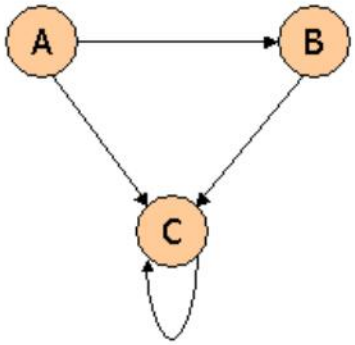
Feedback — Week 1 (Basic)

Help Center

You submitted this quiz on **Mon 9 Feb 2015 7:28 PM PST**. You got a score of **2.00** out of **4.00**. You can attempt again, if you'd like.

Question 1

Consider three Web pages with the following links:



Suppose we compute PageRank with a β 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
○ b + c = 3.25			
○ a + b = 0.55			
● a + c = 2.745	✖	0.00	Here is an outline of how the problem can be approached. First, let *a*, *b*, and *c* be variables representing the PageRanks of the nodes. Write assignment statements that express the new values of *a*, *b*, and *c* in

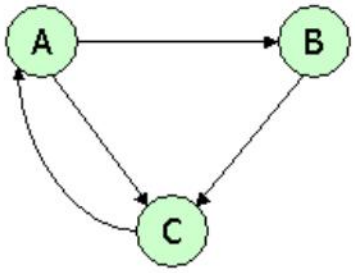
terms of their old values. Remember to divide the old value of a node equally between its successors and then multiply each share by β = 0.7. Finally, take the remaining (1-β) = 0.3 of each node's old value and distribute it equally among the three nodes.
In the limit, the assignments become equalities. You must solve the resulting equations, along with the equation a+b+c=3.

○ a + b = 0.705

Total	0.00 / 1.00

Question 2

Consider three Web pages with the following links:

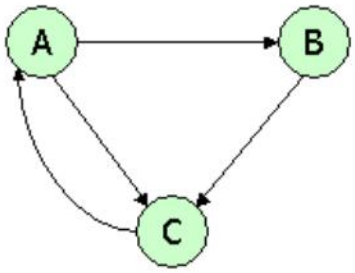


Suppose we compute PageRank with β=0.85. Write the equations for the PageRanks *a*, *b*, and *c* of the three pages A, B, and C, respectively. Then, identify in the list below, one of the equations.

Your Answer		Score	Explanation
◉ .95a = .9c + .05b	✔	1.00	
○ .85c = b + .575a			
○ b = .575a + .15c			
○ c = .9b + .475a			
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
In the limit, c = 9/7	✖	0.00	Hint: first set up the rules that give you the PageRank estimates a, b, and c for one iteration in terms of the PageRank estimates at the previous iteration. In the limit, these estimates are the same for each of the three nodes, so you may equate left and right sides of each rule. That allows you to solve for the ratios of a, b, and c. Then remember that their sum must be 3.
In the limit, a = 6/5			
After iteration 5, c = 7/4			
After iteration 4, a = 9/8			
Total		0.00 / 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, map(12) = [(2,12), (3,12)].

The reduce function is addition. That is, reduce(p, [i_1, i_2, ...,i_k]) is (p,i_1+i_2+...+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
(2,75)			
(6,54)			
(3,90)	✔	1.00	
(2,47)			
Total		1.00 / 1.00	