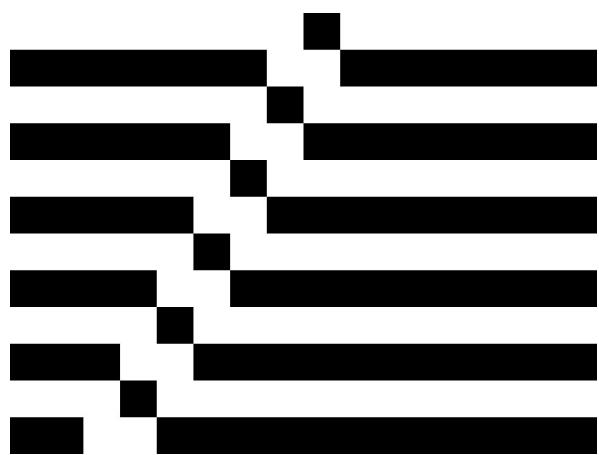
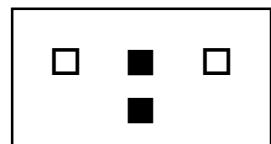


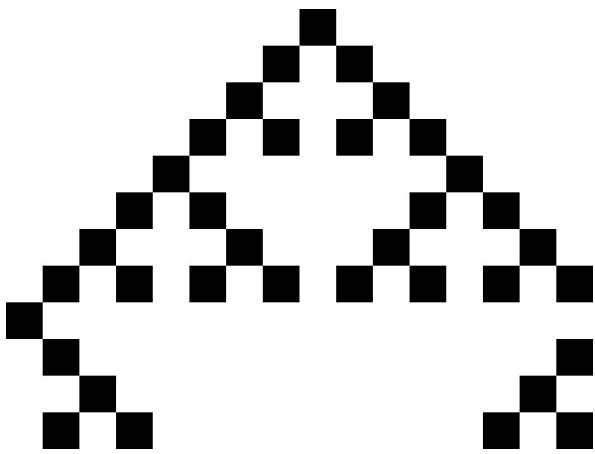


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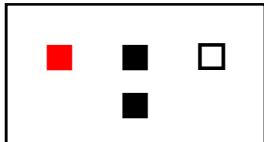


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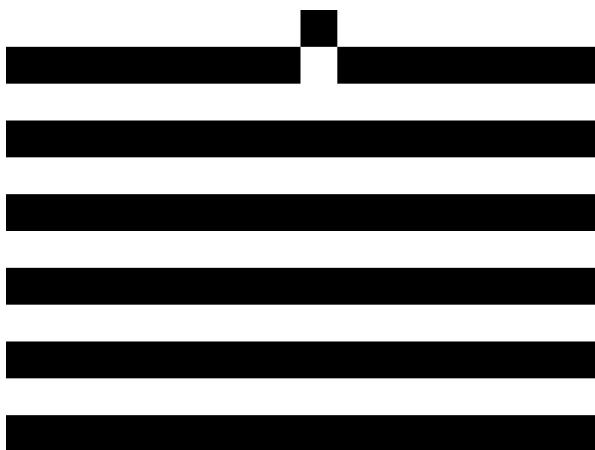


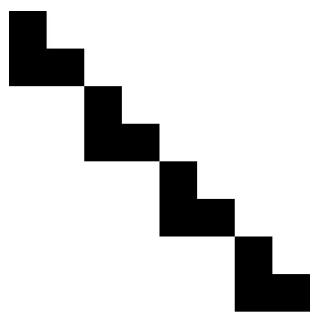


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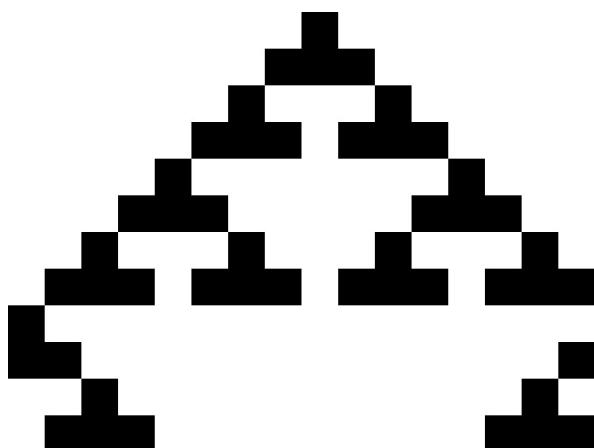
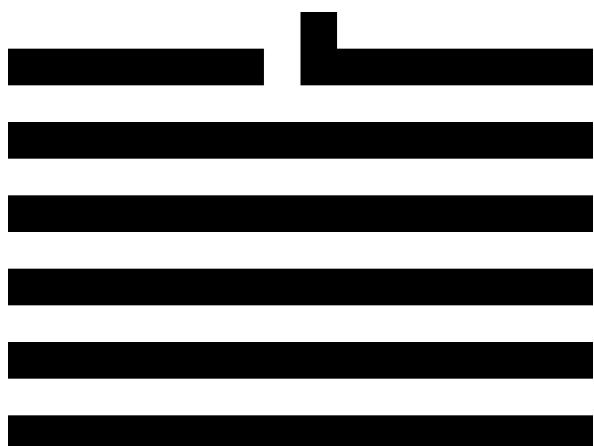
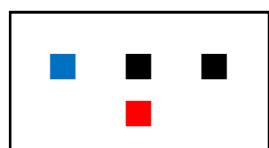
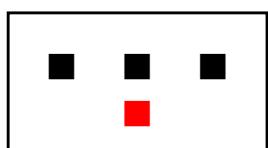
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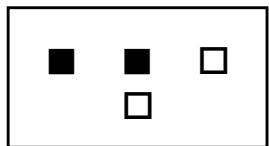


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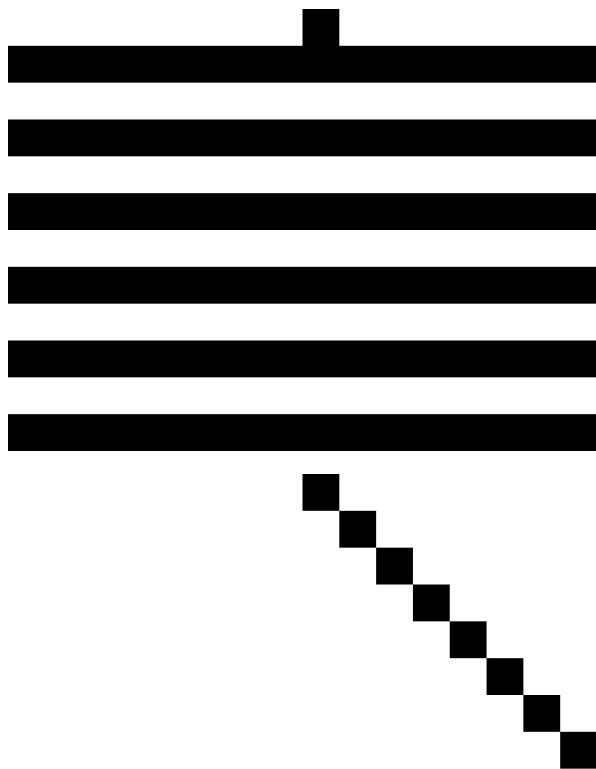
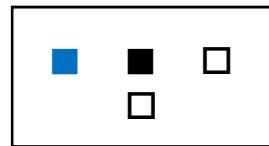
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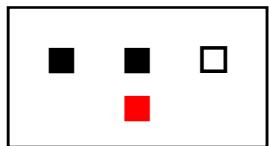
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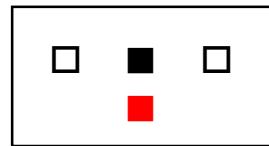
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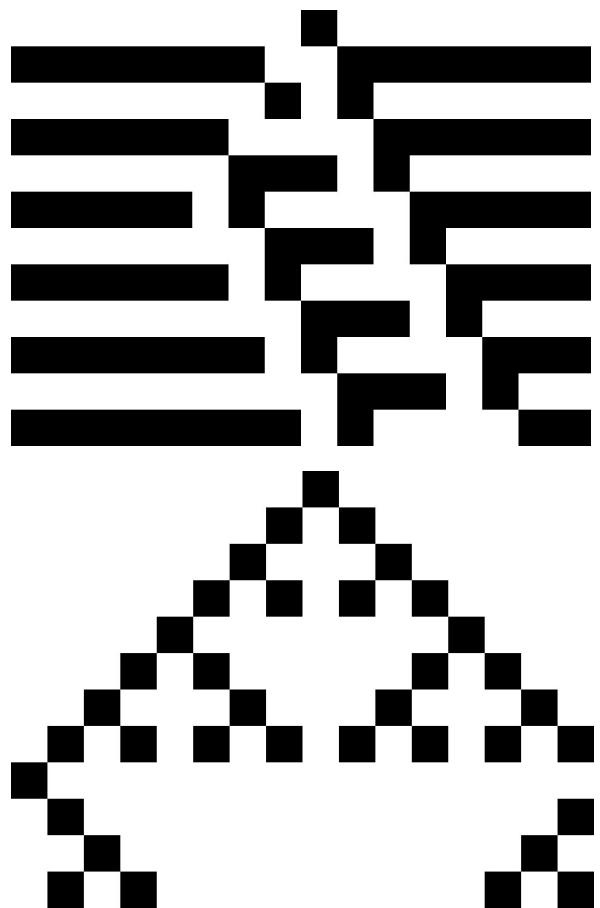


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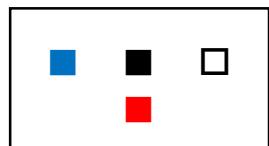
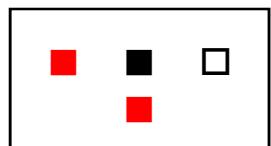
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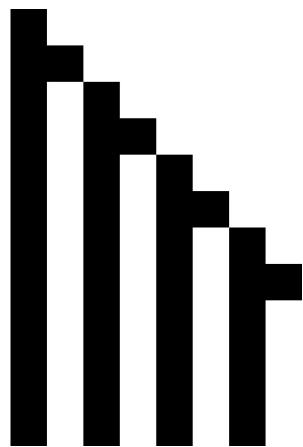
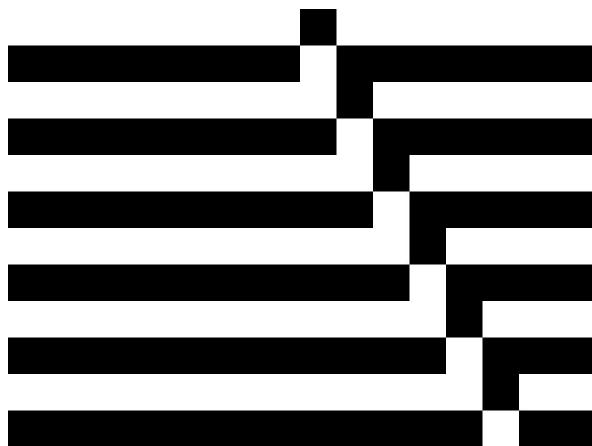




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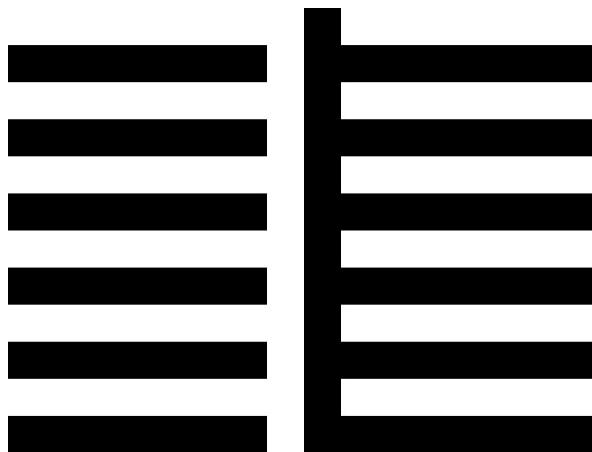
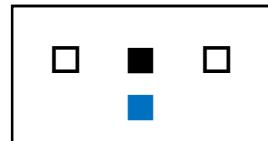
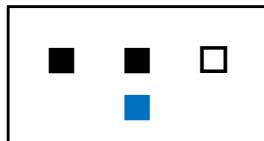
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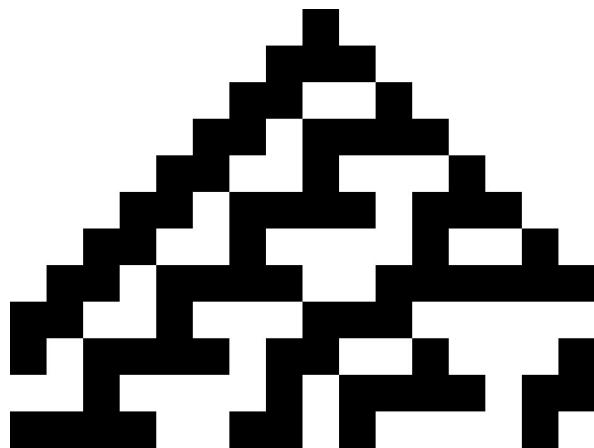




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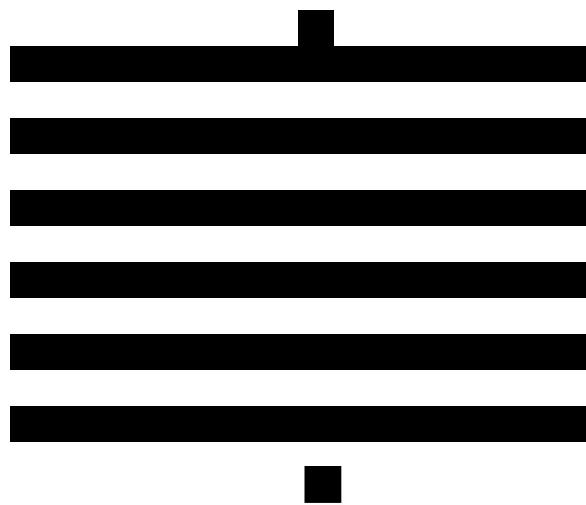
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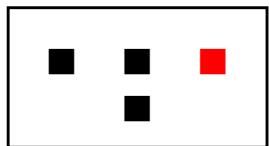


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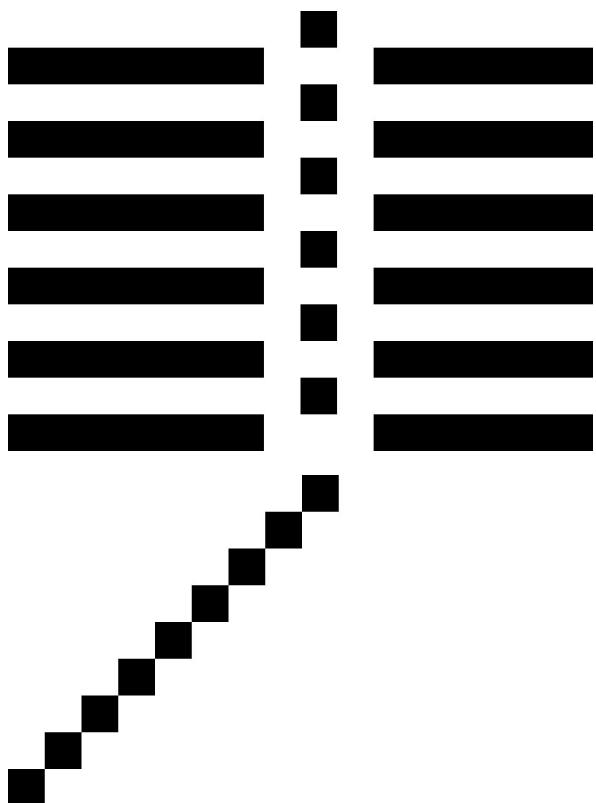
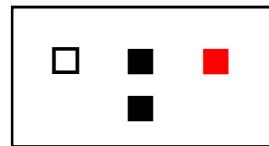
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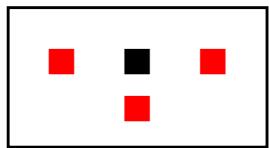
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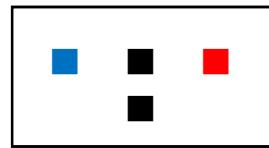
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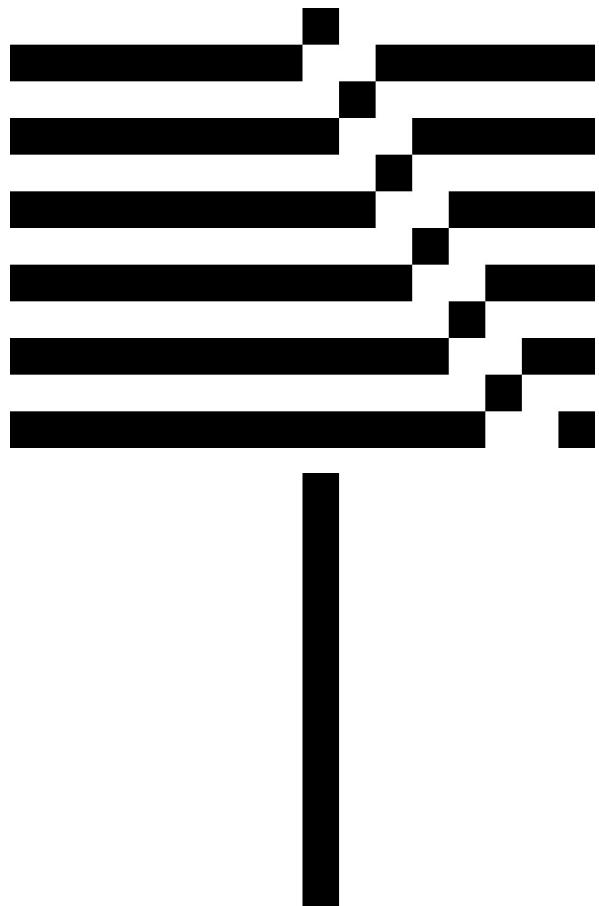


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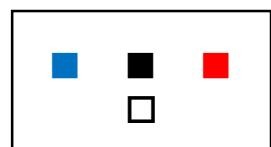
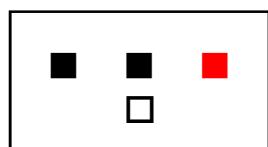
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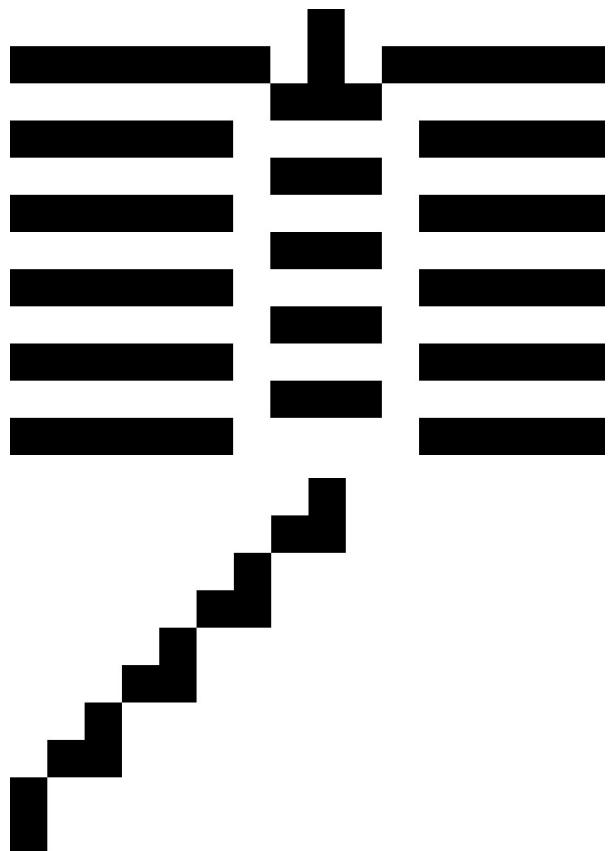




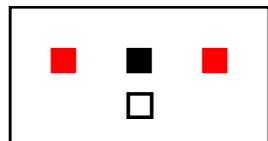
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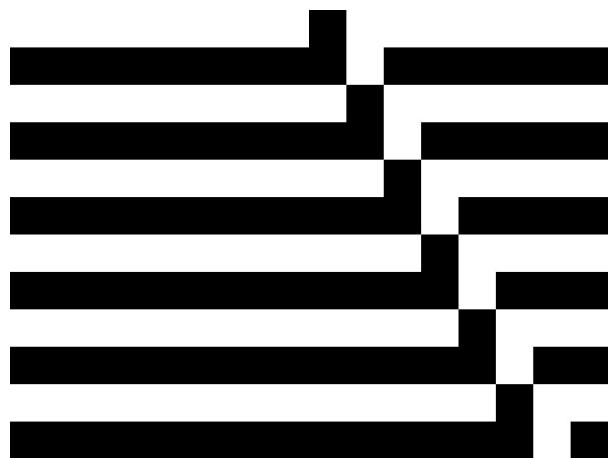




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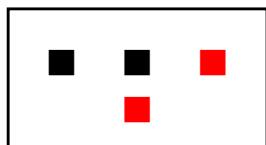


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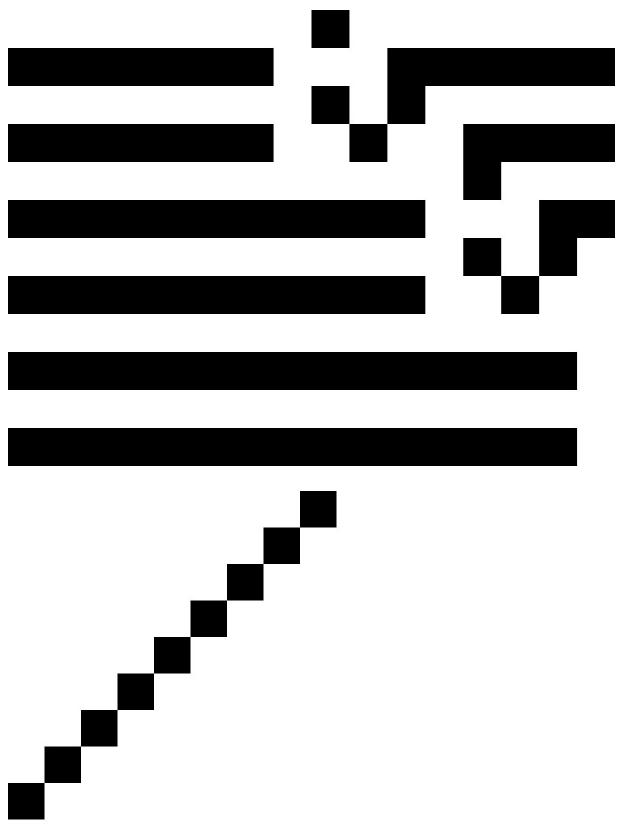
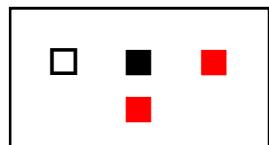




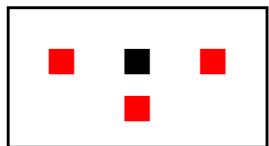
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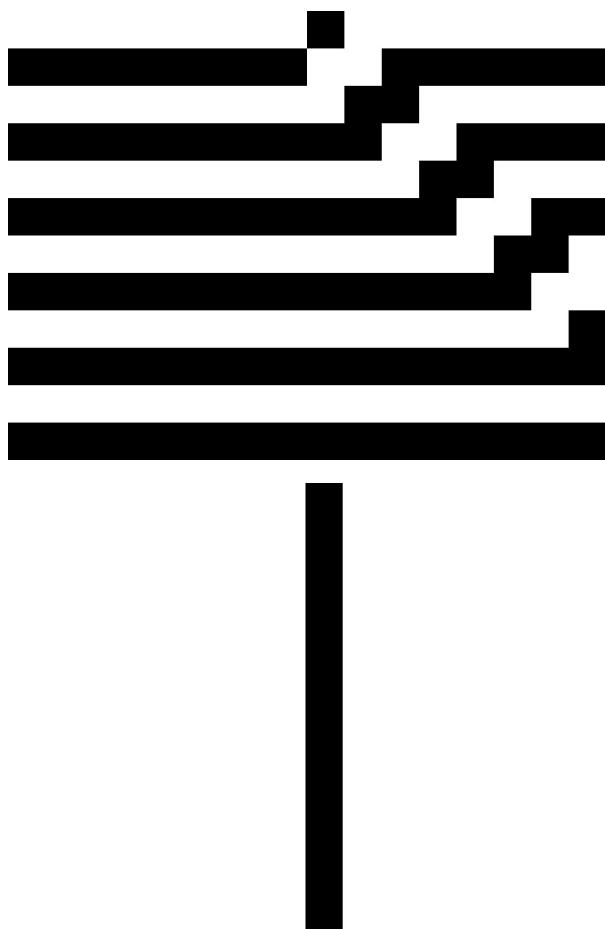
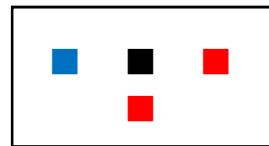
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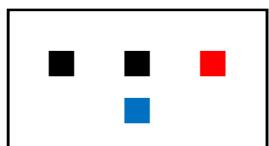
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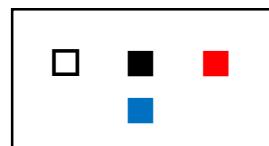
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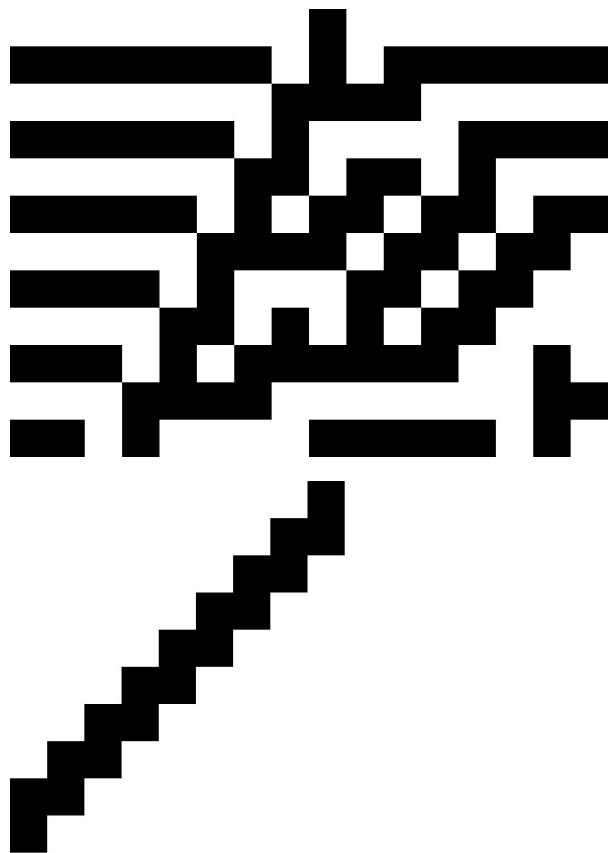


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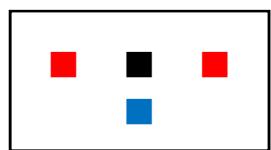


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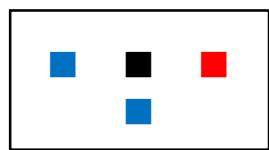


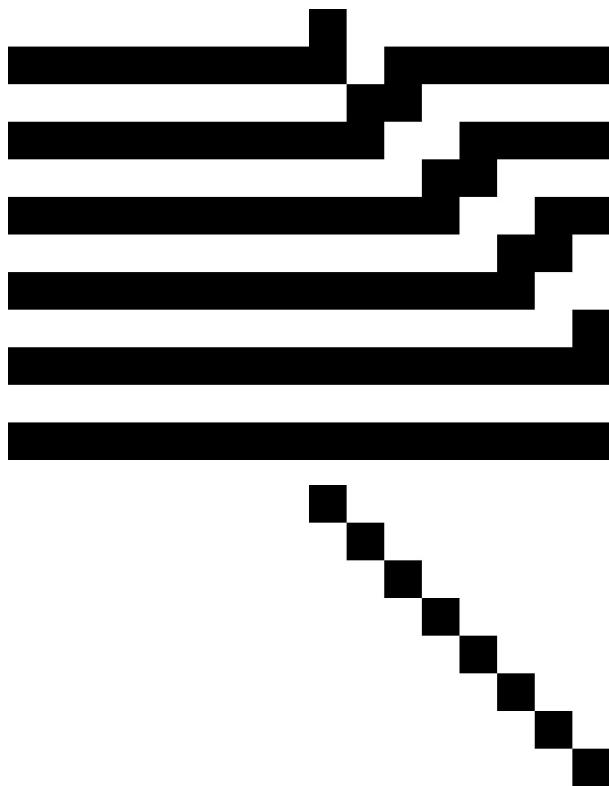


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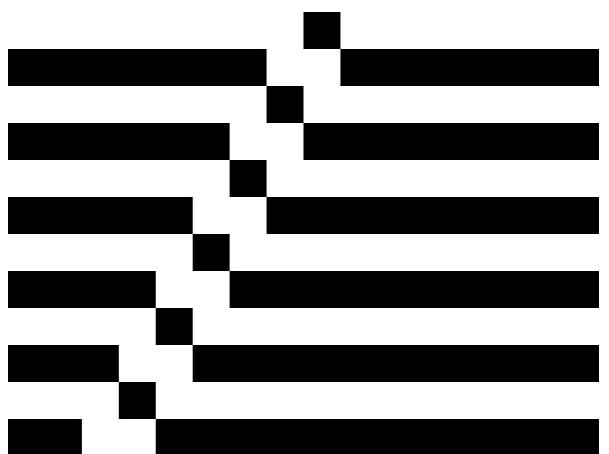
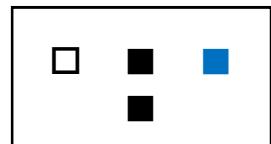
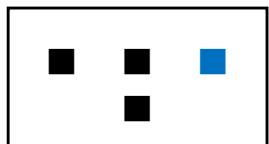
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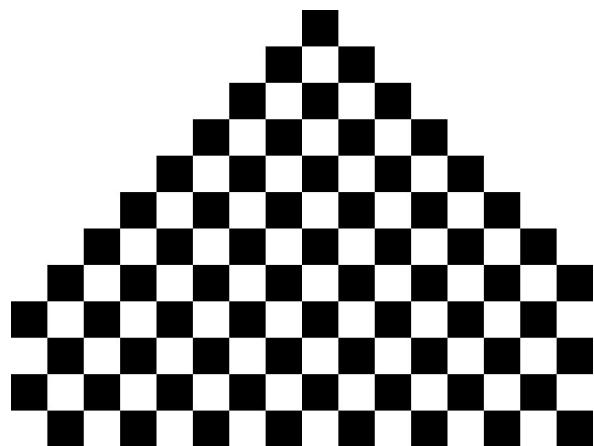




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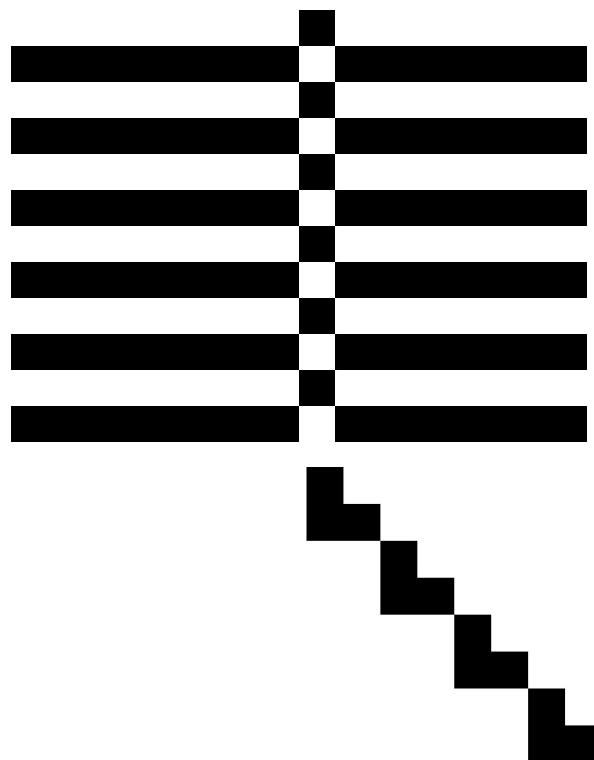
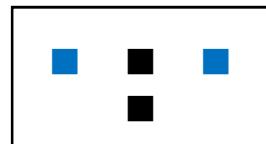
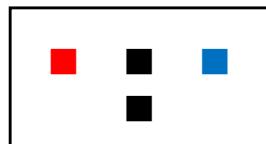
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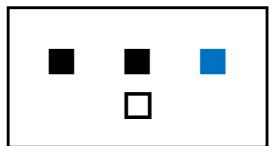


(3, 1, 4, 1)

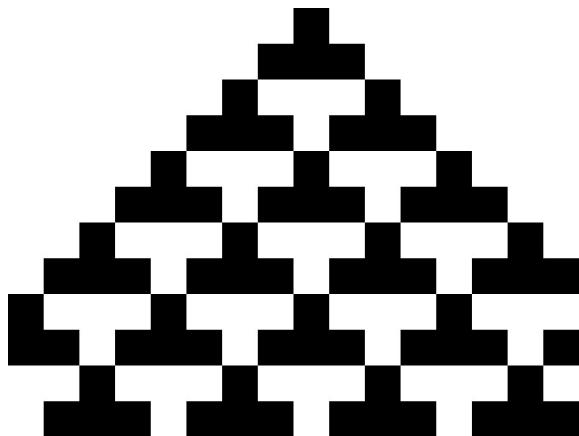
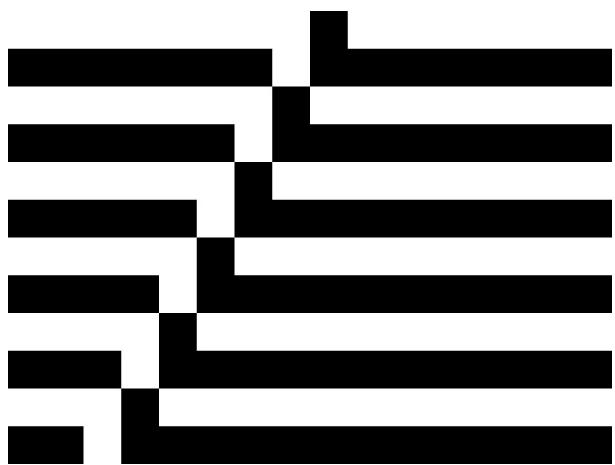
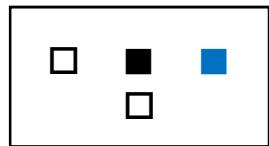
(4, 1, 4, 1)



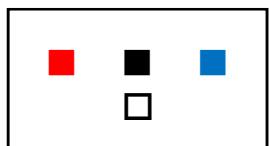
$(1, 1, 4, 2)$



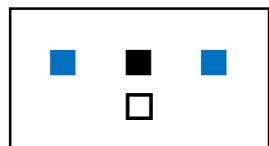
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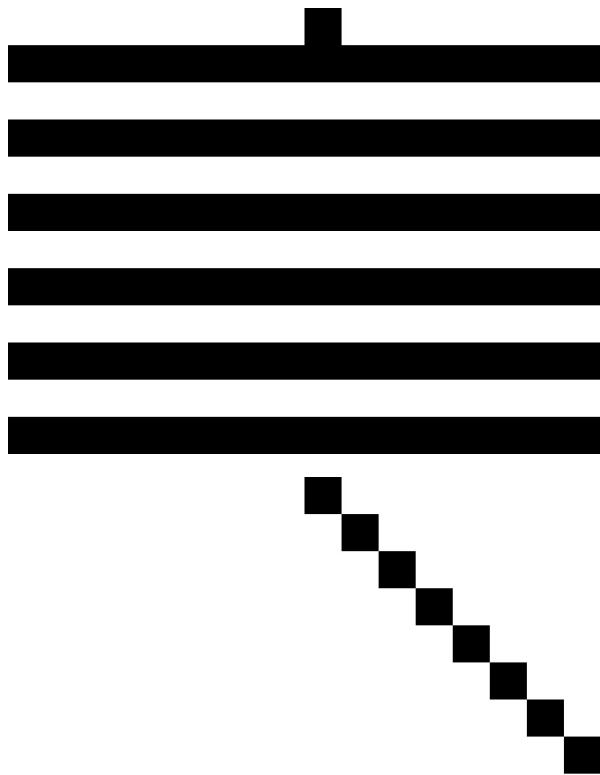


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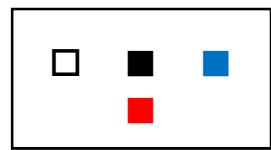
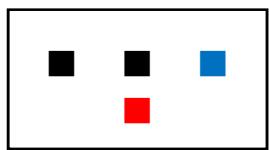
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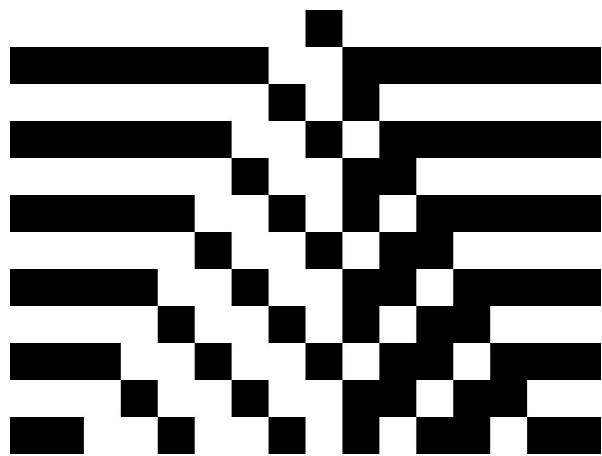




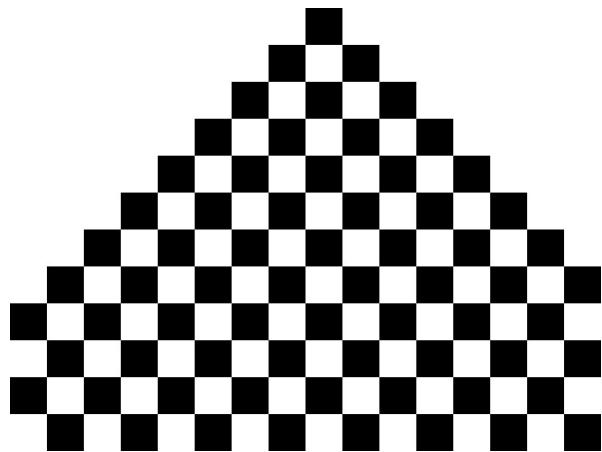
(1, 1, 4, 3)

(2, 1, 4, 3)

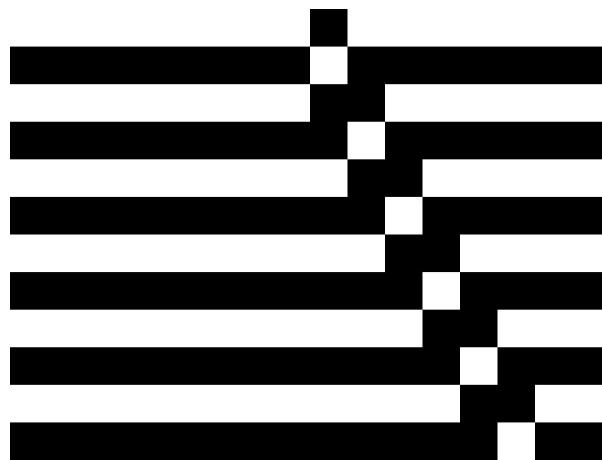
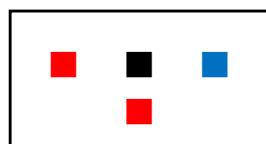


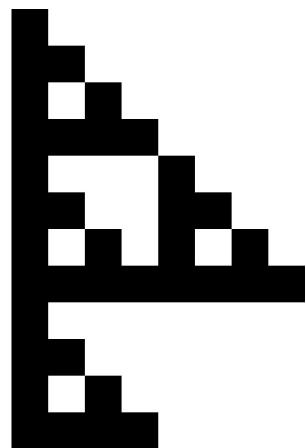


(3, 1, 4, 3)



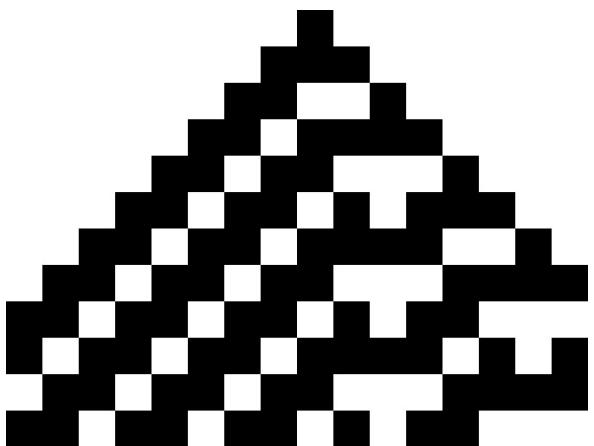
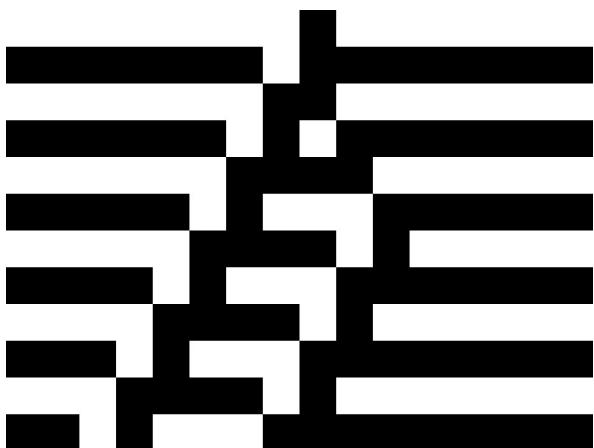
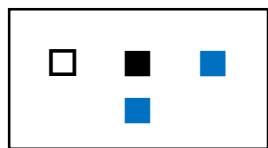
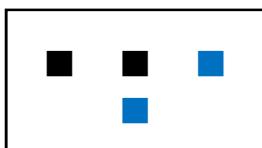
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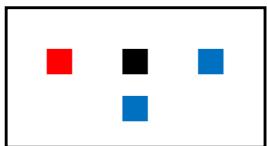


(1, 1, 4, 4)

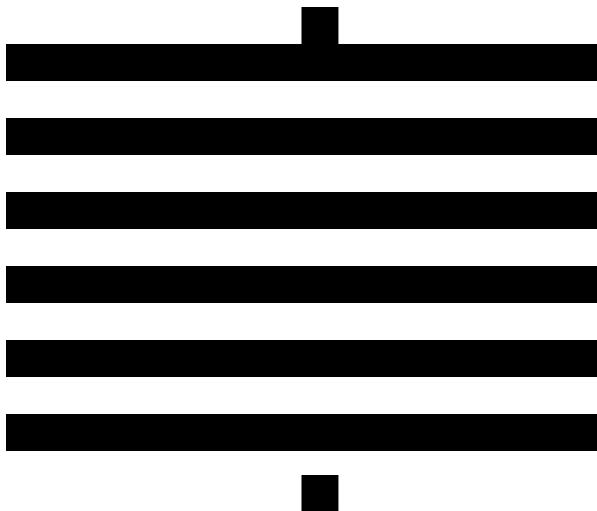
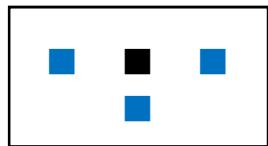
(2, 1, 4, 4)



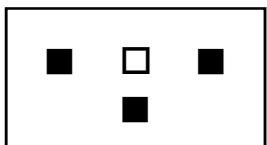
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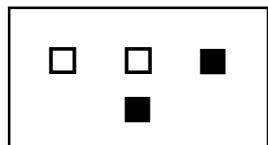
$(4, 1, 4, 4)$

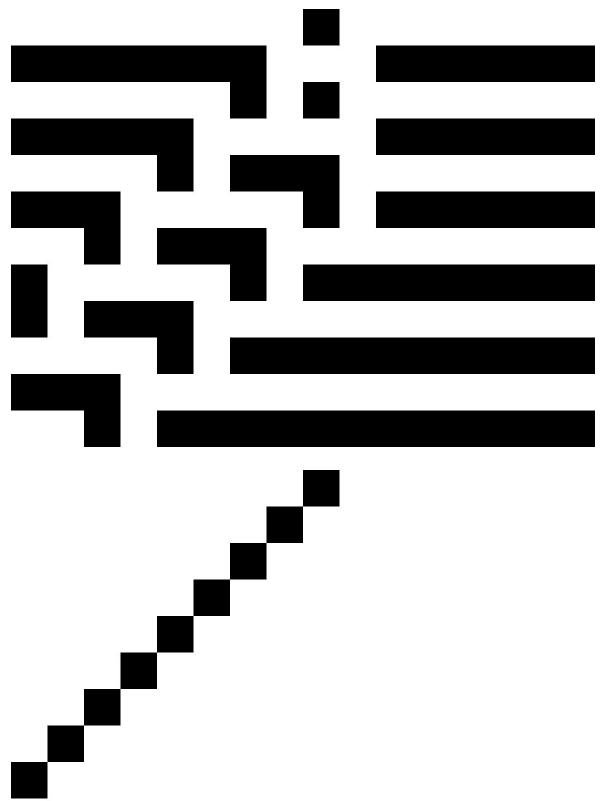


$(1, 2, 1, 1)$



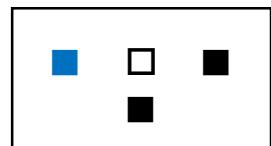
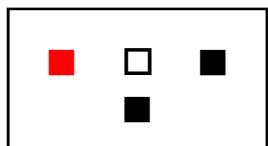
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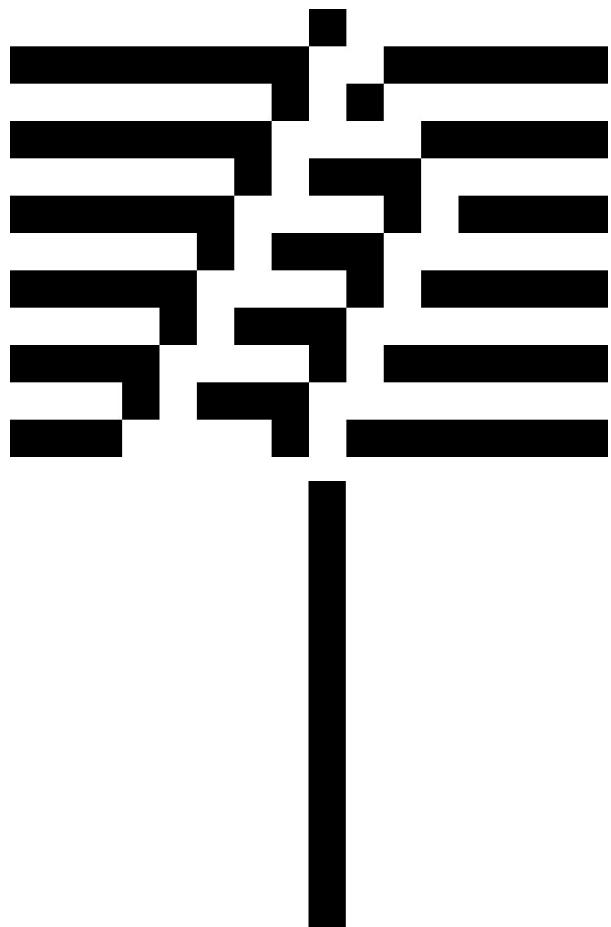




(3, 2, 1, 1)

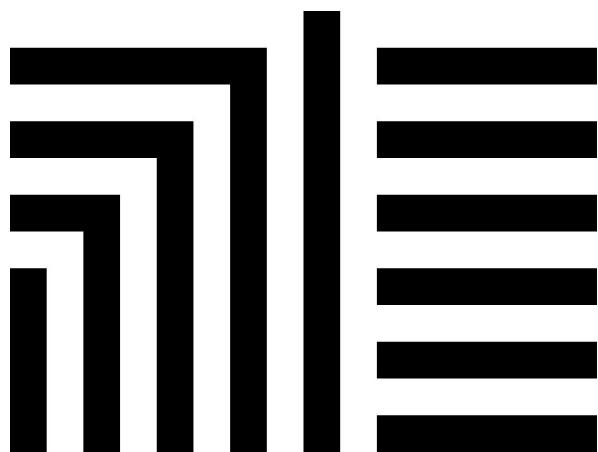
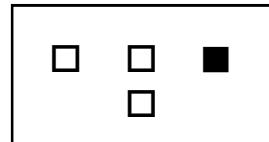
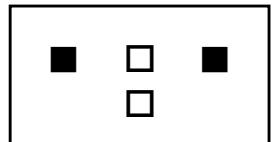
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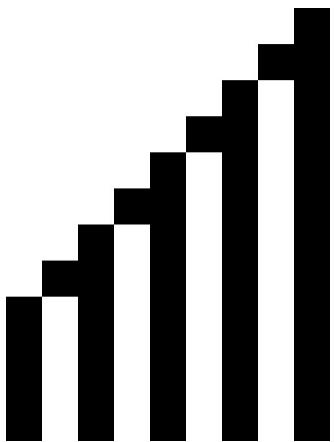




(1, 2, 1, 2)

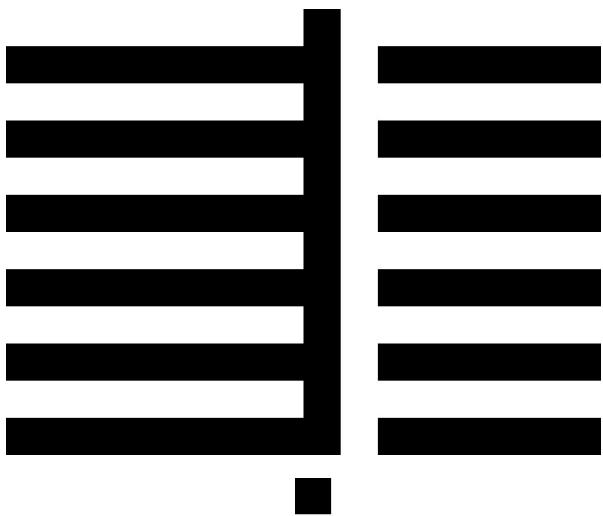
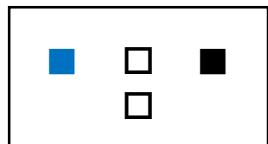
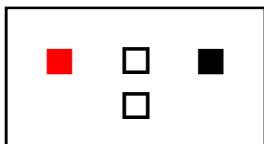
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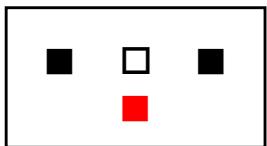


(3, 2, 1, 2)

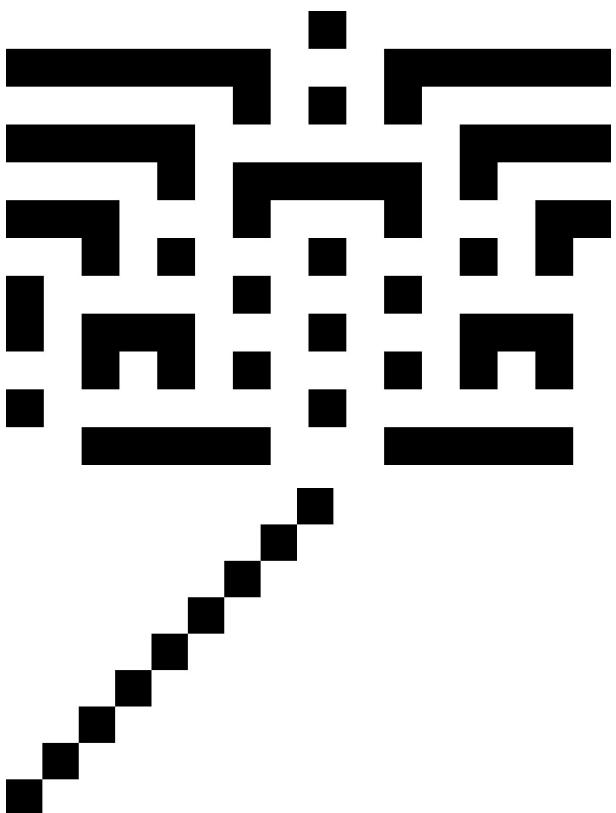
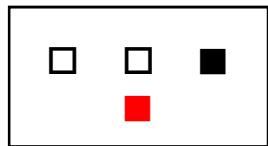
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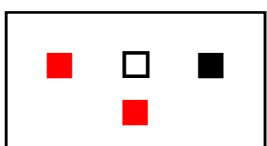
$(1, 2, 1, 3)$



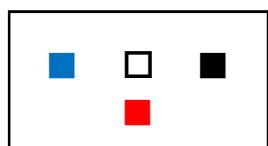
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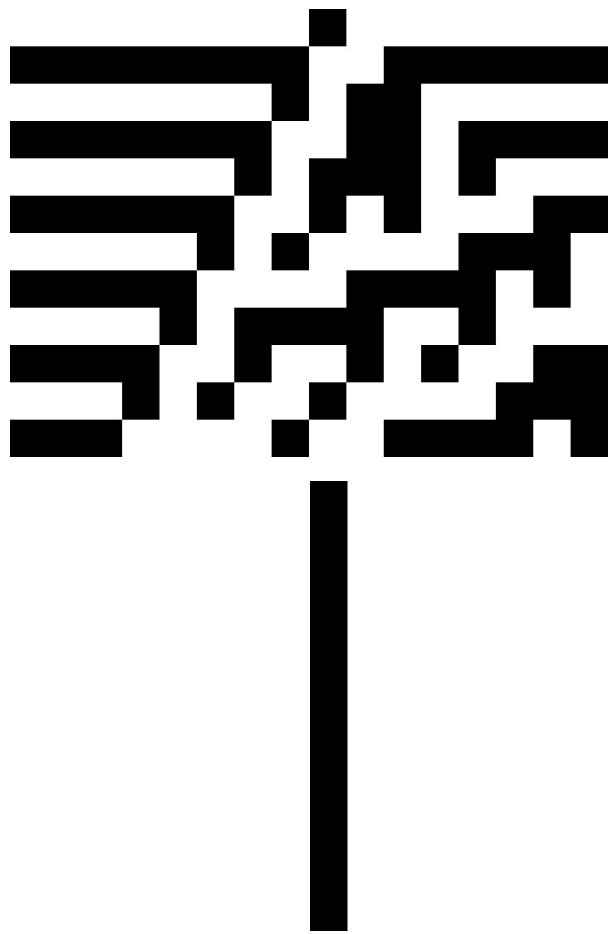


$(3, 2, 1, 3)$



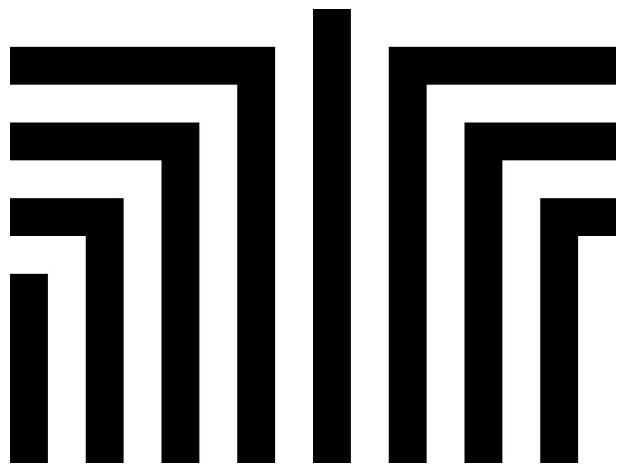
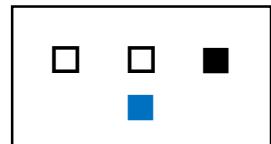
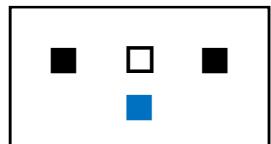
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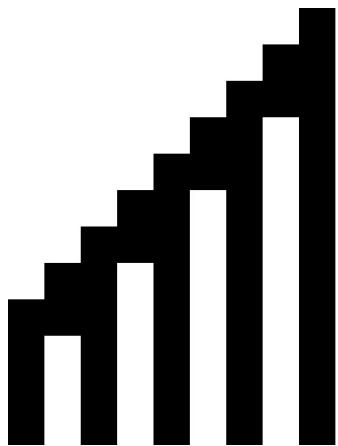




(1, 2, 1, 4)

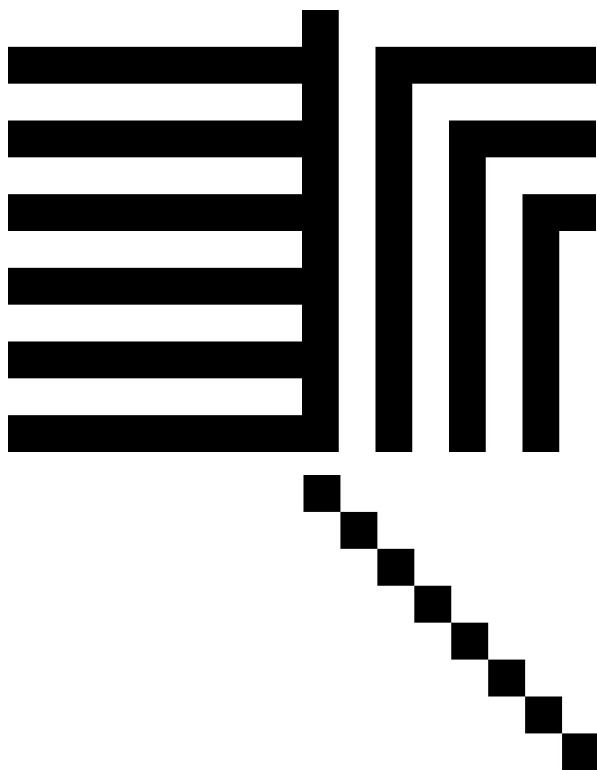
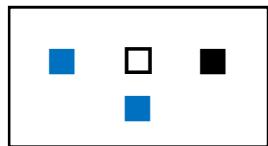
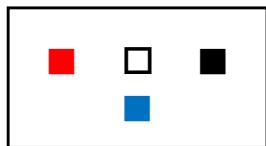
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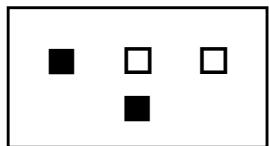


(3, 2, 1, 4)

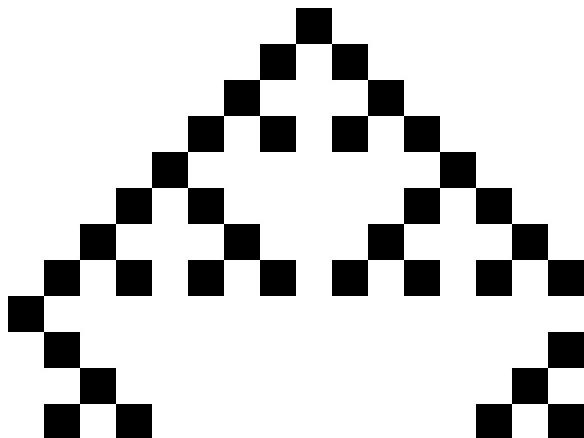
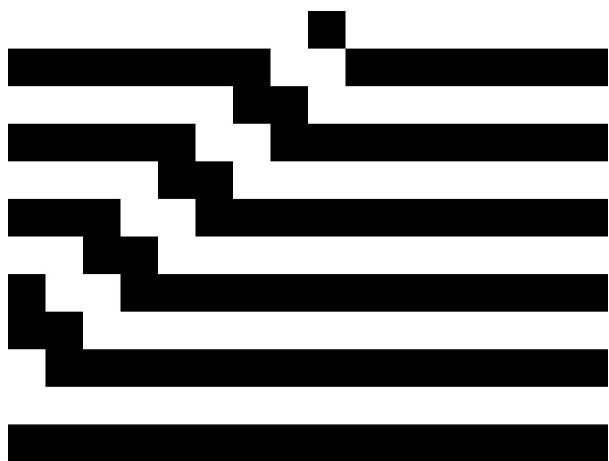
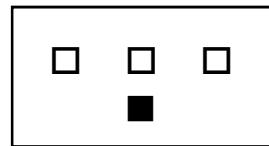
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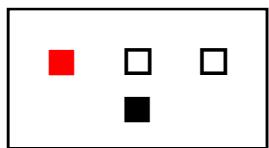
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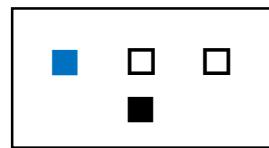
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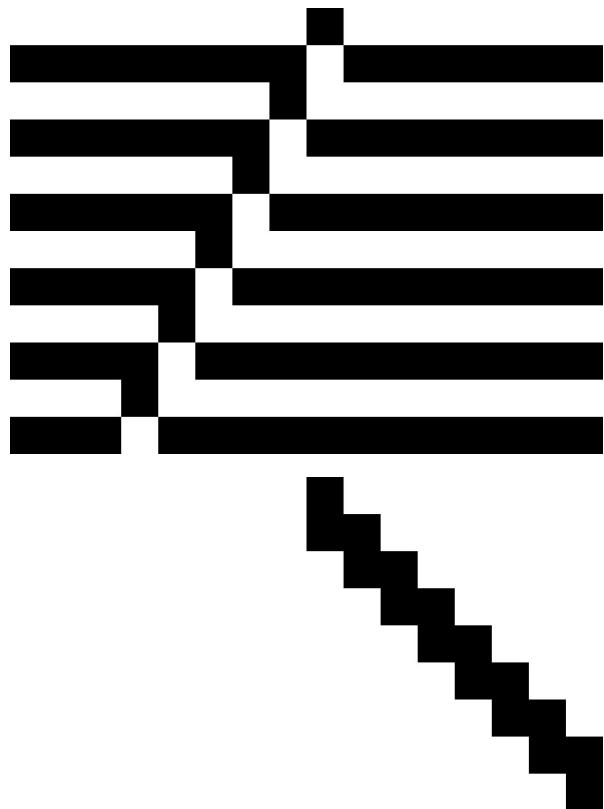


$(3, 2, 2, 1)$

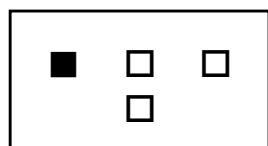


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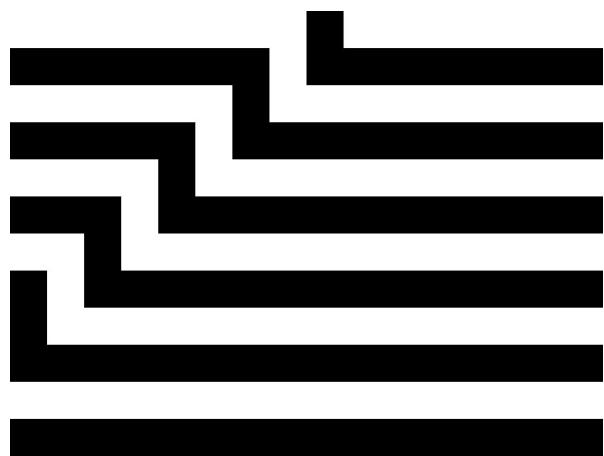
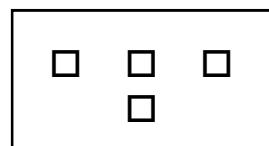


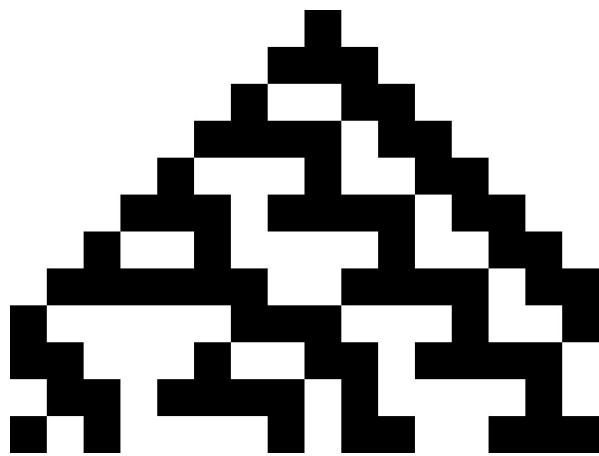


(1, 2, 2, 2)

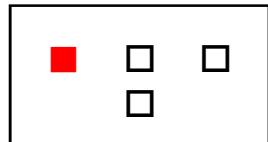


(2, 2, 2, 2)

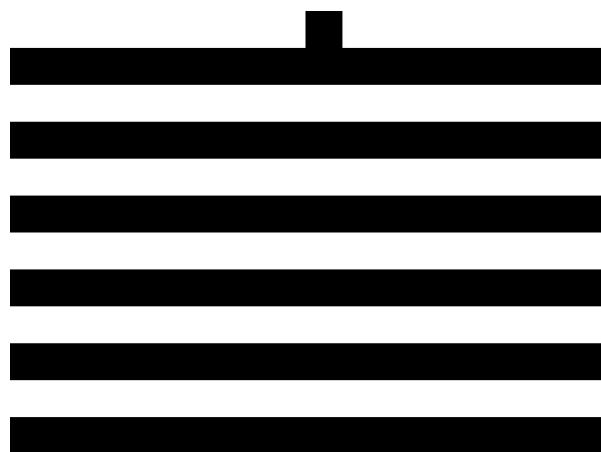
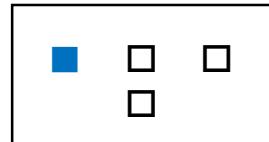


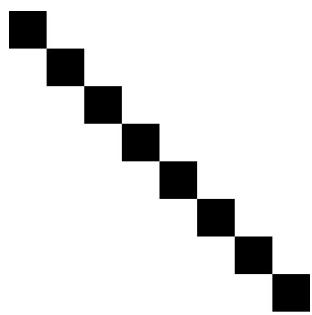


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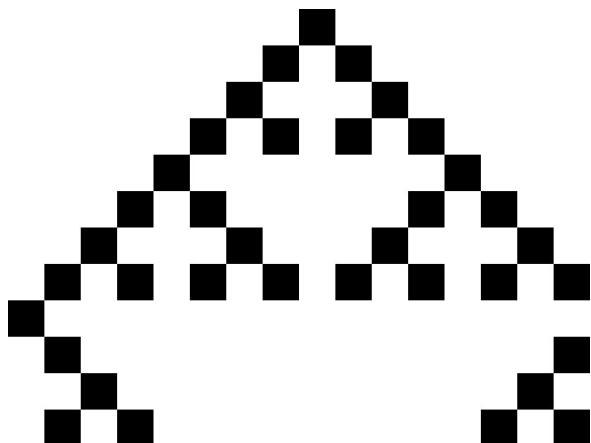
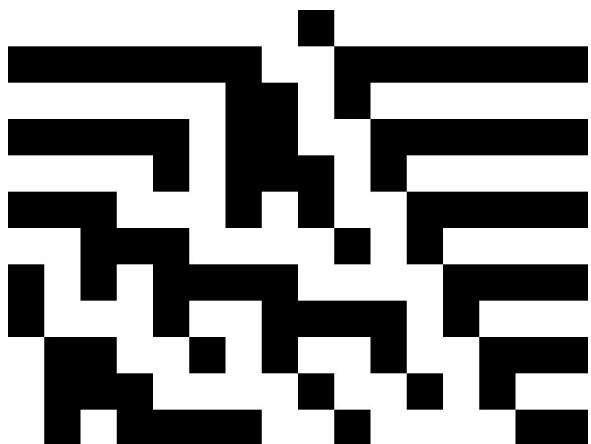
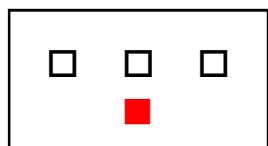
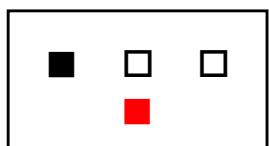
(4, 2, 2, 2)



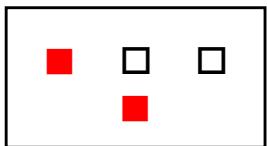


(1, 2, 2, 3)

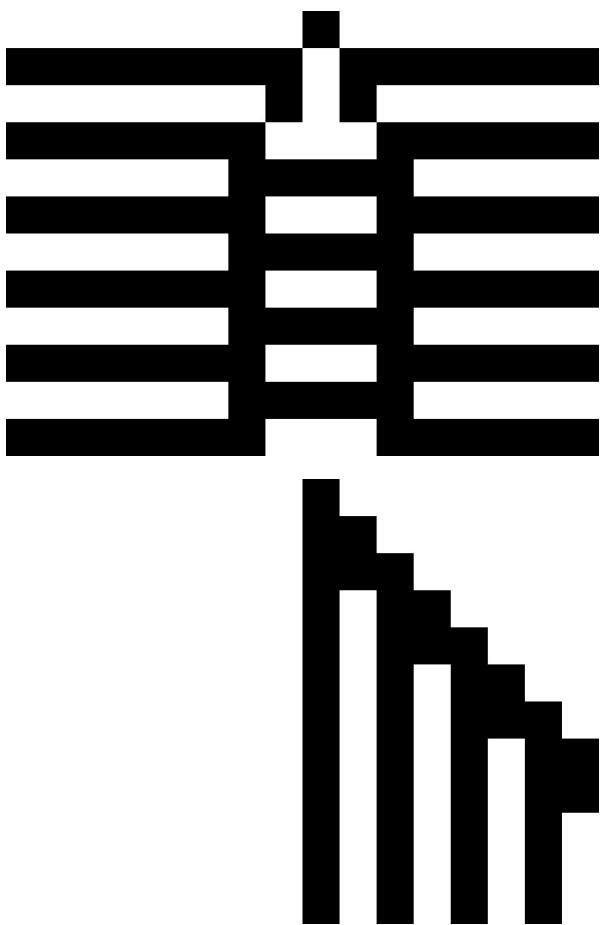
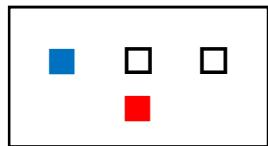
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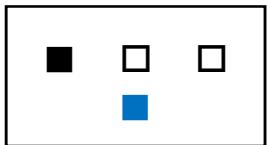
$(3, 2, 2, 3)$



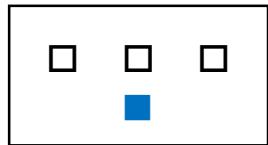
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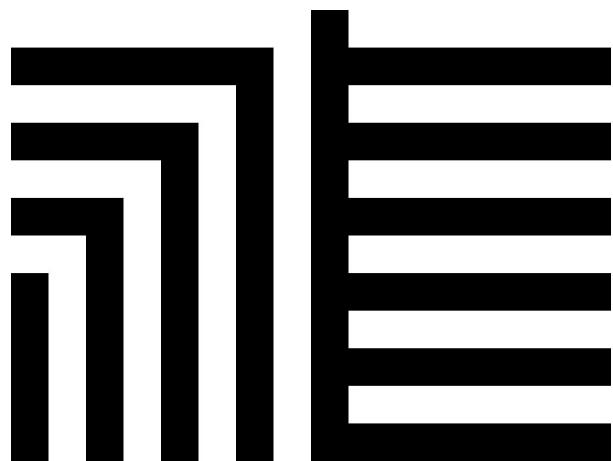


$(1, 2, 2, 4)$

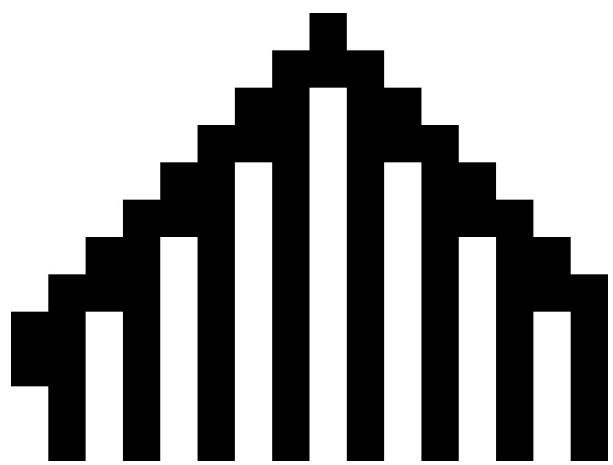


$(2, 2, 2, 4)$

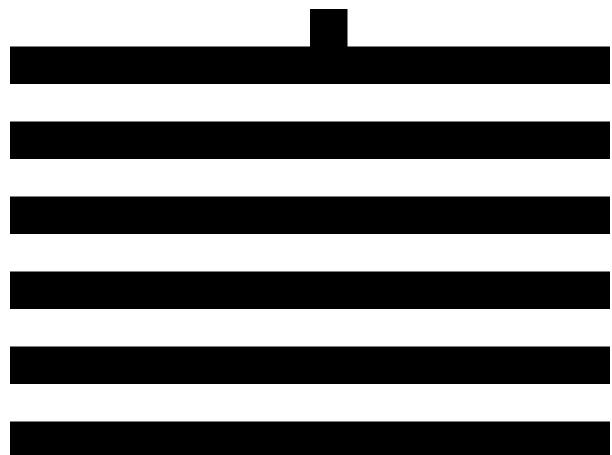
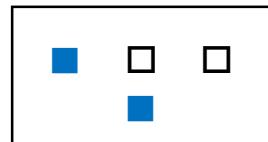
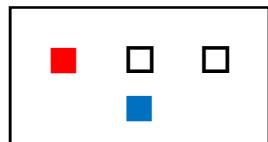




(3, 2, 2, 4)

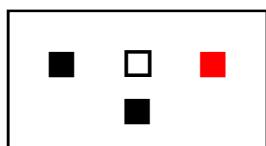


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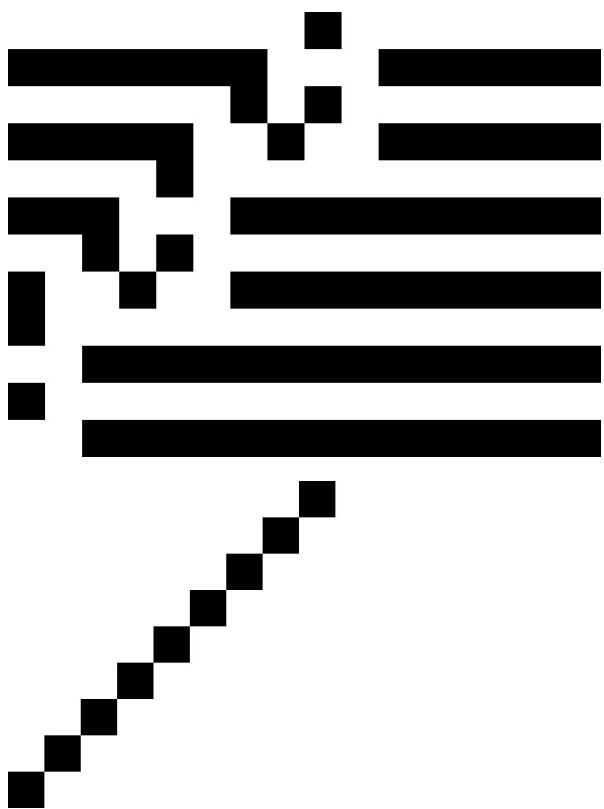
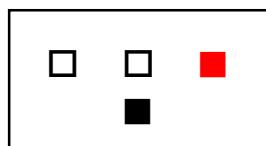




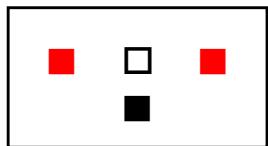
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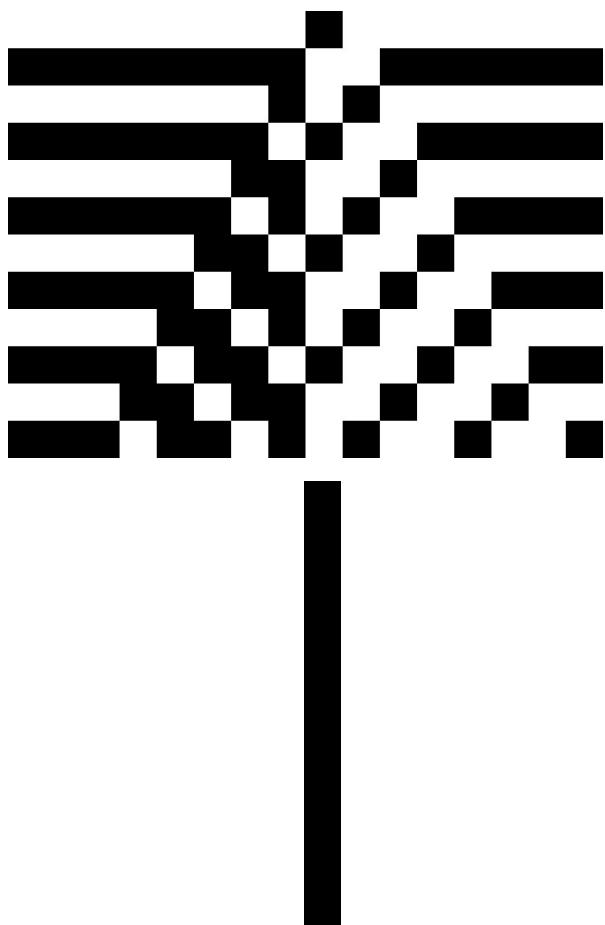
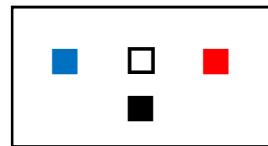
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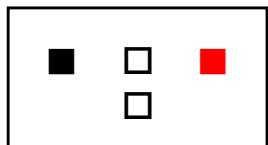
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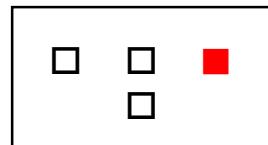
$(4, 2, 3, 1)$

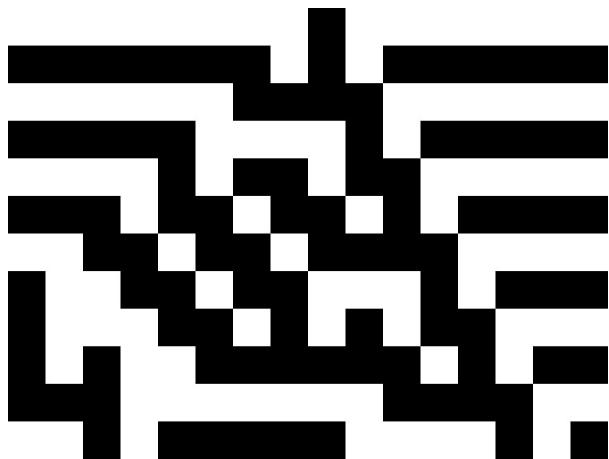


$(1, 2, 3, 2)$

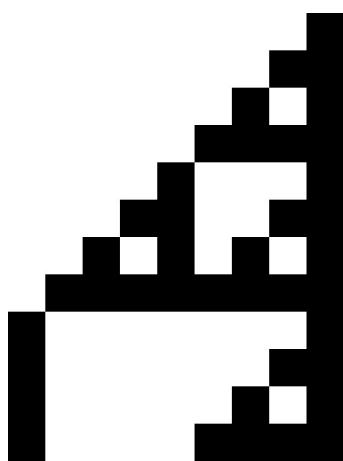


$(2, 2, 3, 2)$

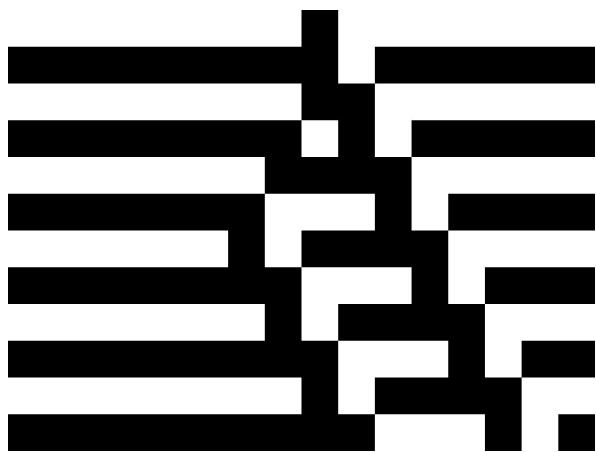
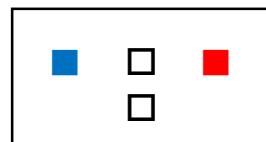
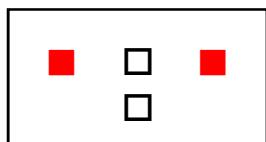




(3, 2, 3, 2)

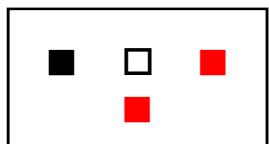


(4, 2, 3, 2)

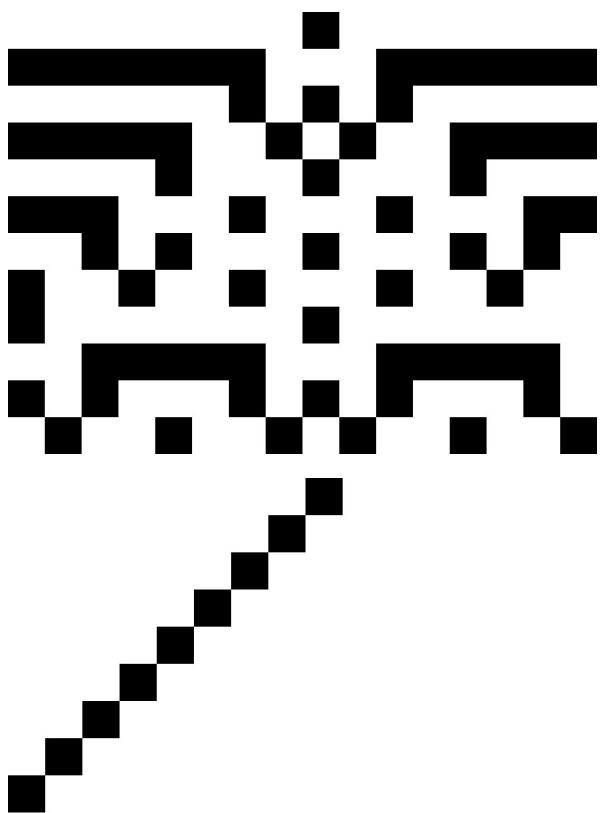
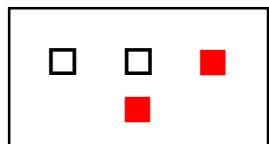




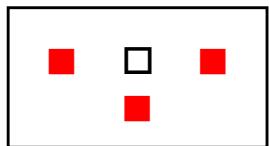
(1, 2, 3, 3)



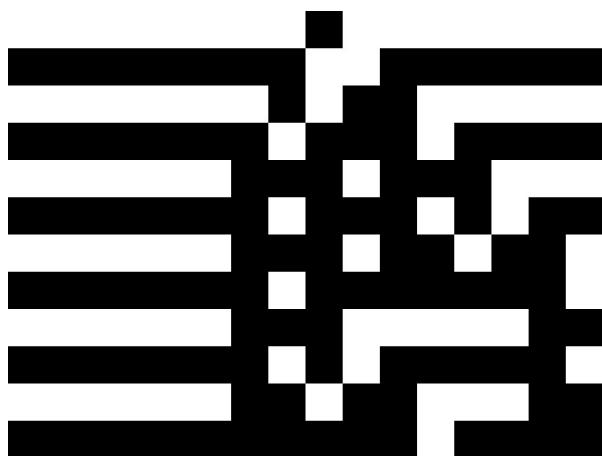
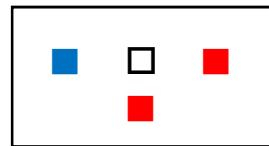
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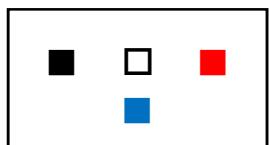
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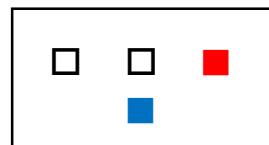
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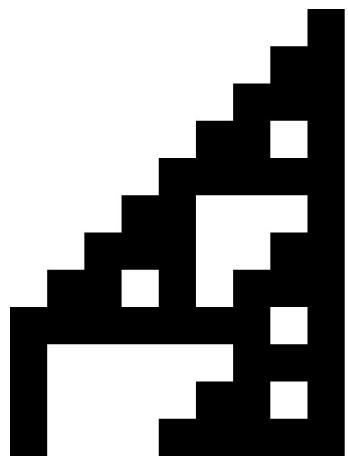
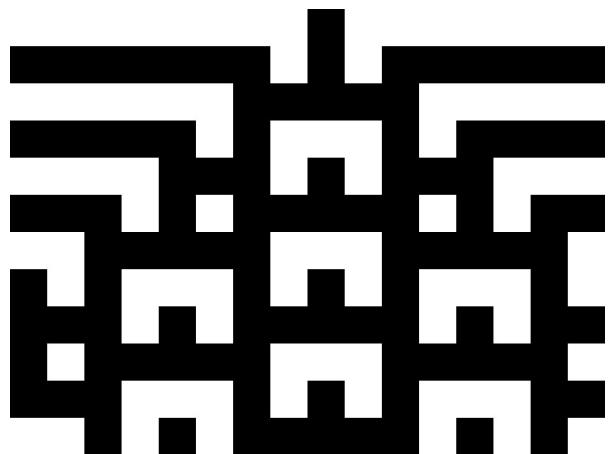


$(1, 2, 3, 4)$



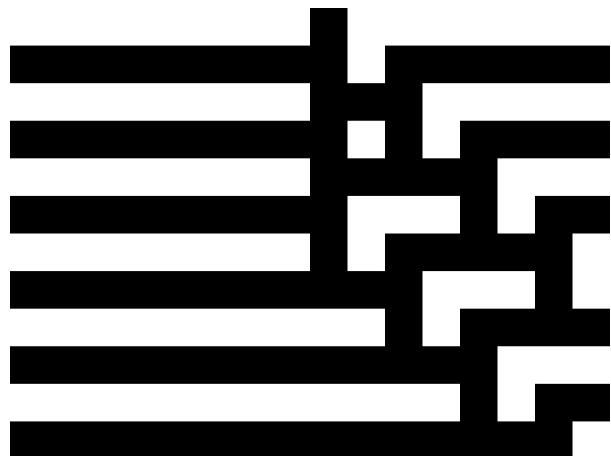
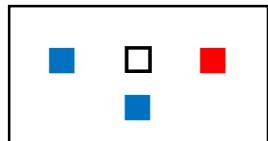
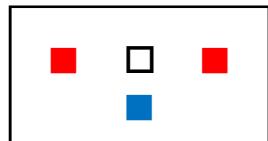
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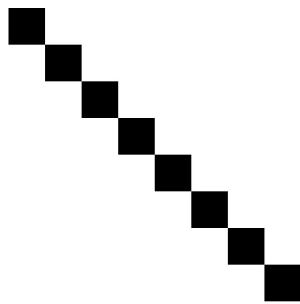




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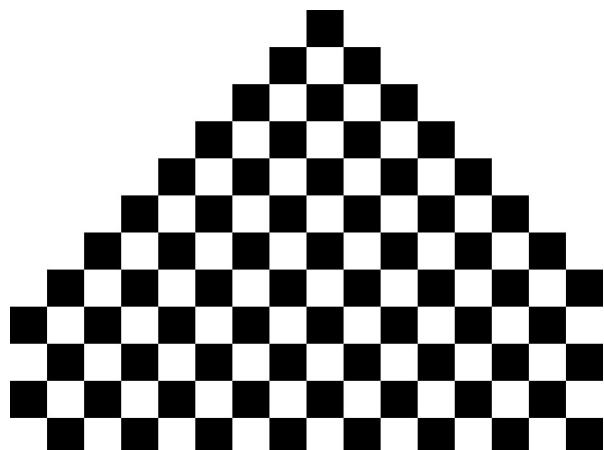
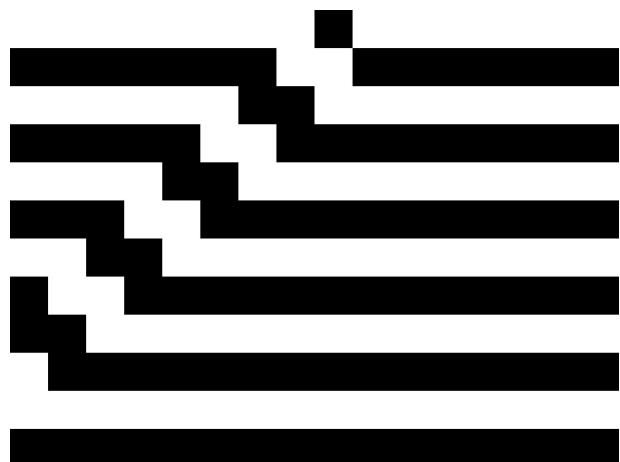
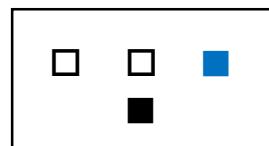
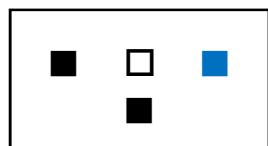
(4, 2, 3, 4)



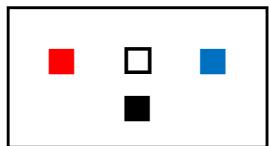


(1, 2, 4, 1)

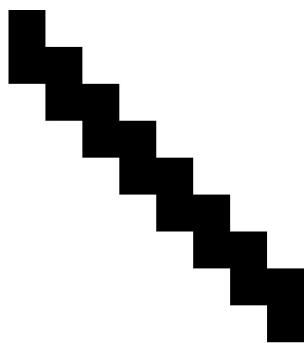
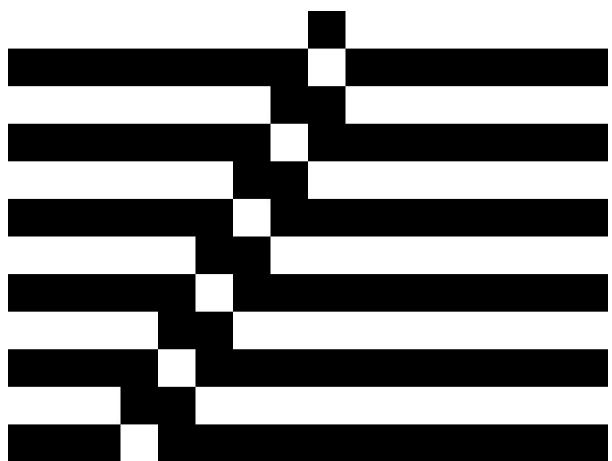
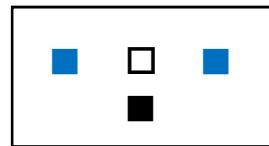
(2, 2, 4, 1)



$(3, 2, 4, 1)$



$(4, 2, 4, 1)$

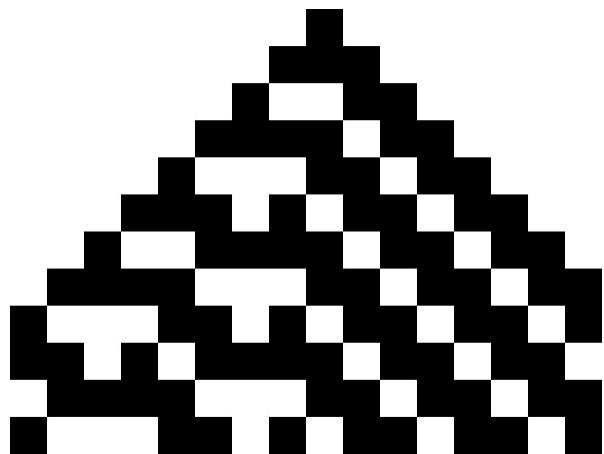
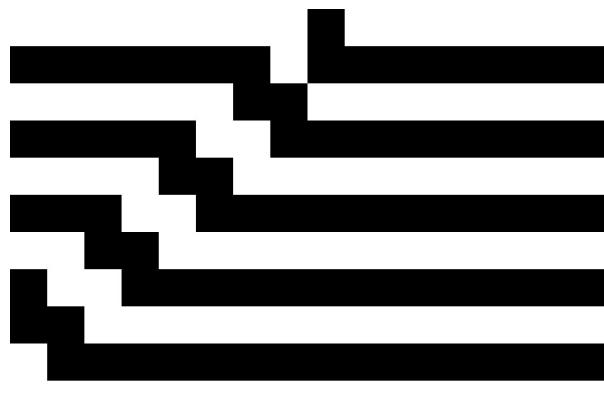


$(1, 2, 4, 2)$



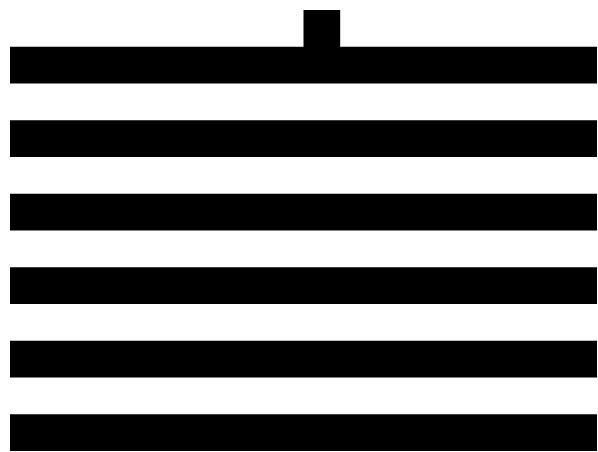
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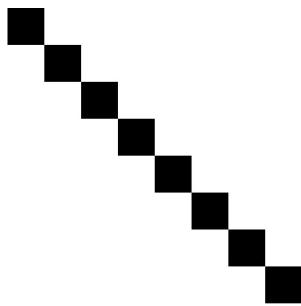




(3, 2, 4, 2)

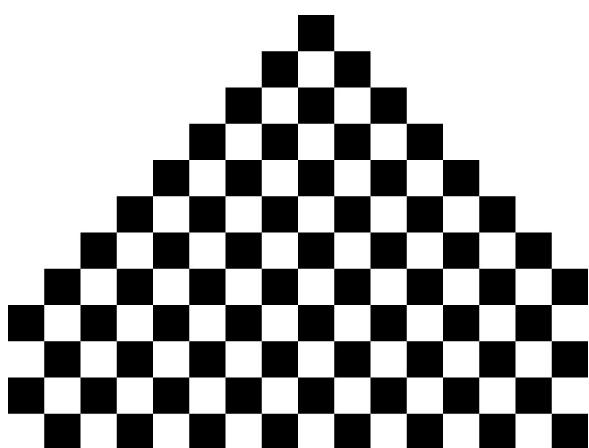
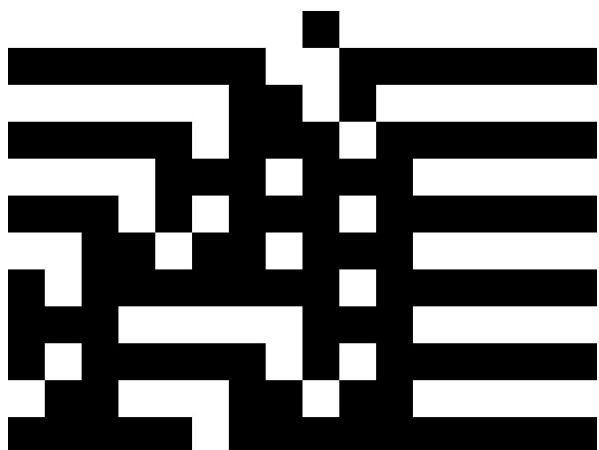
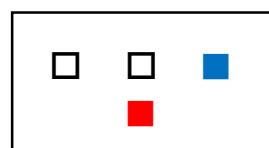
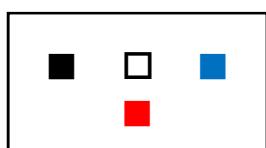
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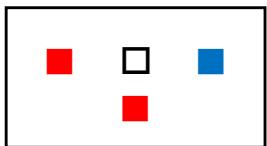


(1, 2, 4, 3)

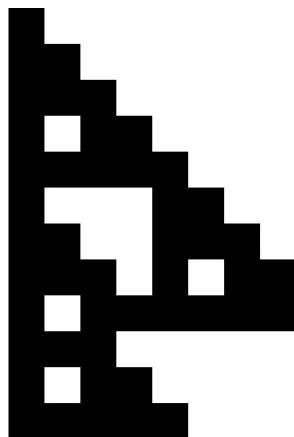
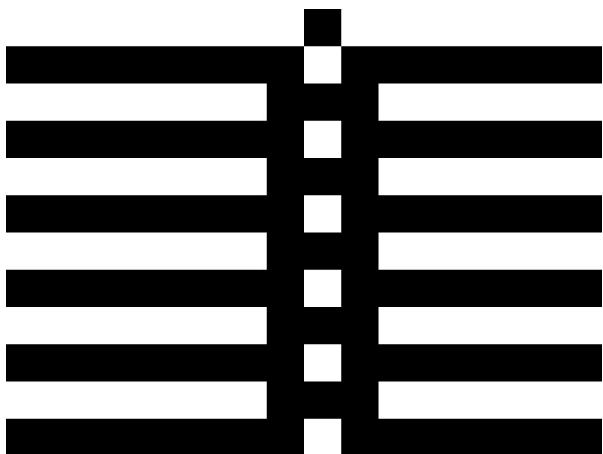
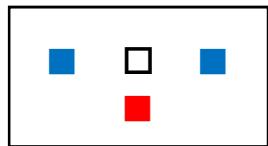
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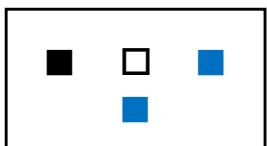
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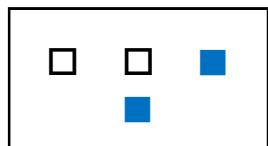
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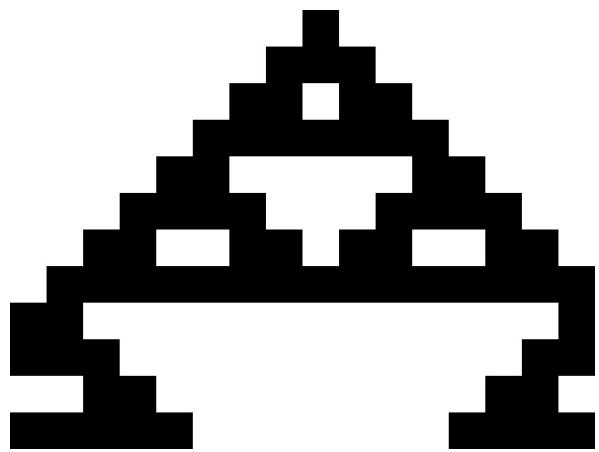
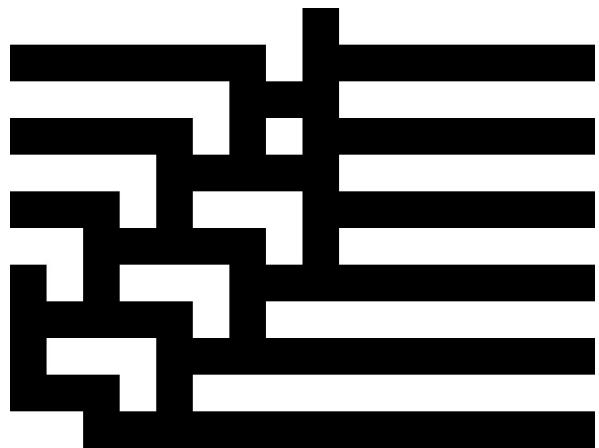


$(1, 2, 4, 4)$



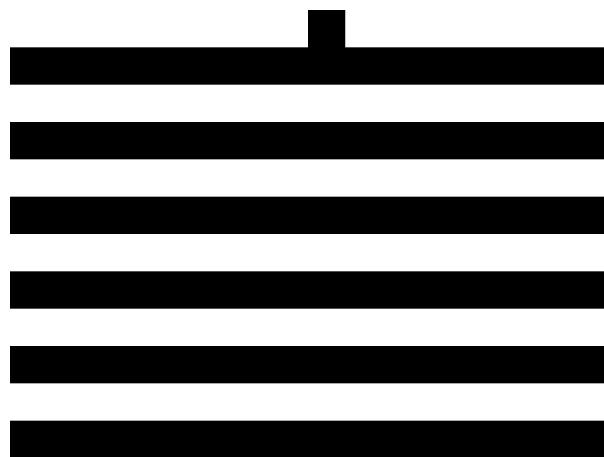
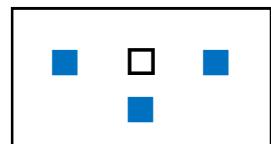
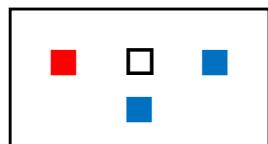
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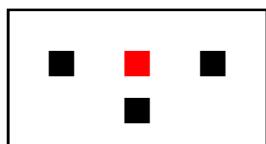
(3, 2, 4, 4)

(4, 2, 4, 4)

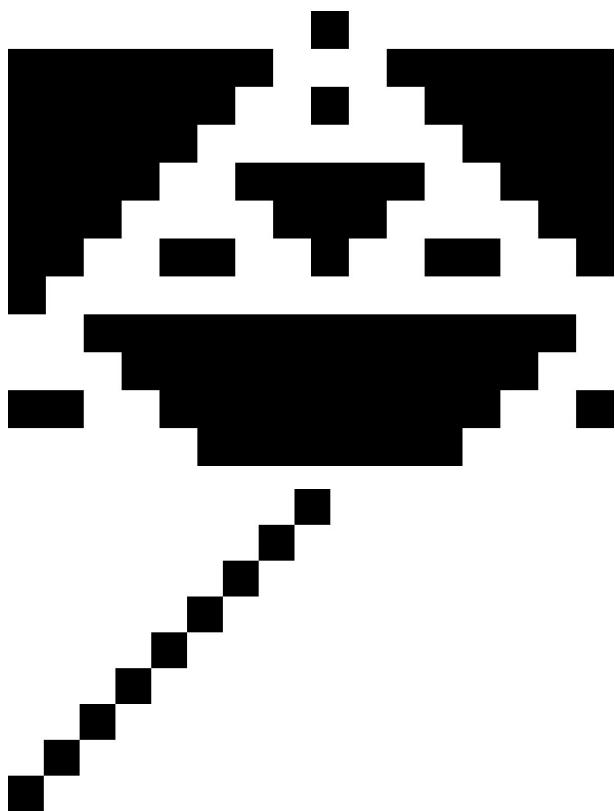
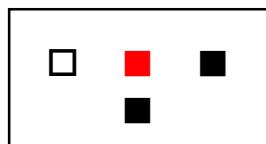




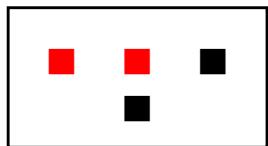
(1, 3, 1, 1)



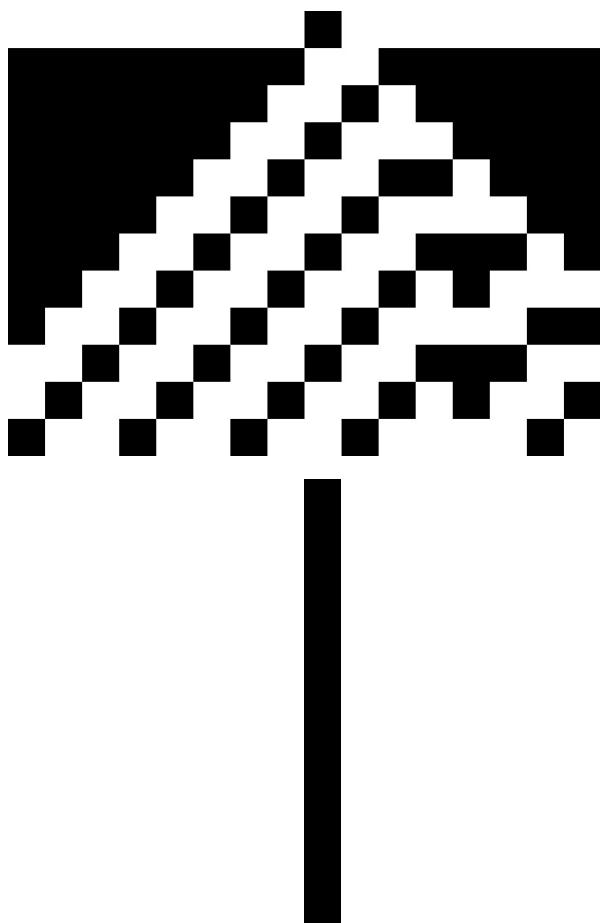
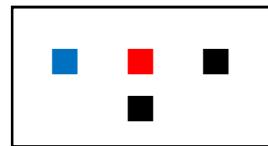
(2, 3, 1, 1)



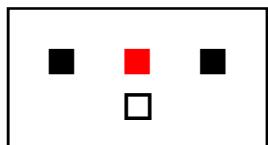
$(3, 3, 1, 1)$



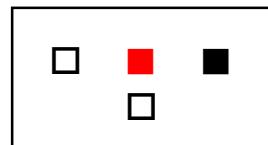
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$(1, 3, 1, 2)$

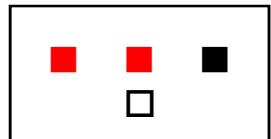


$(2, 3, 1, 2)$

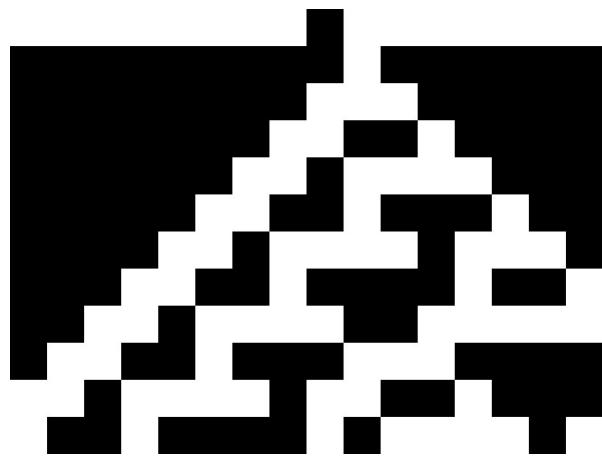
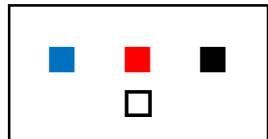




(3, 3, 1, 2)

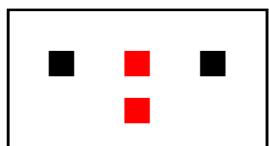


(4, 3, 1, 2)

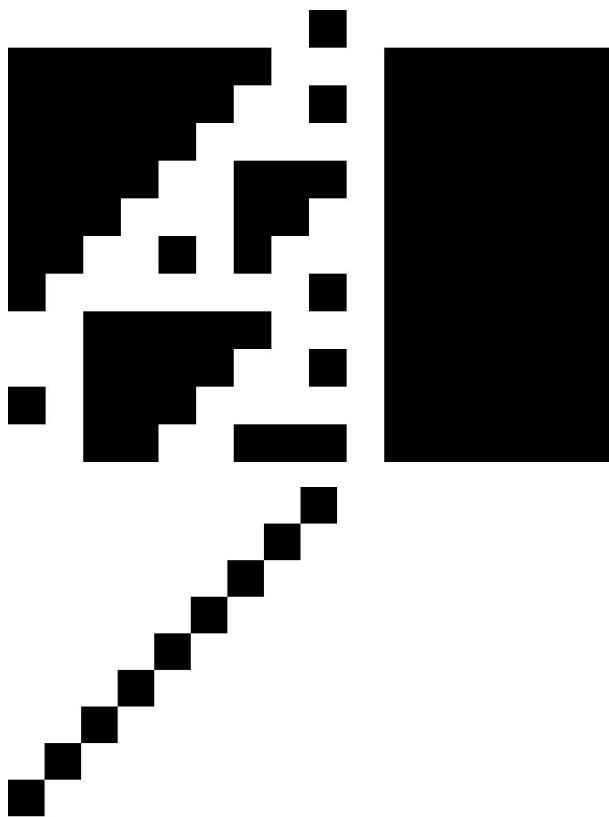
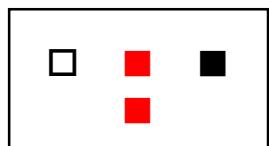




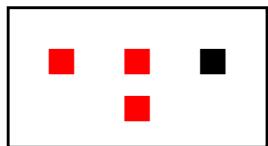
(1, 3, 1, 3)



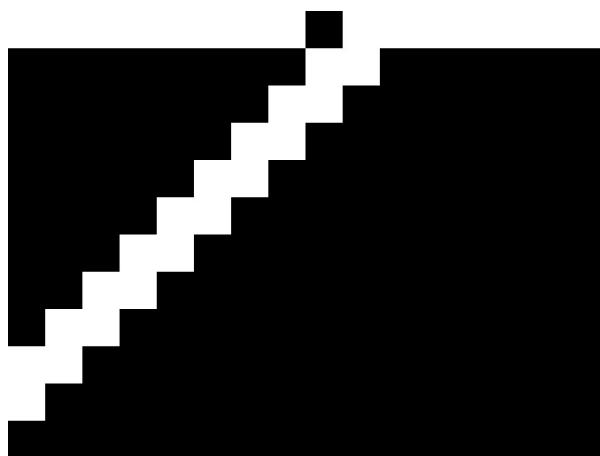
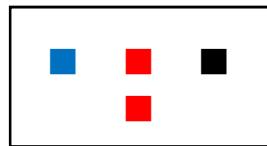
(2, 3, 1, 3)



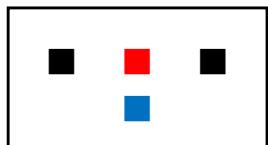
$(3, 3, 1, 3)$



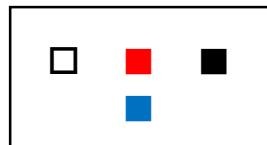
$(4, 3, 1, 3)$



$(1, 3, 1, 4)$



$(2, 3, 1, 4)$

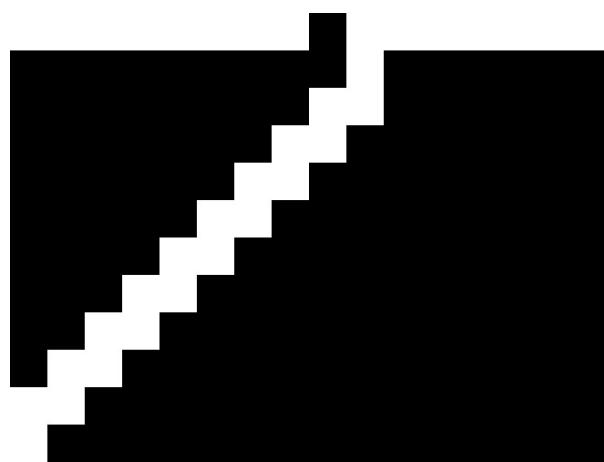
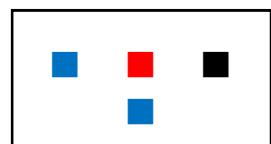


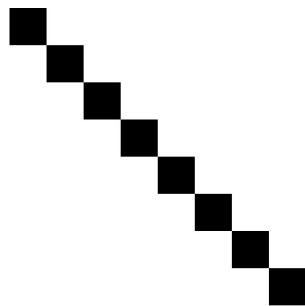


(3, 3, 1, 4)



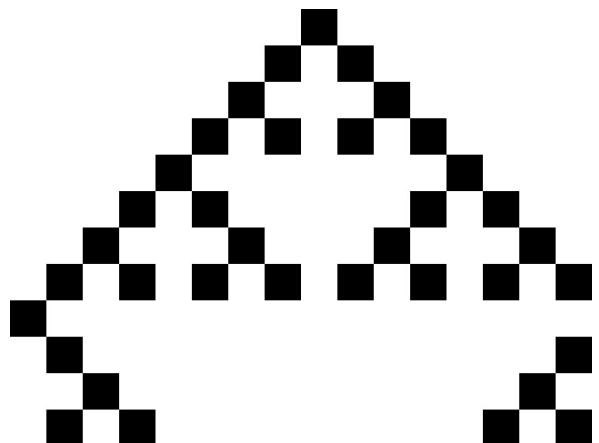
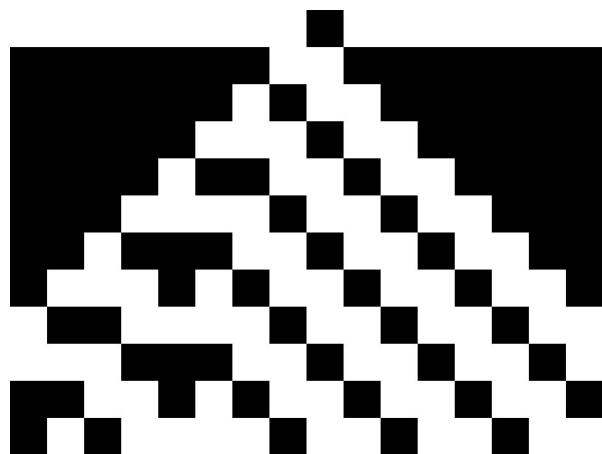
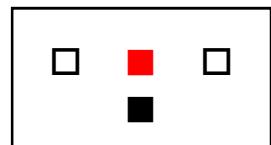
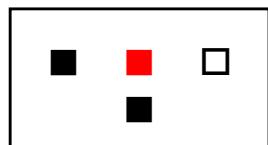
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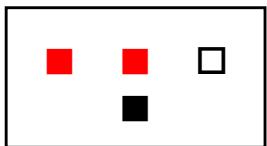


(1, 3, 2, 1)

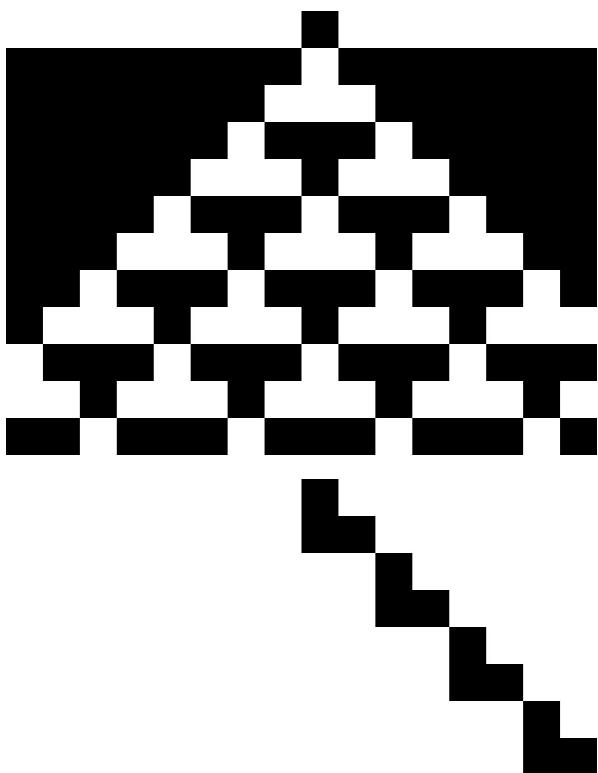
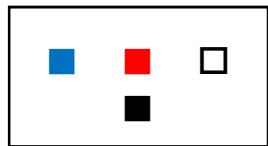
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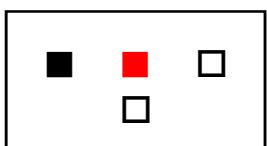
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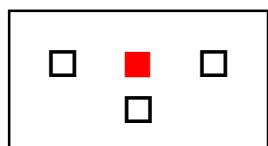
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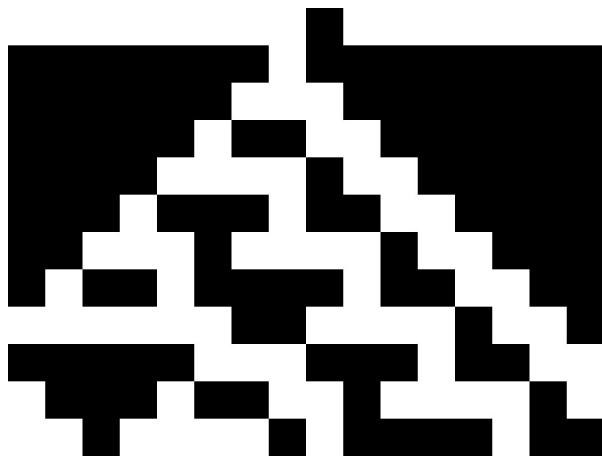


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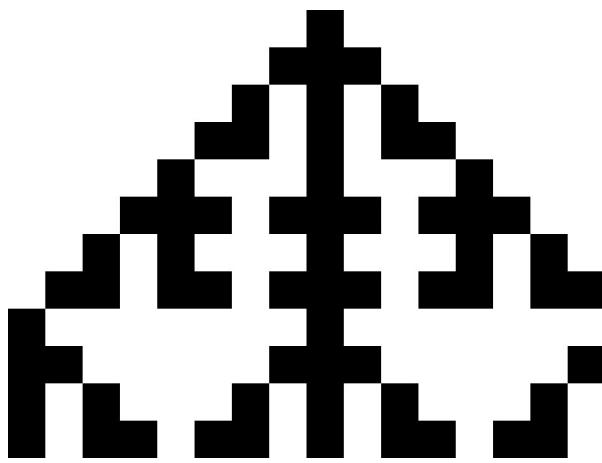


$(2, 3, 2, 2)$

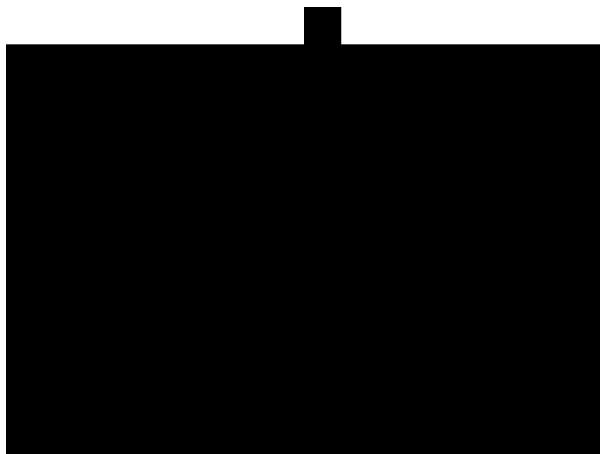
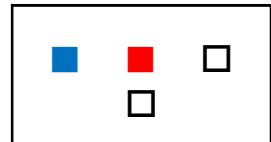
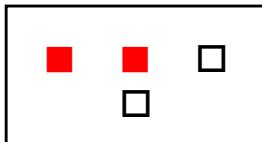


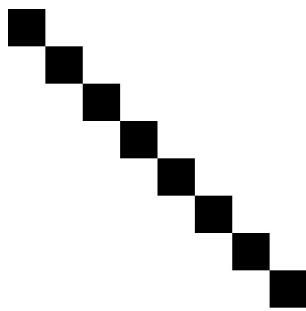


(3, 3, 2, 2)



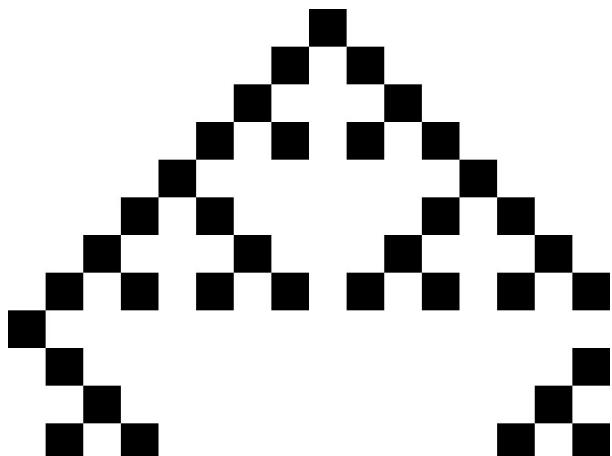
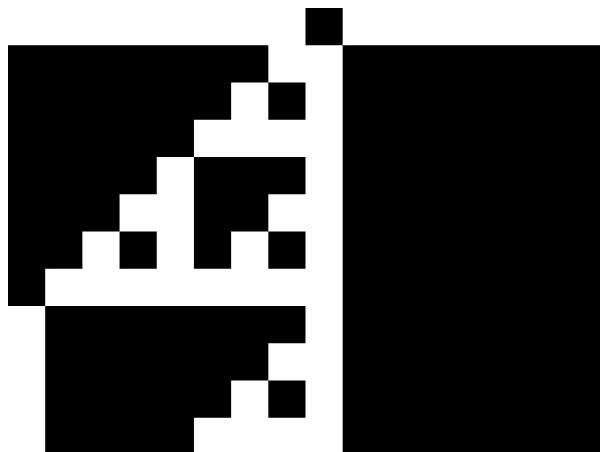
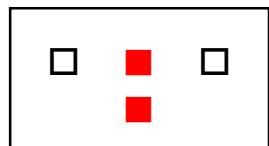
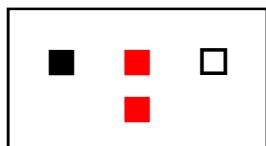
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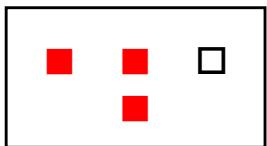


(1, 3, 2, 3)

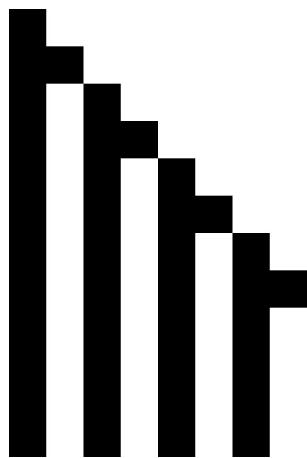
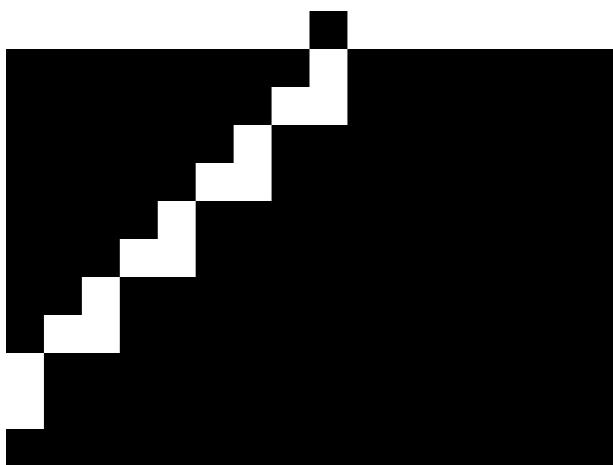
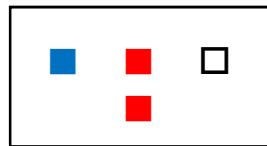
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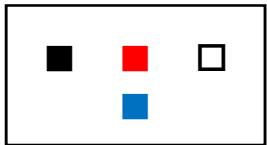
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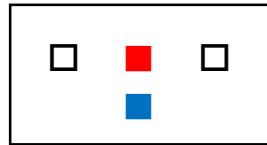
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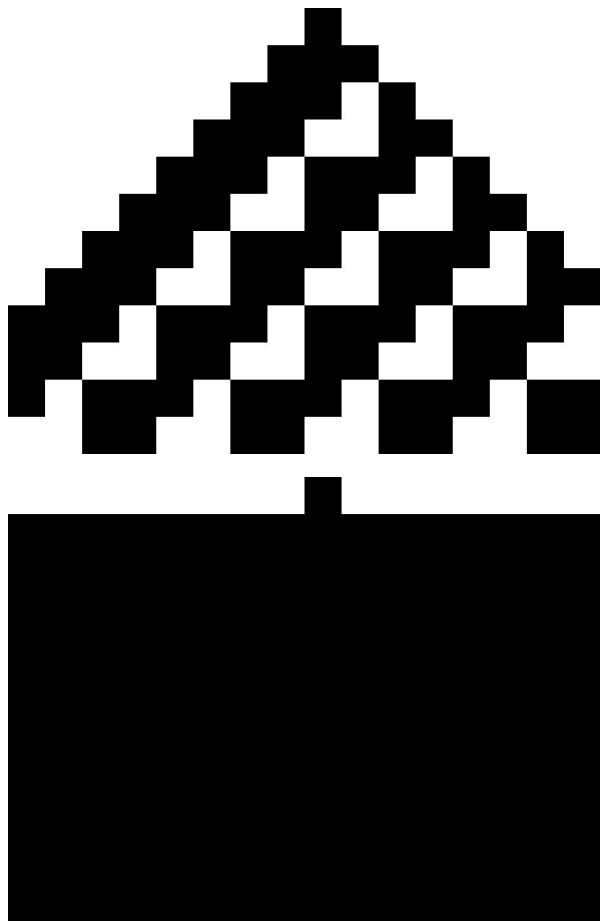


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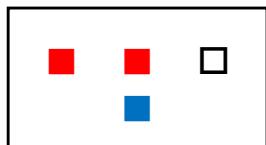


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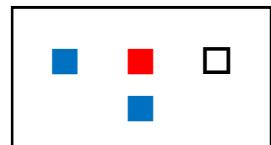


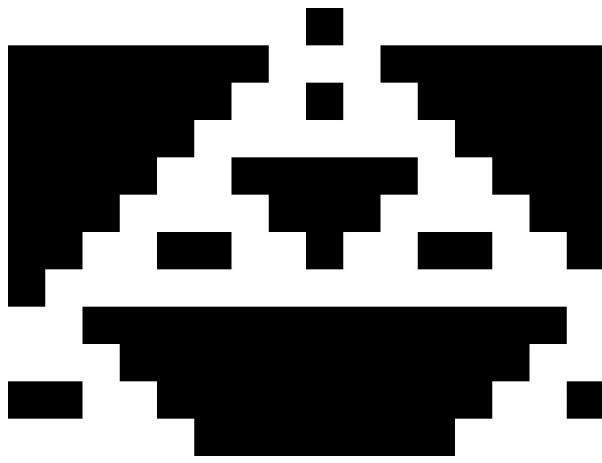


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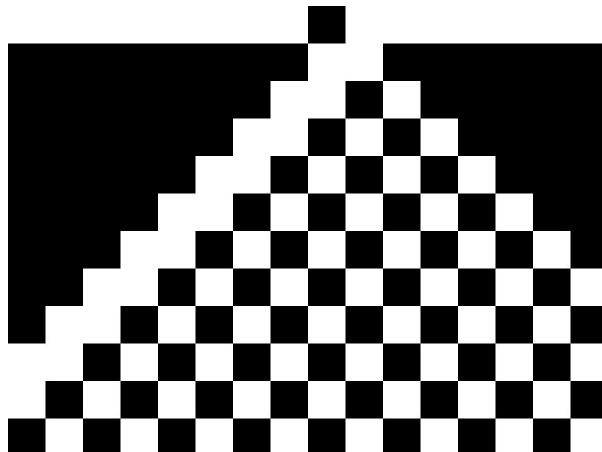
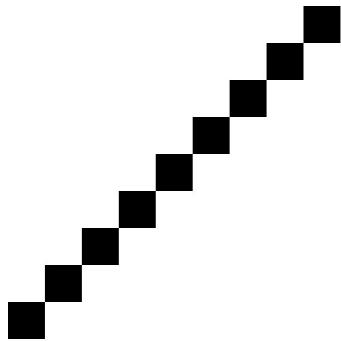
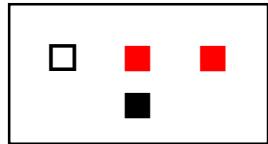
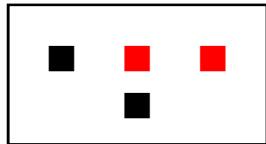
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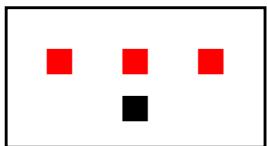


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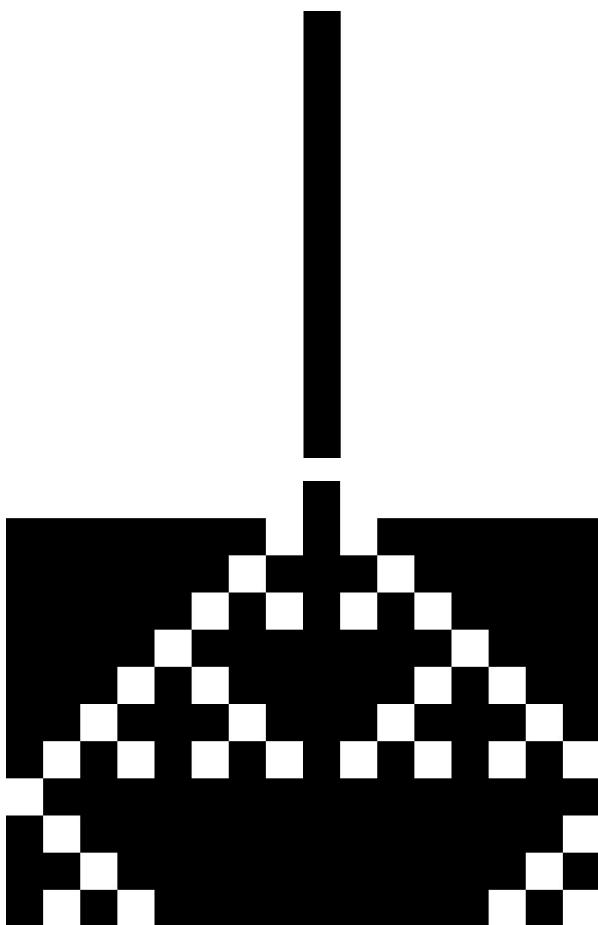
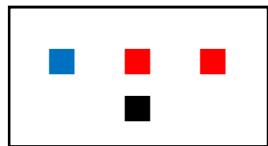
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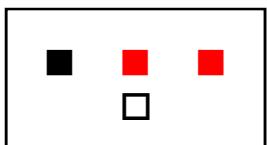
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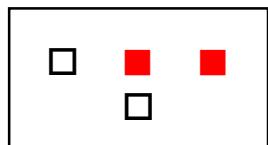
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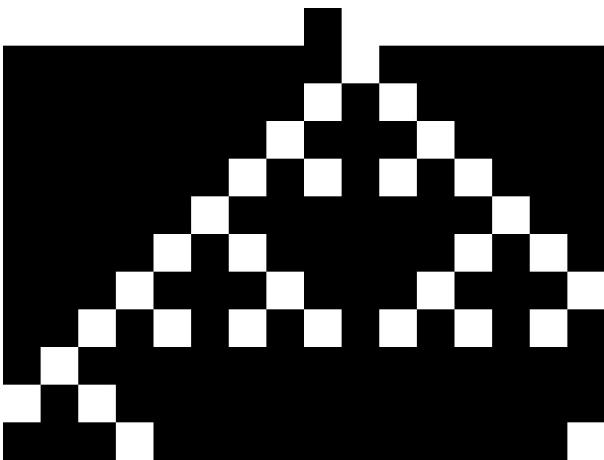
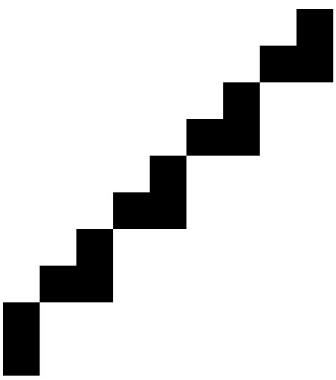


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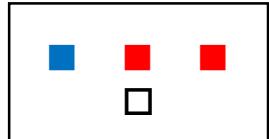
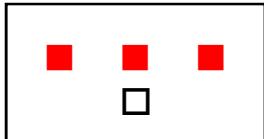
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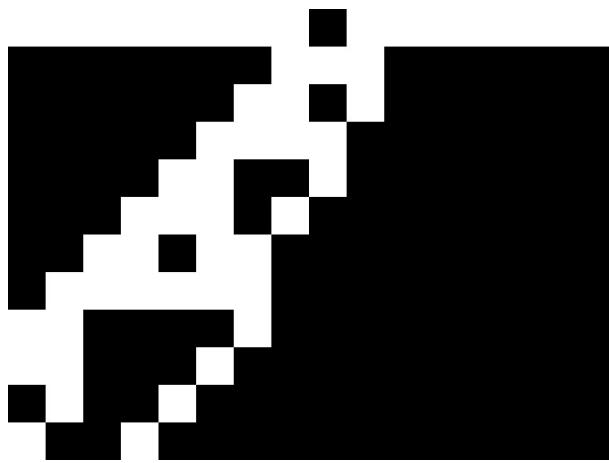




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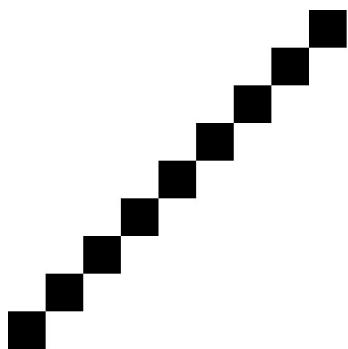
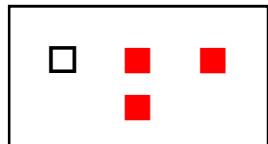
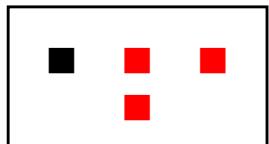
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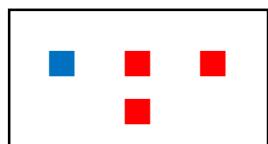
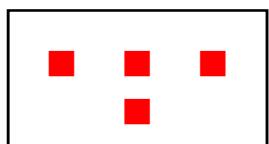
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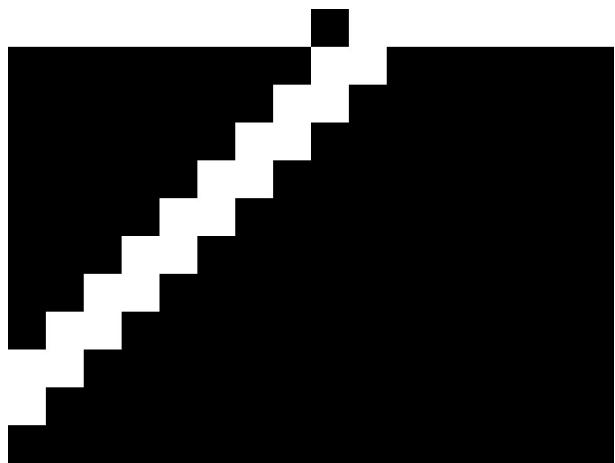
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(3, 3, 3, 3)

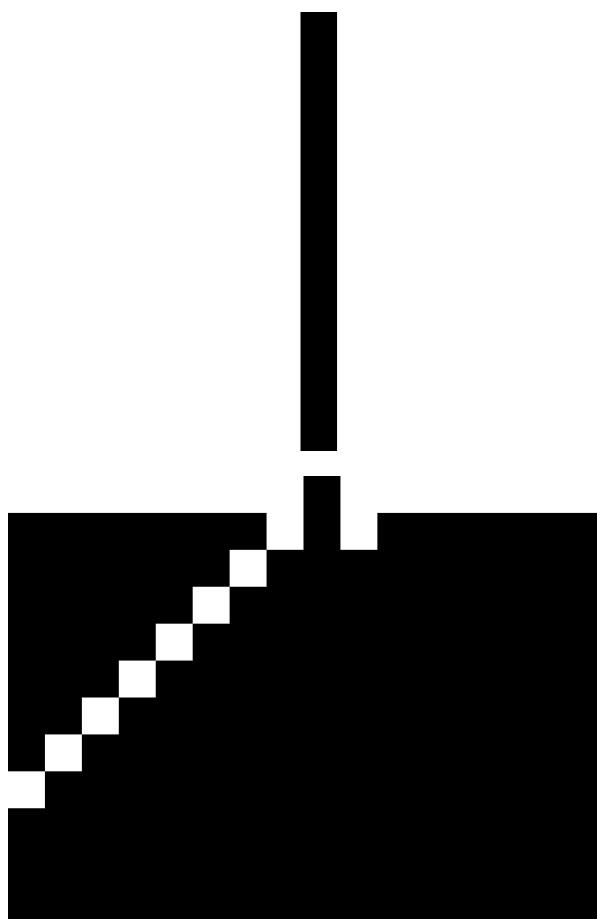
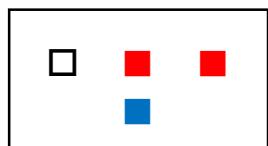
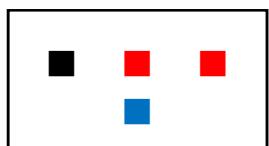
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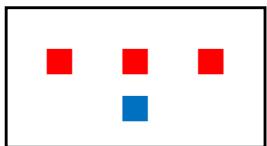


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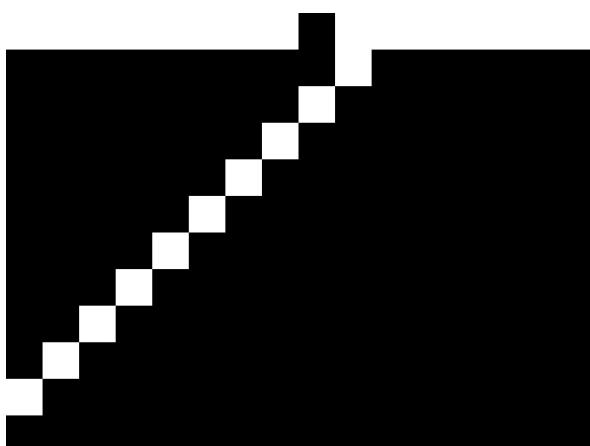
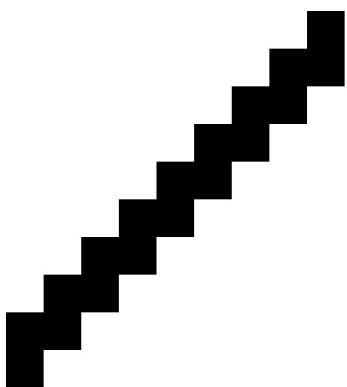
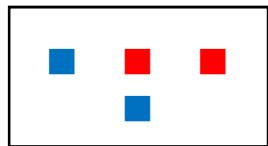
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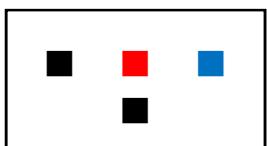
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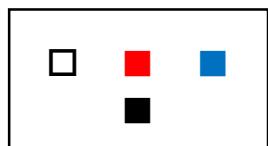
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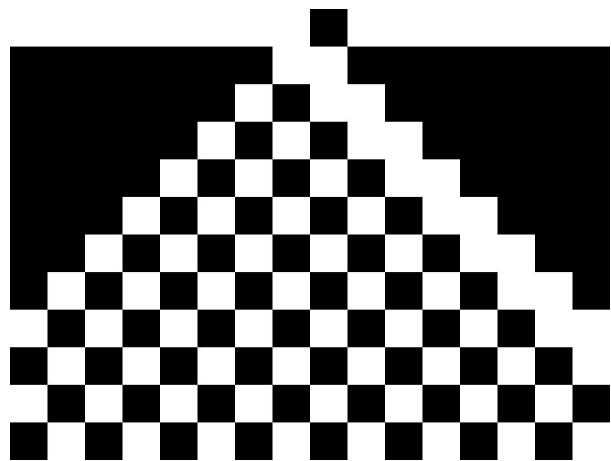
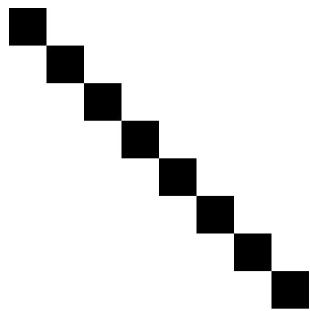


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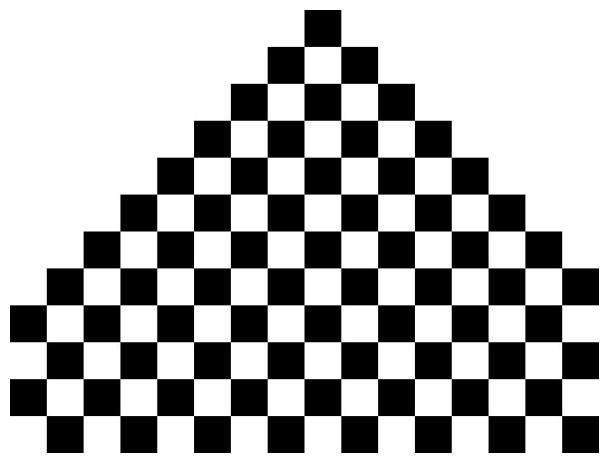
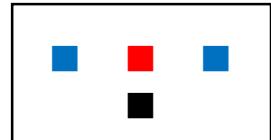
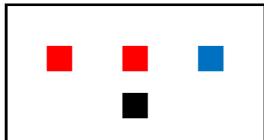
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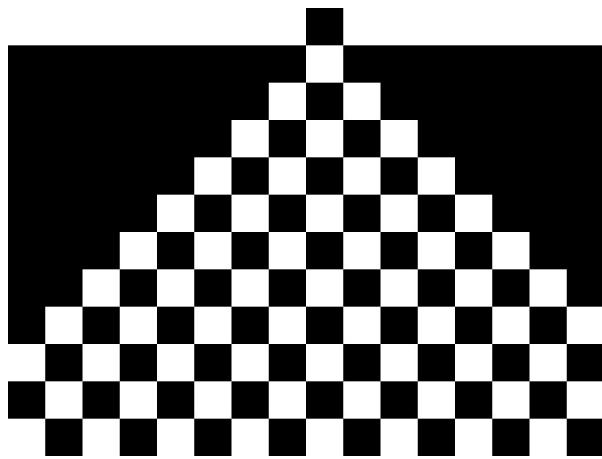




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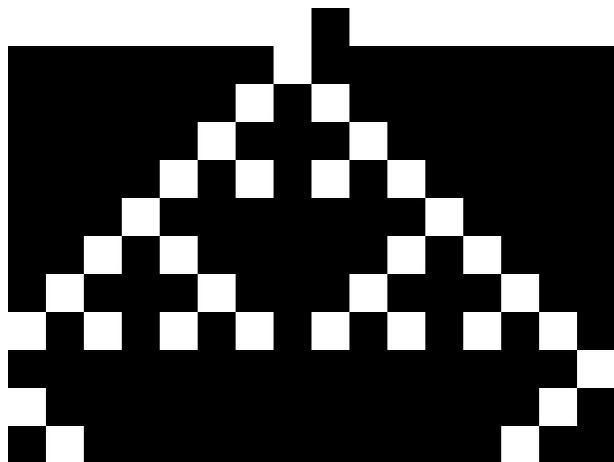
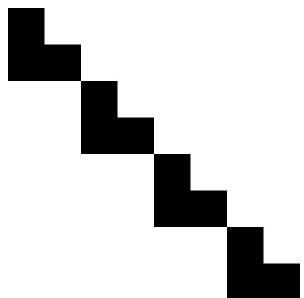
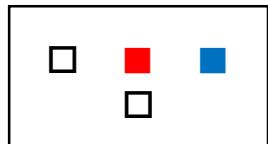
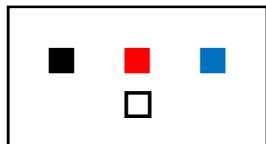
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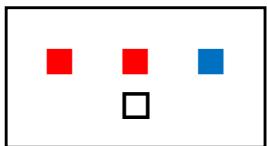


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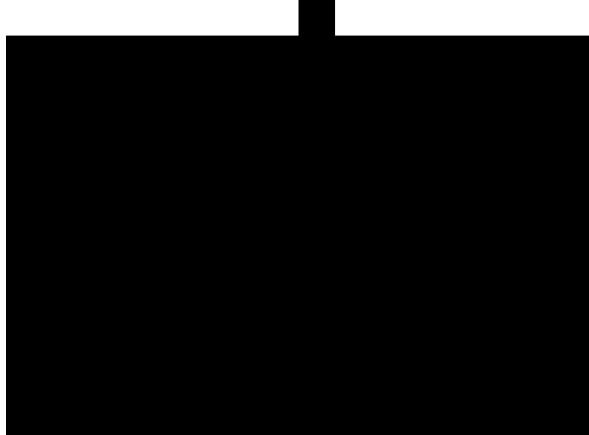
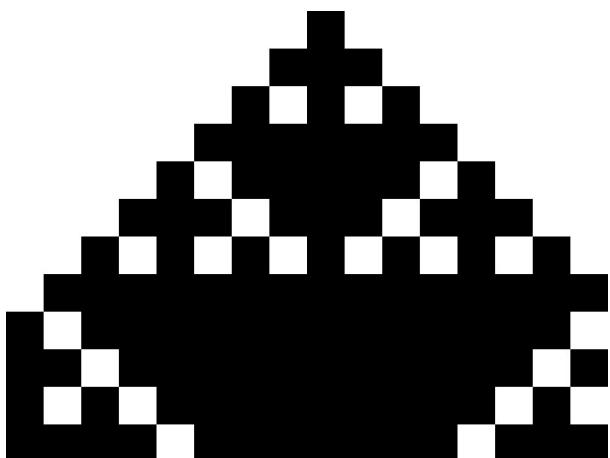
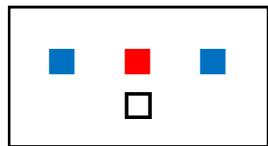
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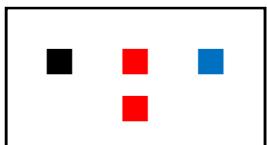
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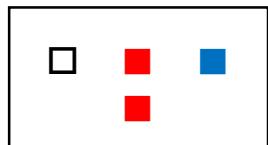
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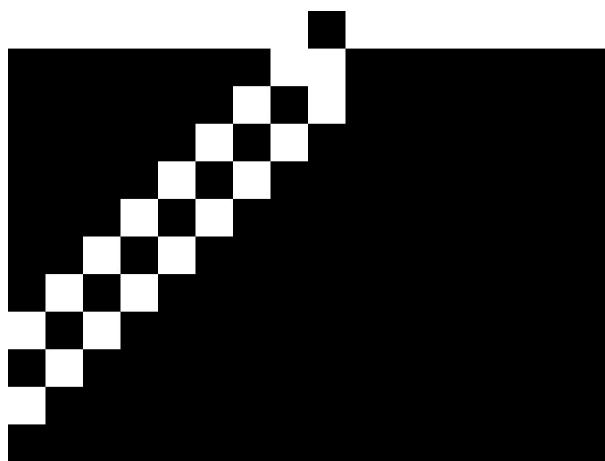
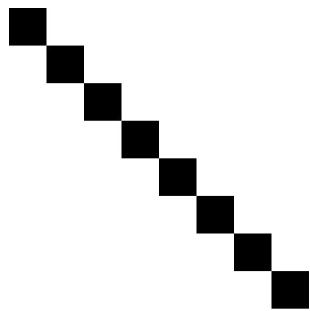


$(1, 3, 4, 3)$



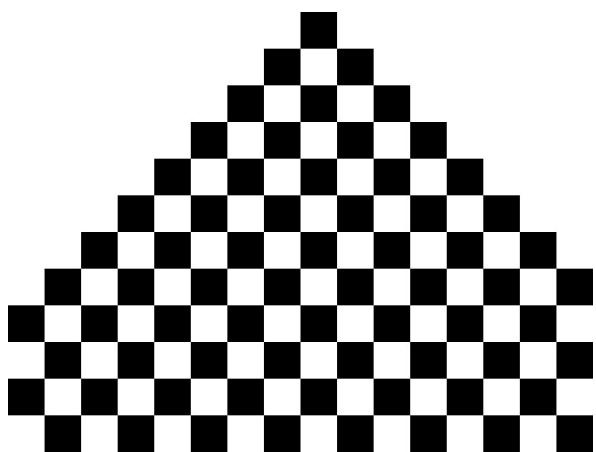
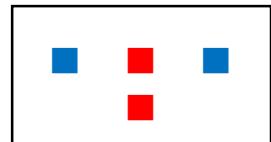
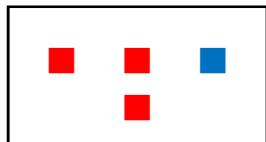
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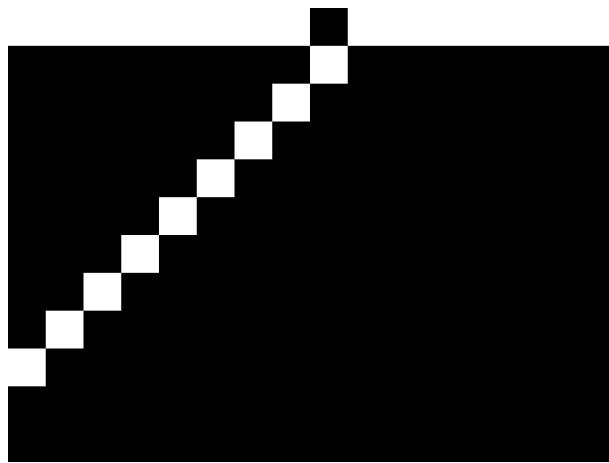




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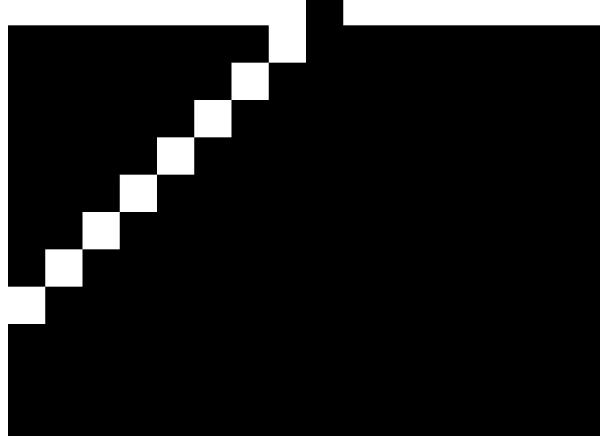
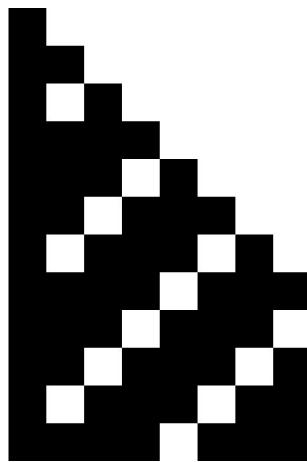
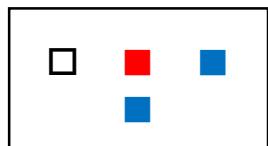
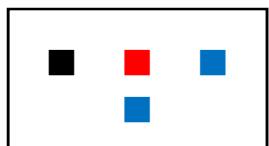
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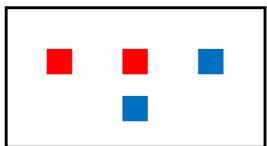


(1, 3, 4, 4)

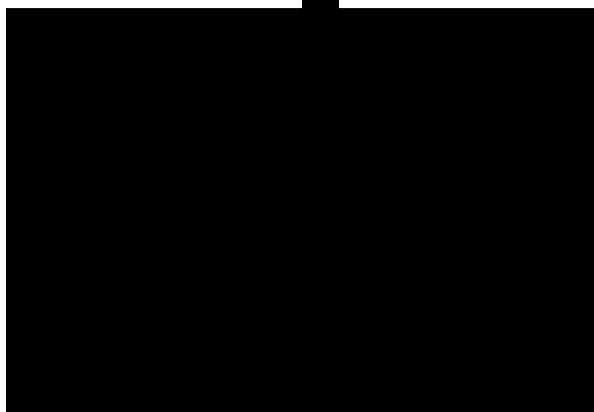
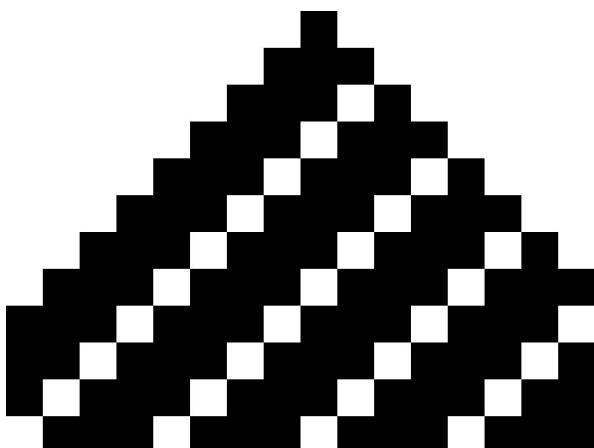
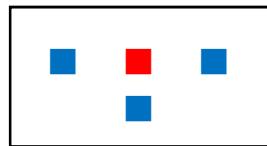
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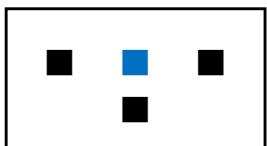
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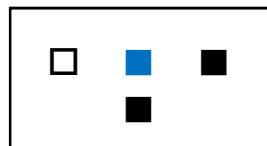
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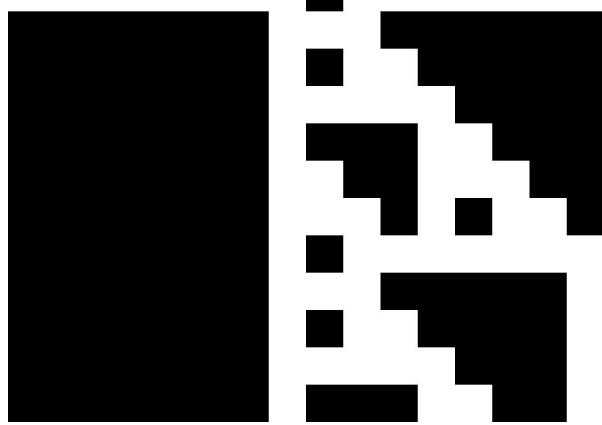


$(1, 4, 1, 1)$



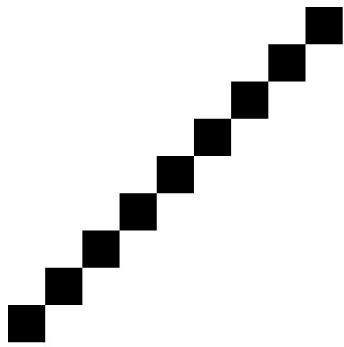
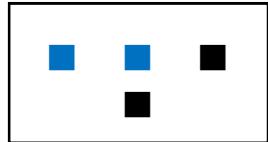
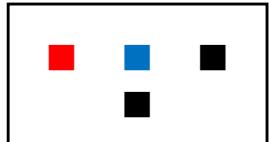
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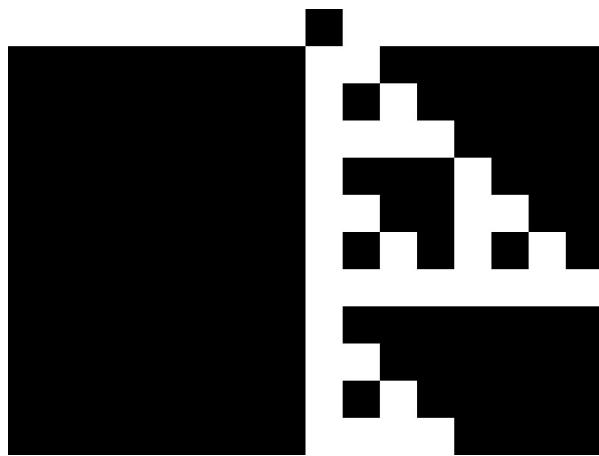




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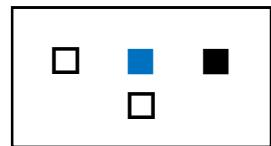
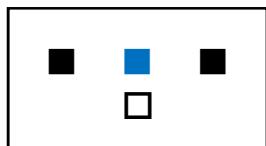
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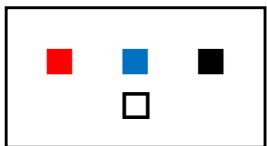


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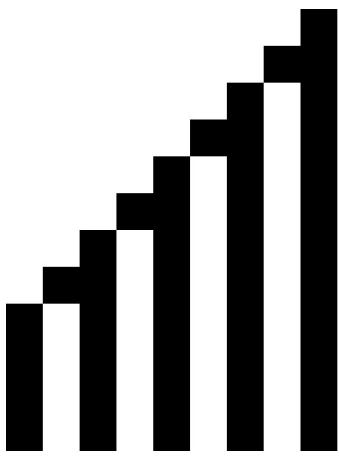
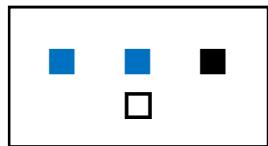
(2, 4, 1, 2)



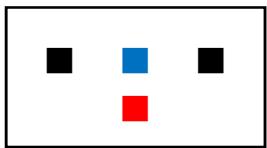
$(3, 4, 1, 2)$



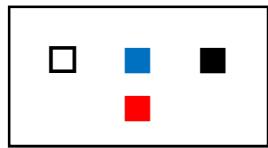
$(4, 4, 1, 2)$

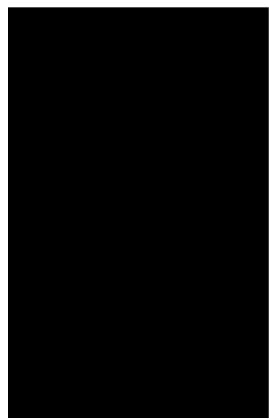


$(1, 4, 1, 3)$



$(2, 4, 1, 3)$

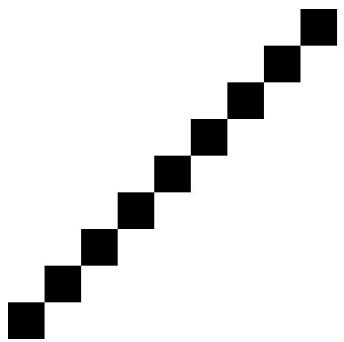
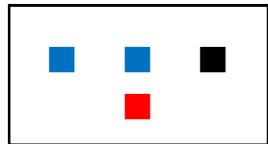
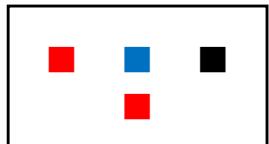


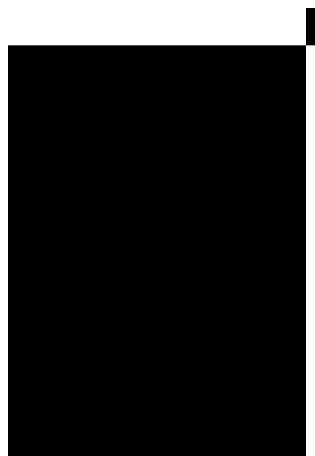


(3, 4, 1, 3)



(4, 4, 1, 3)

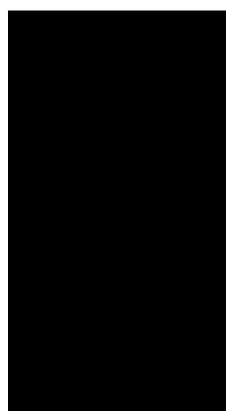
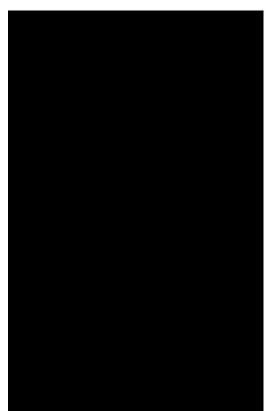
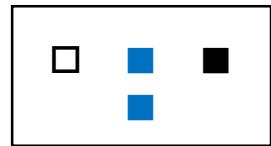
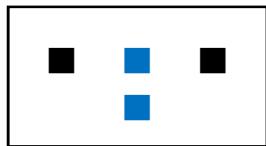




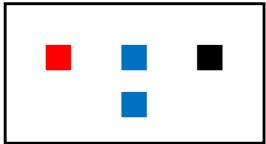
(1, 4, 1, 4)



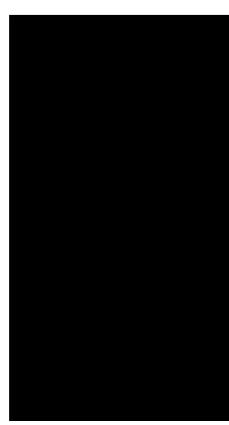
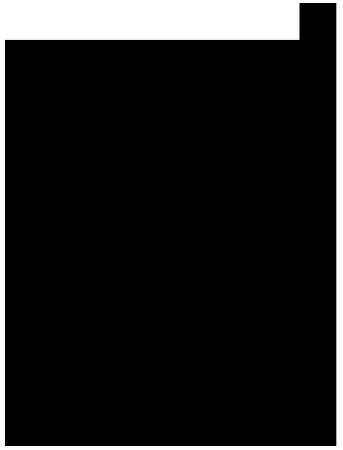
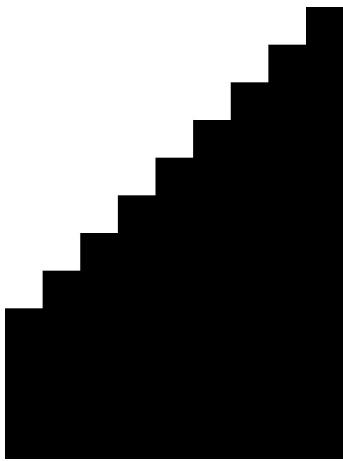
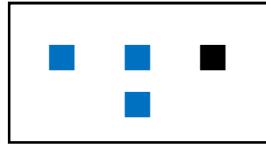
(2, 4, 1, 4)



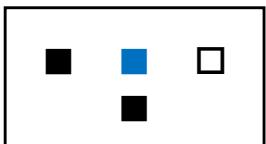
$(3, 4, 1, 4)$



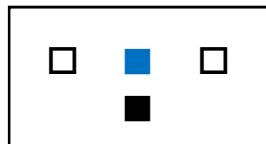
$(4, 4, 1, 4)$

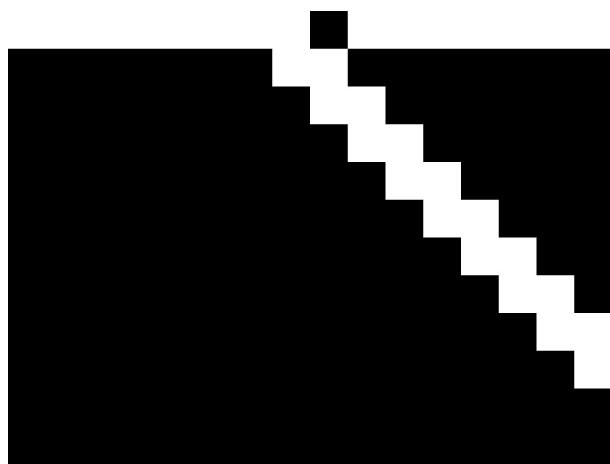
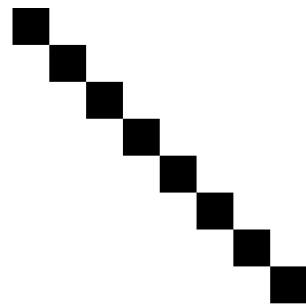


$(1, 4, 2, 1)$



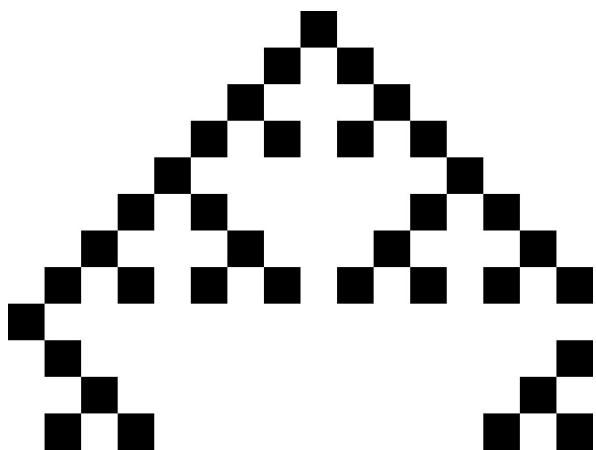
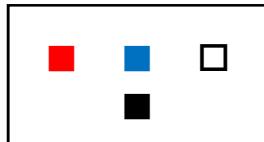
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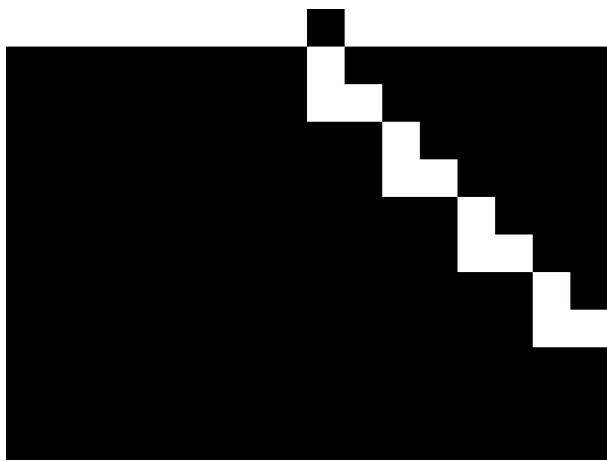




(3, 4, 2, 1)

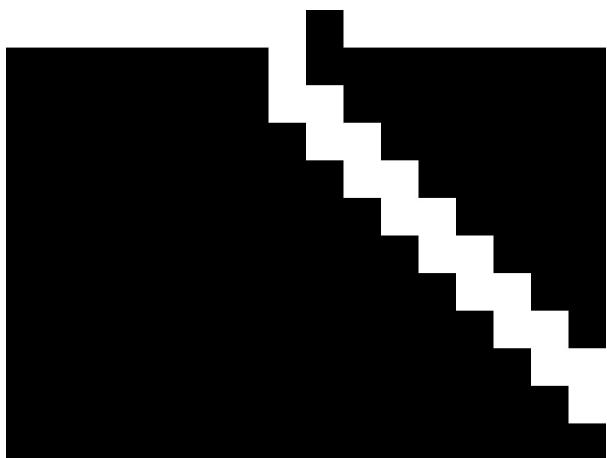
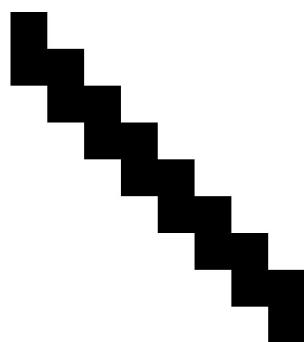
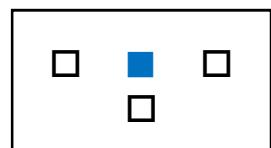
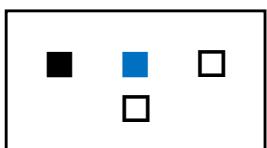
(4, 4, 2, 1)



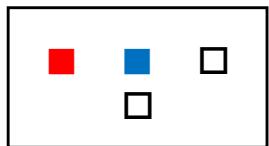


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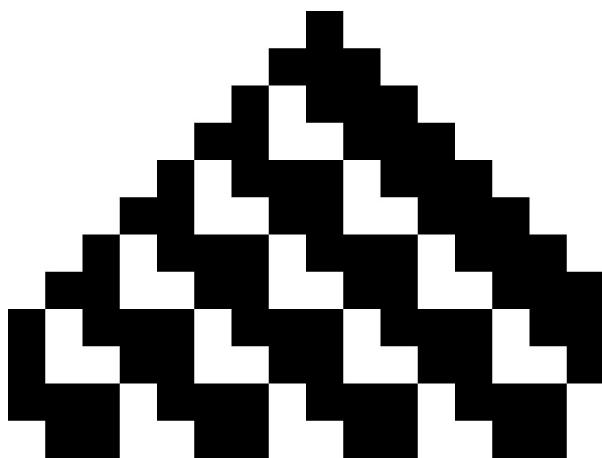
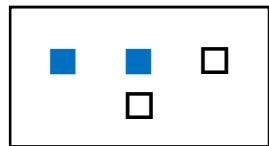
(2, 4, 2, 2)



$(3, 4, 2, 2)$



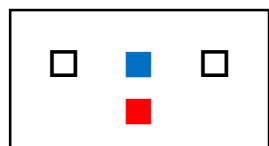
$(4, 4, 2, 2)$

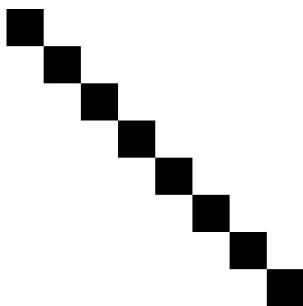


$(1, 4, 2, 3)$



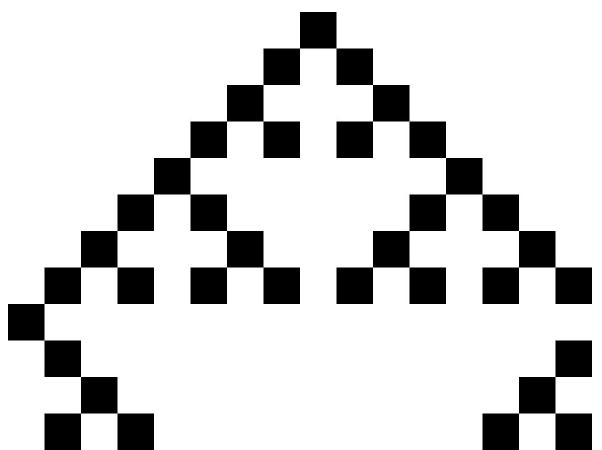
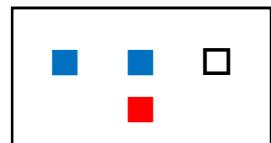
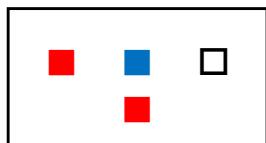
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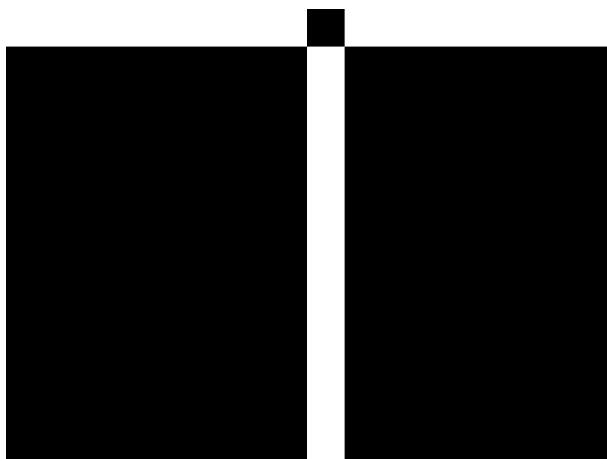




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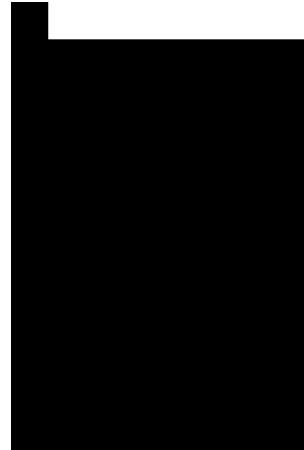
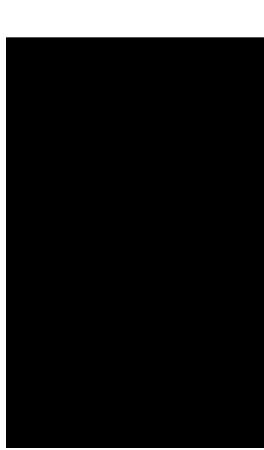
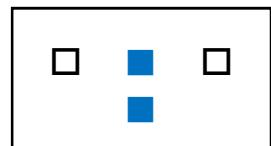
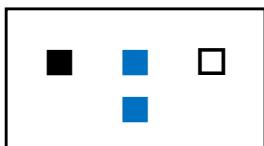
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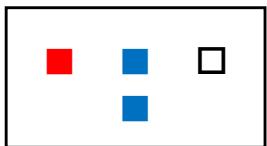


(1, 4, 2, 4)

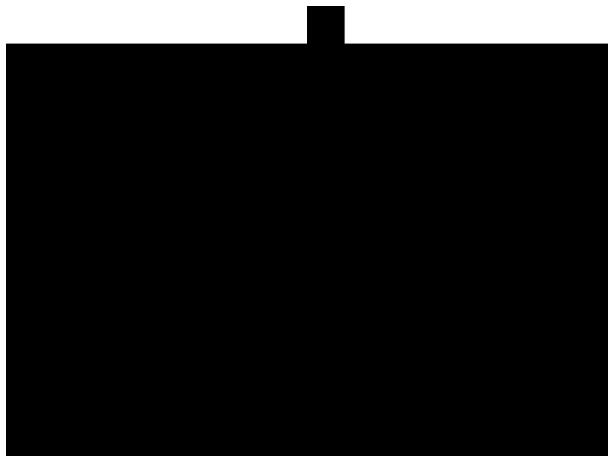
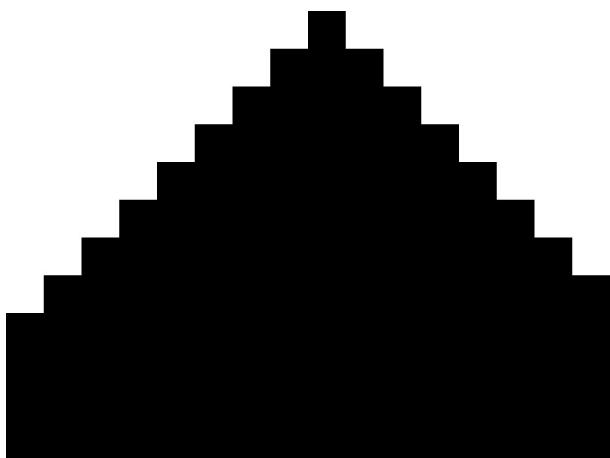
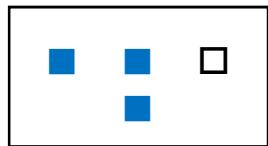
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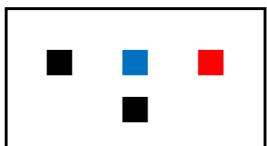
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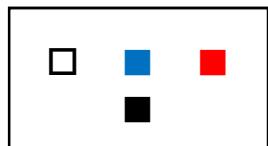
$(4, 4, 2, 4)$

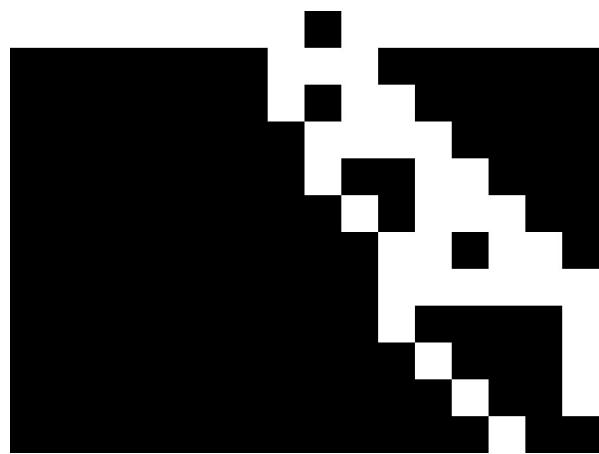


$(1, 4, 3, 1)$



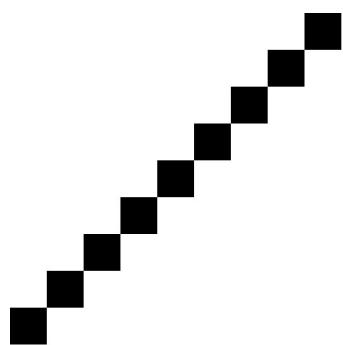
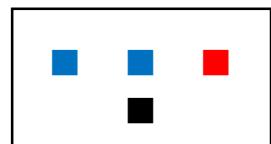
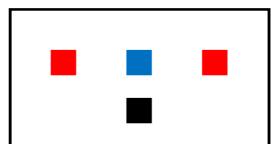
$(2, 4, 3, 1)$

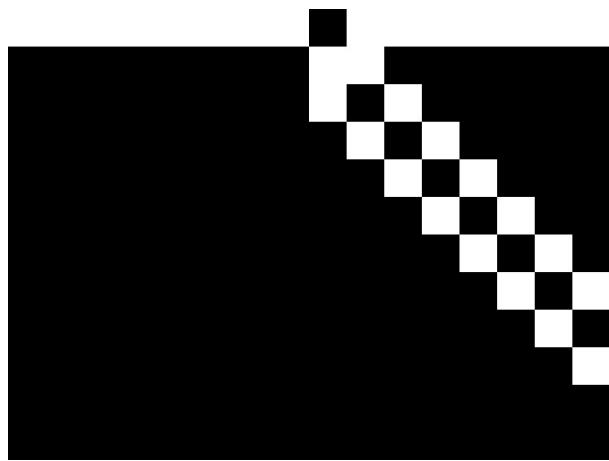




(3, 4, 3, 1)

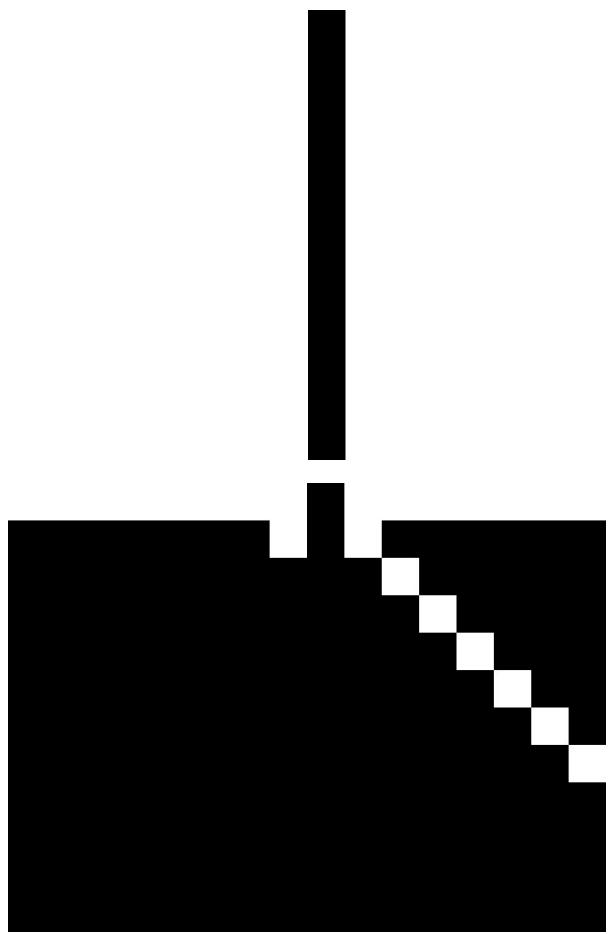
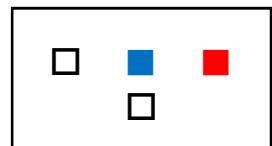
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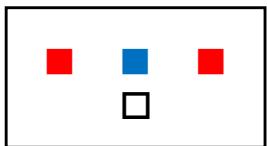


(1, 4, 3, 2)

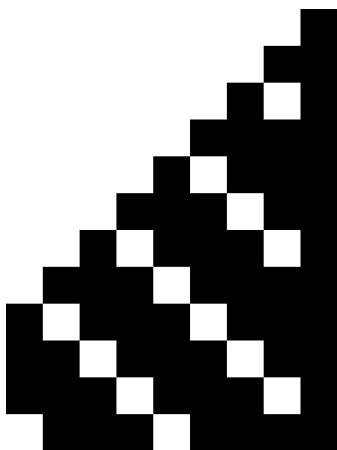
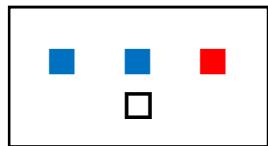
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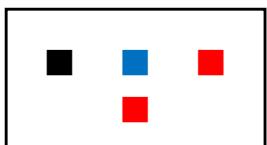
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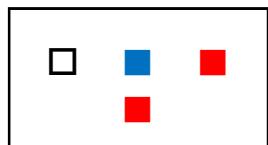
$(4, 4, 3, 2)$

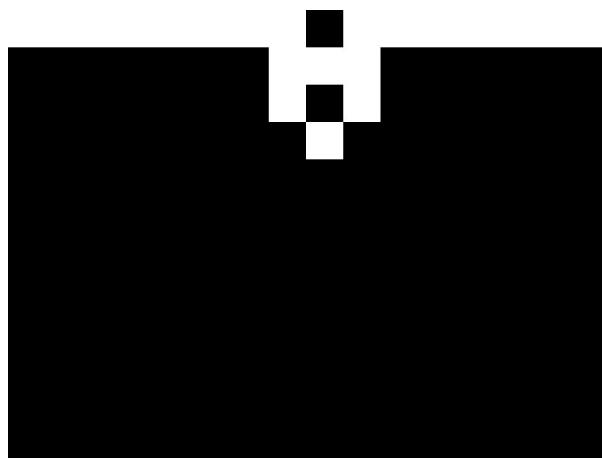


$(1, 4, 3, 3)$



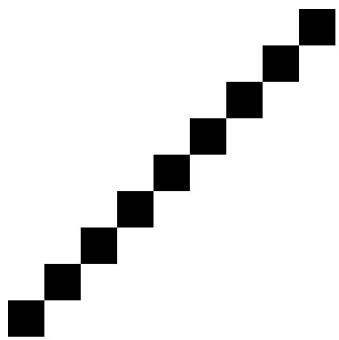
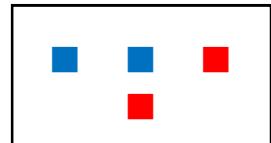
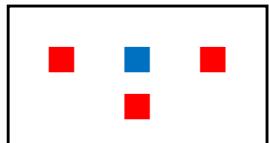
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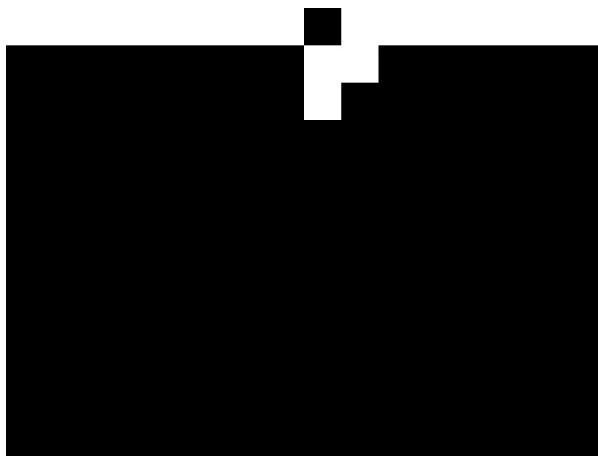




(3, 4, 3, 3)

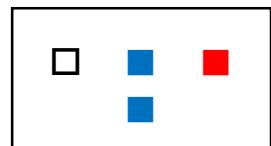
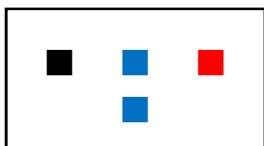
(4, 4, 3, 3)



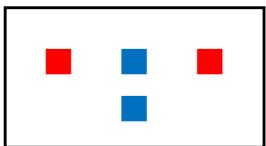


(1, 4, 3, 4)

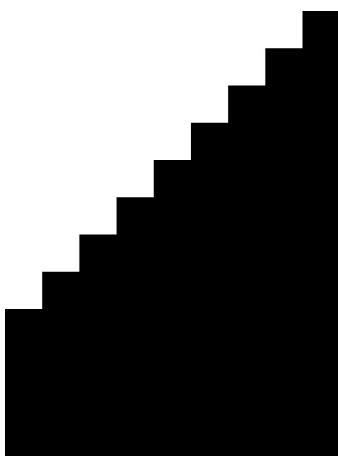
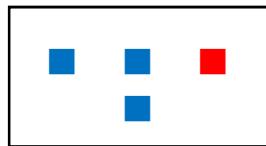
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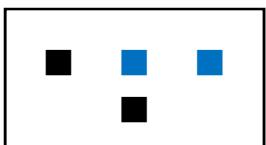
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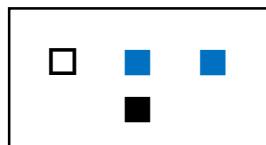
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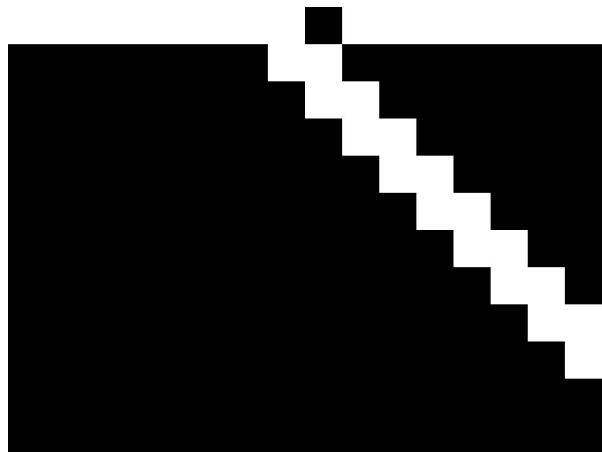
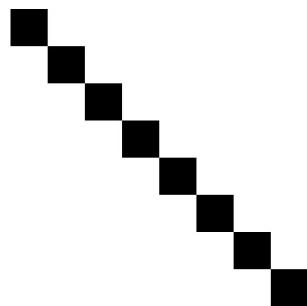


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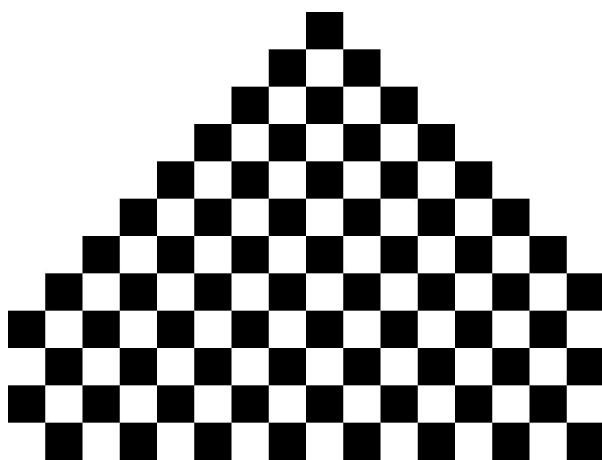
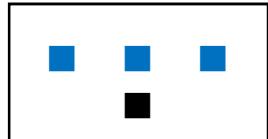
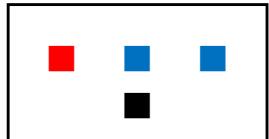
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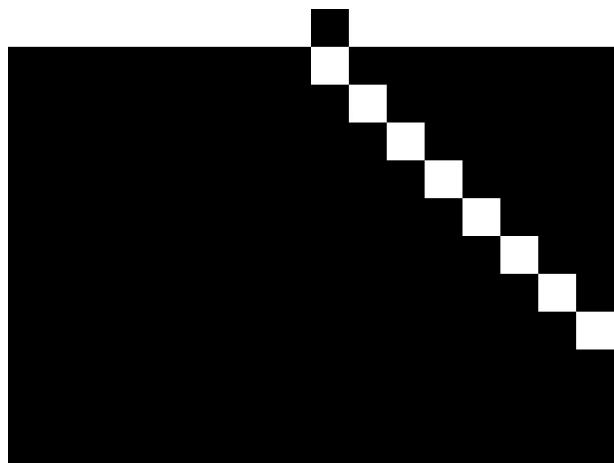




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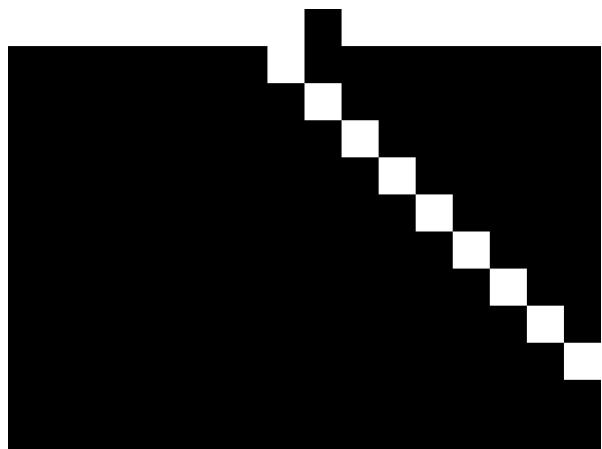
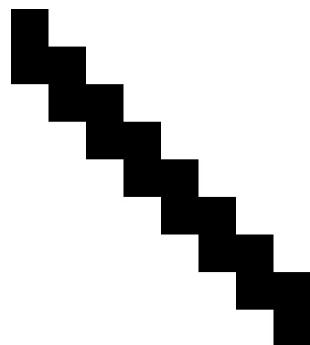
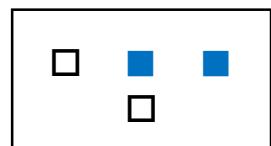
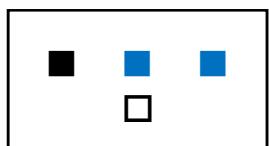
(4, 4, 4, 1)



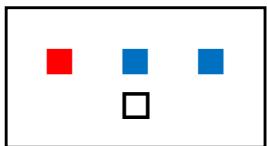


(1, 4, 4, 2)

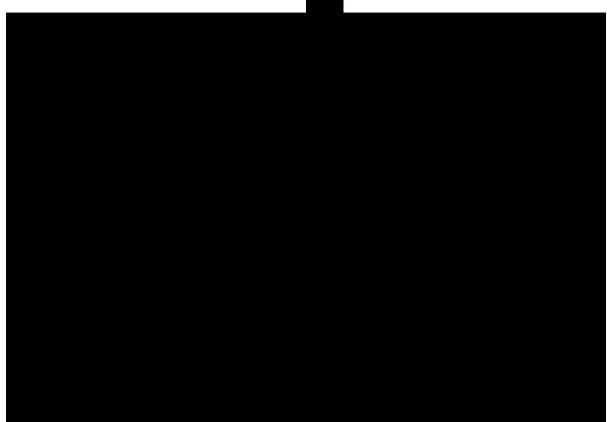
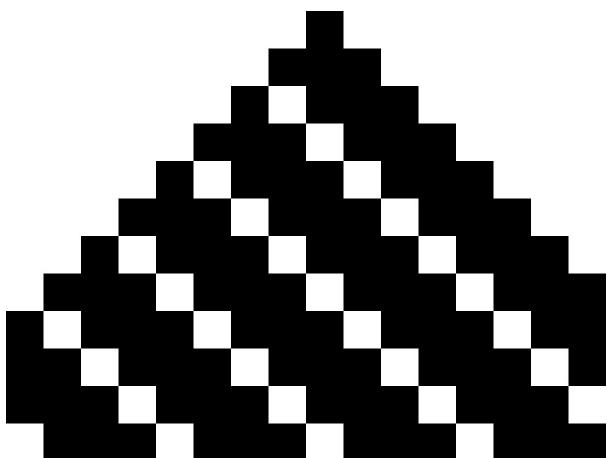
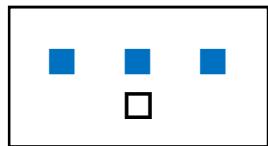
(2, 4, 4, 2)



$(3, 4, 4, 2)$



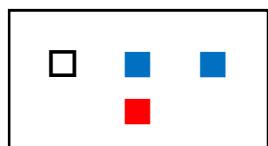
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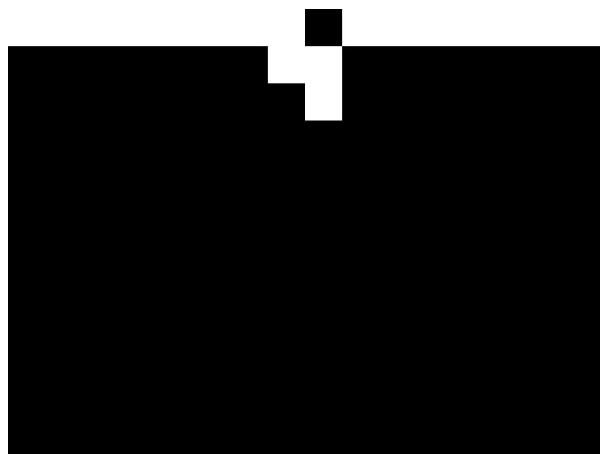
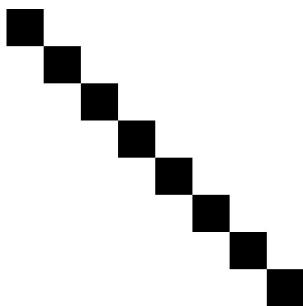


$(1, 4, 4, 3)$



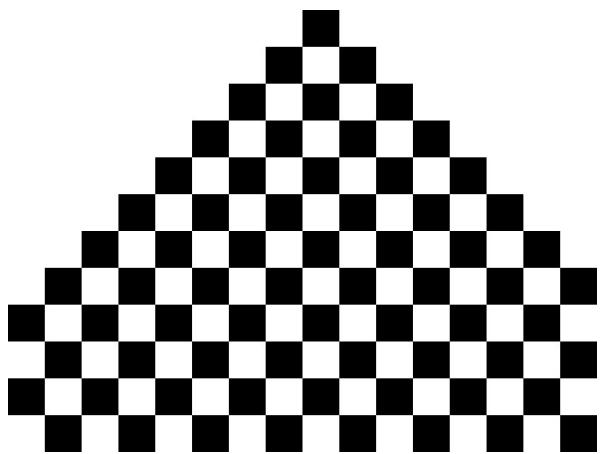
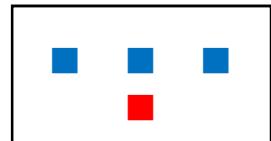
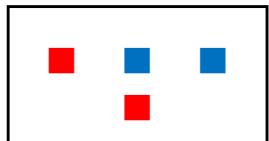
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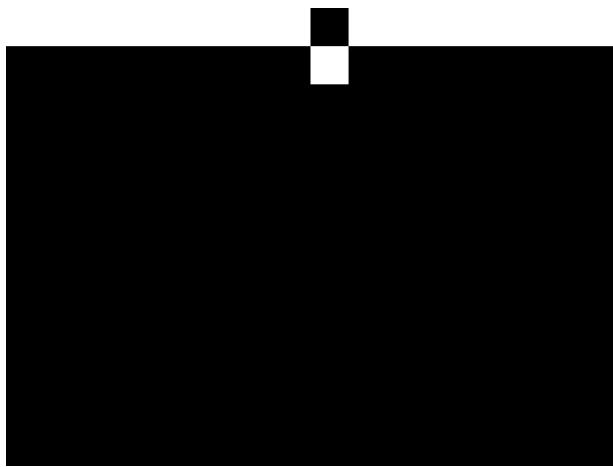




(3, 4, 4, 3)

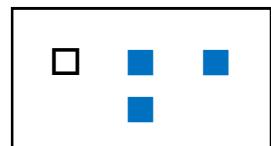
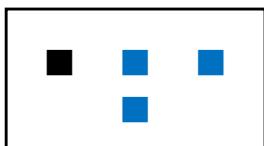
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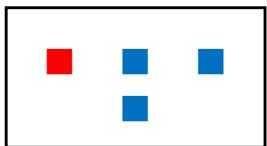


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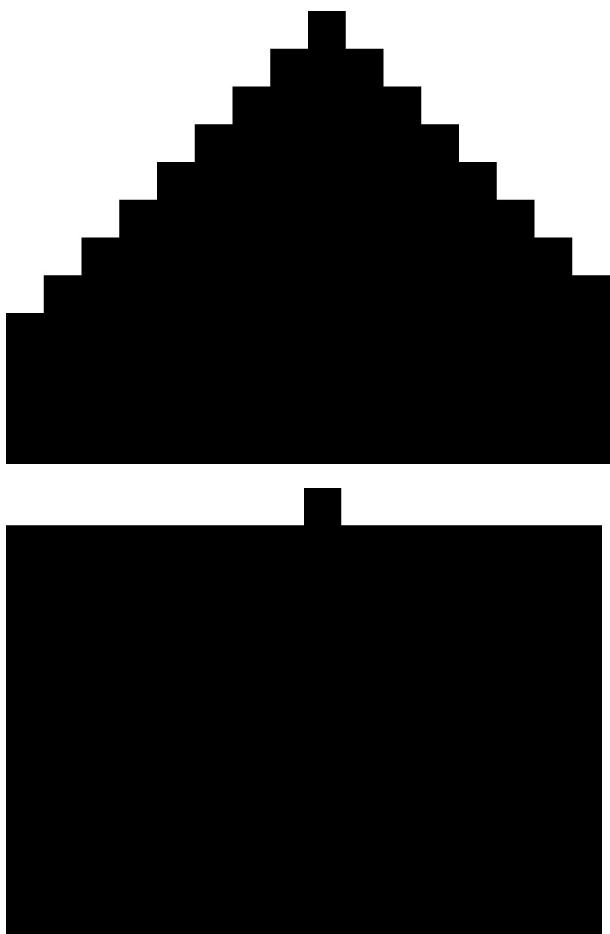
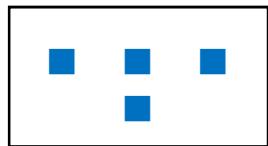
(2, 4, 4, 4)



(3, 4, 4, 4)



(4, 4, 4, 4)



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