

- 17-11.** Alice's Alterations has eight jobs to be completed and only one sewing machine (and sewing machine operator). Given the processing times and due dates as shown here, prioritize the jobs by SPT, DDATE, and SLACK. Today is day 5.

Task	Processing Time (in days)	Due Date
A	5	10
B	8	15
C	6	15
D	3	20
E	10	25
F	14	40
G	7	45
H	3	50

Calculate mean flow time, mean tardiness, maximum tardiness, and number of jobs tardy for each sequence. Which sequencing rule would you recommend? Why?

- 17-12.** Jobs A, B, C, and D must be processed through the same machine center. Sequence the following jobs by (a) SPT and (b) SLACK. Calculate mean flow time, mean tardiness, and maximum tardiness. Which sequencing rule would you recommend? Why?

Job	Processing Time	Due Date
A	20	20
B	10	15
C	30	50
D	15	30

- 17-13.** Sequence the following jobs by (a) SPT, (b) DDATE, and (c) SLACK. Calculate mean flow time, mean tardiness, and maximum tardiness. Which sequencing rule would you recommend? Why?

Job	Processing Time	Due Date
A	5	8
B	3	5
C	9	18
D	6	7

- 17-14.** Claims received by Healthwise Insurance Company are entered into the database at one station, and sent to another station for review. The processing time (in minutes) required for each general type of claim is shown here. Currently, Bill Frazier has a backlog of 10 claims. In what order should he process the claims so that the entire batch is finished as soon as possible? How long will it take to completely process the 10 claims?

Classification	Processing Time	
	Date Entry	Review
1. Medicare I	8	6
2. Physician 24	15	9
3. Medicare II	6	5
4. Physician 4	5	10
5. HMO I	17	15

(Continued)

Classification	Processing Time	
	Date Entry	Review
6. Physician 17	9	10
7. Emergency II	5	3
8. HMO II	4	15
9. Physician 37	12	10
10. Emergency I	20	4

- 17-15.** Jobs processed through Percy's machine shop pass through milling first, and then turning. The current backlog of jobs and hours required at each machine follow.

Job	Milling	Turning
A	5	4
B	2	5
C	3	1
D	1	0
E	4	2

Sequence the jobs so that the entire set of jobs is completed as soon as possible. Make a Gantt chart to map out the schedule on each machine and determine the makespan for the set of jobs.

- 17-16.** The Blue Plate Special restaurant, famous for its slow-cooked stews and meats, serves one meal a day family style. Sous Chef Lisle marinates the meat, fish, and vegetables for the five different dishes on the menu, while Chef Graham handles the cooking. The time required for marinating and cooking can vary, depending on the complexity of the dish and the spiciness desired, as shown below. Assuming only one dish can be marinating and one dish cooking at a time, determine in what order the dishes should be fixed to minimize the total preparation time. When will the entire menu be completed?

Dish	Marinating	Cooking
Irish Stew	7	8
Barbeque Pork	3	6
Creamy Herb Roast	8	4
Smoked Turkey	6	5
Parrot Isle Salmon	3	2

- 17-17.** Sassy U makes fashion jeans out of a variety of denim materials that differ in thickness, stiffness, drape and weave. Customers receive a sampling of product in each type of material before final orders are placed. Each day, bolts of denim cloth received from suppliers wait their turn in the cutting department. The cutting sequence is developed from an algorithm called *Johnson's Rule* which examines the time required for *spreading* the cloth on a cutting table (plus marking the pattern) and the time required for *cutting* it into pattern pieces that will later be sewn together. These times can vary considerably due to number of pattern pieces, pattern placement (matching stripes, for example), cloth thickness, and whether the cutting is to be performed by hand (with an electric knife) or by a CNC textile-cutting machine.
- Given the time data below, determine the optimal sequence of denim cloth through the cutting room so that makespan is minimized.
  - Map out the spreading and cutting processes on a Gantt chart and calculate the makespan.
  - Using the sequence determined above, when will the stretch denim material leave the cutting room?