In Class Scheduling Problem

The emergency room at a large hospital has the following hourly requirements for nurse staffing. To keep things simple, let’s assume at first that the requirements are the same every day of the week.

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| Time Period: | Midnight – 4AM | 4AM – 8 AM | 8AM - Noon | Noon – 4PM | 4PM – 8PM | 8PM - Midnight |
| Requirements: | 4 | 8 | 16 | 8 | 12 | 8 |

1. If each nurse can work 8 hours a day, how many nurses are required if split shifts are allowed? A split shift is one in which the nurse might work two different 4 hour periods, separated by one or more 4 hour periods off-duty.
2. How many nurses will be required to work a split shift?
3. If a union contract precludes split shifts and each nurse must work a full 8 hour shift consisting of two consecutive 4 hour periods, how many nurses will be required and how should they be scheduled? You should assume, since each day has the same requirements, that the schedule will “roll” so that nurses who start at 8PM will also be working Midnight to 4AM.

What are the decision variables?

What is the objective---in words and algebraically?

What are the constraints---in words and algebraically?