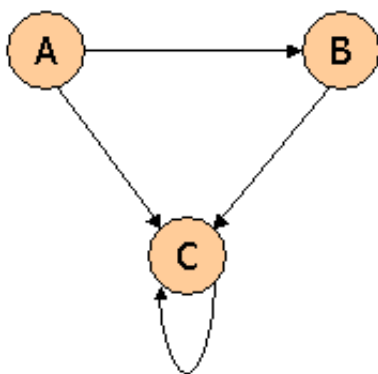


You submitted this quiz on **Wed 11 Feb 2015 5:34 PM CST**. You got a score of **4.00** out of **4.00**.

## Question 1

Consider three Web pages with the following links:

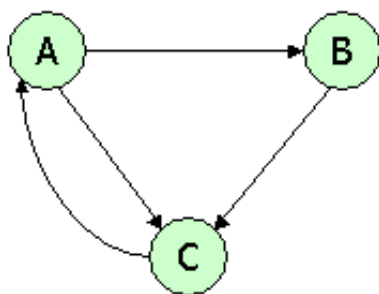


Suppose we compute PageRank with a  $\beta$  of 0.7, and we introduce the additional constraint that the sum of the PageRanks of the three pages must be 3, to handle the problem that otherwise any multiple of a solution will also be a solution. Compute the PageRanks  $a$ ,  $b$ , and  $c$  of the three pages A, B, and C, respectively. Then, identify from the list below, the true statement.

Your Answer	Score	Explanation
<input type="radio"/> $a + b = 1.025$		
<input checked="" type="radio"/> $a + c = 2.595$	✓ 1.00	
<input type="radio"/> $a + b = 0.655$		
<input type="radio"/> $b + c = 3.25$		
Total	1.00 / 1.00	

## Question 2

Consider three Web pages with the following links:

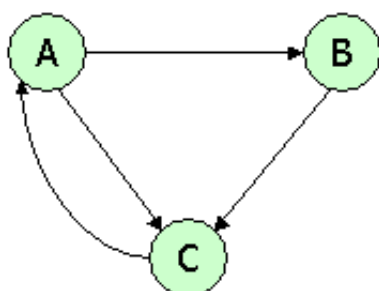


Suppose we compute PageRank with  $\beta=0.85$ . Write the equations for the PageRanks  $a$ ,  $b$ , and  $c$  of the three pages A, B, and C, respectively. Then, identify in the list below, one of the equations.

Your Answer	Score	Explanation
<input type="radio"/> $.85c = b + .575a$		
<input type="radio"/> $b = .475a + .05c$		
<input type="radio"/> $a = .9c + .05b$		
<input checked="" type="radio"/> $.95b = .475a + .05c$	✓ 1.00	
Total	1.00 / 1.00	

### Question 3

Consider three Web pages with the following links:



Assuming no "taxation," compute the PageRanks  $a$ ,  $b$ , and  $c$  of the three pages A, B, and C, using iteration, starting with the "0th" iteration where all three pages have rank  $a = b = c = 1$ . Compute as far as the 5th iteration, and also determine what the PageRanks are in the limit.

Then, identify the true statement from the list below.

Your Answer	Score	Explanation
<input type="radio"/> In the limit, $c = 4/3$		
<input checked="" type="radio"/> In the limit, $b = 3/5$	✓ 1.00	
<input type="radio"/> After iteration 5, $b = 1/2$		
<input type="radio"/> In the limit, $b = 5/8$		
Total	1.00 / 1.00	

## Question 4

Suppose our input data to a map-reduce operation consists of integer values (the keys are not important). The map function takes an integer  $i$  and produces the list of pairs  $(p,i)$  such that  $p$  is a prime divisor of  $i$ . For example,  $\text{map}(12) = [(2,12), (3,12)]$ .

The reduce function is addition. That is,  $\text{reduce}(p, [i_1, i_2, \dots, i_k])$  is  $(p, i_1 + i_2 + \dots + i_k)$ .

Compute the output, if the input is the set of integers 15, 21, 24, 30, 49. Then, identify, in the list below, one of the pairs in the output.

Your Answer	Score	Explanation
<input type="radio"/> (7,119)		
<input type="radio"/> (2,47)		
<input checked="" type="radio"/> (5,45)	✓ 1.00	
<input type="radio"/> (6,54)		
Total	1.00 / 1.00	