FIFO

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	7	**0**	**1**	**2**	**0**	**3**	**0**	**4**	**2**	**3**	**0**	**3**	**0**	**3**	**2**	**1**	**2**	**0**	**1**	**7**	**0**	**1**
frame 1	7	7	7	7	7	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2
frame 2		0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	4	4	7	7	7
frame 3			1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
frame 4				2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1
	*	*	*	*	hit	*	hit	*	hit	hit	*	hit	hit	hit	hit	*	*	hit	hit	*	hit	hit
Page hit	12																					
Page fault	10																					

LRU

	7	**0**	**1**	**2**	**0**	**3**	**0**	**4**	**2**	**3**	**0**	**3**	**0**	**3**	**2**	**1**	**2**	**0**	**1**	**7**	**0**	**1**
frame 1	7	7	7	7	7	3	3	3	3	3	3	3	3	3	3	3	3	3	3	7	7	7
frame 2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
frame 3			1	1	1	1	1	4	4	4	4	4	4	4	4	1	1	1	1	1	1	1
frame 4				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	*	*	*	*	hit	*	hit	*	hit	hit	hit	hit	hit	hit	hit	*	hit	hit	hit	*	hit	hit
Page hit	14																					
Page fault	8																					

Optimal

	7	**0**	**1**	**2**	**0**	**3**	**0**	**4**	**2**	**3**	**0**	**3**	**0**	**3**	**2**	**1**	**2**	**0**	**1**	**7**	**0**	**1**
frame 1	7	7	7	7	7	3	3	3	3	3	3	3	3	3	3	3	3	3	3	7	7	7
frame 2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
frame 3			1	1	1	1	1	4	4	4	4	4	4	4	4	1	1	1	1	1	1	1
frame 4				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	*	*	*	*	hit	*	hit	*	hit	hit	hit	hit	hit	hit	hit	*	hit	hit	hit	*	hit	hit
Page hit	14																					
Page fault	8																					

Consider the following page reference string: 7,0,1,2,0,3,0,4,2,3,0,3,0,3,2,1,2,0,1,7,0,1

How many page faults would occur for the following replacement algorithms, assuming four frames? Remember all frames are initially empty, so your first unique pages will all cost one fault each.

a) LRU replacement

b) FIFO replacement

c) Optimal replacement