



+0/1/60+

	a	b	c	d	e	f	g	h	i	j
A	x									
B		x								
C		x								
D			x							
E				x						
F					x					
G						x				
H							x			
I								x		
J									x	

(a) reshuffle matrix. Row, capital is question, column, lower case, is answer

	d	j	h	g	a	c	b	f	e	i
A					x					
B							x			
C						x				
D	x									
E									x	
F								x		
G				x						
H			x							
I					x					
J		x								

(b) Shuffling answers and rows alike

Table 1: Final, Shuffling questions and rows as pairs

	d	j	h	g	a	c	b	f	e	i
D	x									
C					x					
G			x							
J	x									
F						x				
A				x						
H		x								
B					x					
I							x			
E								x		

Design: assume at most 20 qa pairs per matrix. For each pair, a matrix row can be created. In the given original order, the matrix with correct choices ticked would be empty, except for the diagonal.

Shuffling the (anwser, row) pairs creates a new matrix and answer order, in which the ticks are in more or less random position, where the ticked column matches the question number in the original order.

Distribute questions and answers over the AMC allocated tokens, e.g. questions from 1 to 20, answers from 21 to 40, matrix rows from 41 to 60. This reuses the defined token registers.

First let us see if we grasp the randomisation.

**Question 1**

Which of the following cities lie in what country?

pre shuffle

- h Dubrovnik, H Croatia
- g Rome, G Italy
- f Dublin, F Ireland
- e Lisbon, E Portugal
- b Berlin, D Germany
- c London, C England
- b Paris, B France
- a Athens, A Greece

post shuffle

- f Dublin, G Italy
- b Paris, B France
- e Lisbon, H Croatia
- h Dubrovnik, E Portugal
- g Rome, D Germany
- b Berlin, A Greece
- c London, F Ireland
- a Athens, C England

a row:	0	A	B	C	D	E	F	G	H
1	.	.	.	.	.	C	.	.	.
2	.	C	.	.	.	.	.	.	.