Given data																		
Saturation flow rate	1700	veh/hr																
Cycle length, C	60	sec																
Effective red, r	40	sec																
Effective green, g	20	sec																
Calculated data	**Cycle 1**			**Cycle 2**			**Cycle 3**											
Vehicle arrivals	15	veh		8	veh		4	veh										
Arrival rate	0.250	veh/sec		0.133	veh/sec		0.067	veh/sec										
Saturation flow rate	0.472	veh/sec		0.472	veh/sec		0.472	veh/sec										
Clearance rate	0.222	veh/sec		0.339	veh/sec		0.406	veh/sec										
Queue at beginning of red	0	veh		5.6	veh		4.1	veh										
Queue at end of red	10.0	veh		10.9	veh		6.8	veh										
Queue at end of green	5.6	veh		4.1	veh		0.0	veh										
Queue service time	45.0	sec		32.1	sec		16.7	sec										
Queue clears at end of green?	No			No			Yes											
QAP data	**Time**	**Queue**		**Time**	**Queue**		**Time**	**Queue**										
Beginning of red	0	0.0		60	5.6		120	4.1										
Beginning of green	40	10.0		100	10.9		160	6.8										
Time of queue clearance	60	5.6		120	4.1		177	0.0										
End of green	60	5.6		120	4.1		180	0.0										
Polygon dividers																		
	40	0																
	40	10																
	60	0																
	60	5.6																
	100	0																
	100	10.9																
	120	0																
	120	4.1																
	160	0																
	160	6.8																
Delay calculations (graphical method since D>C)																		
Area segment	**Base**	**Height**		**Area**														
1	40.0	10.00		200.0														
2	20	7.78		155.6														
3	40	8.22		328.9														
4	20	7.50		150.0														
5	40	5.44		217.8														
6	20	6.78		67.8														
Total delay				1120.0														
	Cycle 1			**Cycle 2**			**Cycle 3**			**Total**								
Area (total delay)	355.6			478.9			285.6			1120.0								
Vehicle arrivals	15			8			4			27.0								
Average delay	23.7			59.9			71.4			41.5