

Bus problems

stops	A	B	C	D	E	F
off	2	3	2			
on	1		2			
Start	5	4	7	etc.		

At stop A the bus arrives with 5 people on board, two people get off, one gets on, this means there are now 4 people on the bus.

1. Explore this image using different numbers, different givens, etc.
2. For example, supposed we do not know any of values for totals on the bus except for the starting value, or the finishing value: how could these be reconstructed?
3. What is the minimum amount of information needed to model the usage of one bus route?
4. Suppose two of the passengers are mathematicians (as often happens on my regular bus route in Oxford). One says to the other: 'there are three times as many people after stop D as there were before stop B'. The other replies: 'there were four times as many before stop D and there were after stop B'. What possible numbers could there be? How can this problem be changed to limit the number of answers further?
5. What different problems could be posed if we change the bus stop labels to numbers?
6. What if during the rush hour the average number boarding increases by 10% at each stop and the average number leaving decreases by 20%?