The LeanMan

Lean Factory Simulation Kits

Lean Principles

2-Event Participant Placemat Set

Learning to see the Waste

Calculations

Measure and Calculate the results:

	Total Cars Completed	Number Reworked	Number In WIP	Rate Cars/Minute	1st PC to FGI in SEC
Batch 'n Queue "A"	_____	_____	_____	(total # cars / sim run time) _____	(time in sec) _____
Lean "B"	_____	_____	_____	(total # cars / sim run time) _____	(time in sec) _____
	=B/A*100	=A/B*100	=A/B*100	=B/A*100	=A/B*100
Improvement	**%**	**%**	**%**	**%**	**%**

Timekeeper:

Exercise #A: Place the participant instruction placemats with the Batch ‘n Queue steps face up.
Call START and run the simulation for 10 minutes, call STOP. Record the time the 1st car reaches finished goods. Complete the metrics calculation form for each exercise.

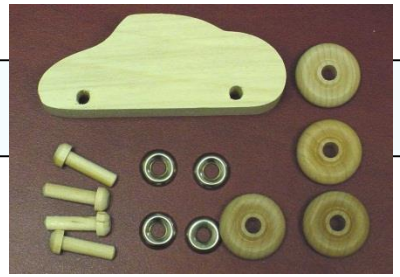
Exercise #B: Turn the participant placemats over so the Lean Flow instructions are face up.
Call START and run the lean flow simulation for 10 minutes, call STOP. Record the time the 1st car reaches finished goods. Complete the metrics calculation form for each exercise

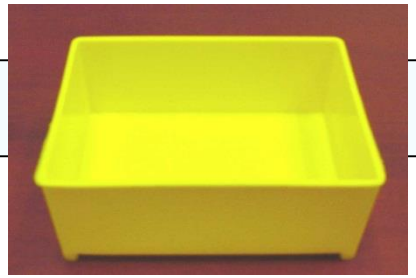
Batch ‘n Queue - Step 1

Stockroom:

1 Pick 3 kits, placing material for each car into a plastic bag, zip lock the bag and place into large yellow container.
2 Move the batch of 3 cars to the next operation
3 Repeat operation when the empty containers are returned from next op.

NOTE: randomly insert a painted wheel into <u>just one</u> of the kits in each batch of three until told to stop by the inspection person.





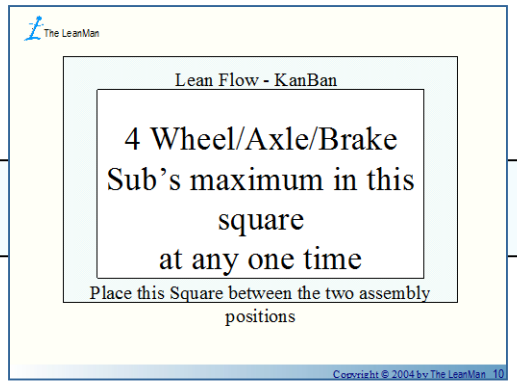
Lean Flow - Step 1

Wheel / Axle / Brake subassembly:

1 Pick material from the POU bins, inspecting for nonconforming material (discard and do not use and painted wheel)

2 Assemble wheel onto axle, curved side of wheel toward axle hub.

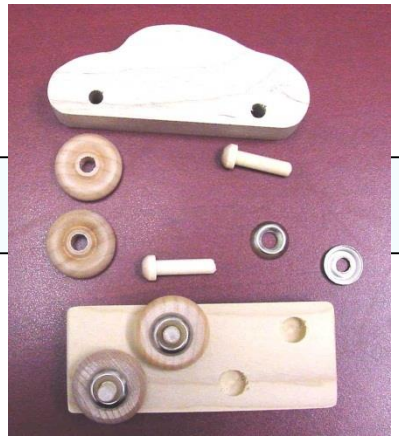
3 Slip disk brake onto axle, flat side to wheel's flat side. Place sub assembly into the KANBAN square. *No more then 4 at any one time*



Batch ‘n Queue - Step 2

Wheel / Axle / Brake subassembly:

1 Remove material from plastic container. *Return empty containers to previous op.*
2 Assemble wheel onto axle, curved side of wheel toward axle hub.
3 Slip disk brake onto axle, flat side to wheel’s flat side. Place sub assembly onto fixture by pressing the rounded hub into the fixtures recessed hole.
4 Place 4 subassemblies onto each fixture.
5 Pass entire batch to next operation when all three are complete.



Lean Flow - KanBan

4 Wheel/Axle/Brake Sub's maximum in this square at any one time

Place this Square between the two assembly positions

Batch ‘n Queue - Step 3

Car assembly:

1 Remove each wheel subassembly from holding fixture and attach to car body, use clockwise twist as you insert the axle peg. *Return empty holding fixture to previous op.*

2 Move the completed batch of 3 cars to the next operation <u>when all 3 are complete</u>.

Ergonomic Assembly Tool

Use of the tool is highly encouraged to prevent sore fingers over the duration of the simulation event.

Lean Flow - Step 2

Car assembly:

1 Pick the car body from the POU material and pick each wheel subassembly from the KanBan square as needed, inspecting for (and rejecting) any with a painted wheel.

2 Attach each wheel subassembly to the car body, use clockwise twist as you insert the axle peg, and inspect for freely rotating wheel. Adjust as required.

3 Move the car to the Finished Goods area when complete.

Ergonomic Assembly Tool

Use of the tool is highly encouraged to prevent sore fingers over the duration of the simulation event.

Batch ‘n Queue - Step 4

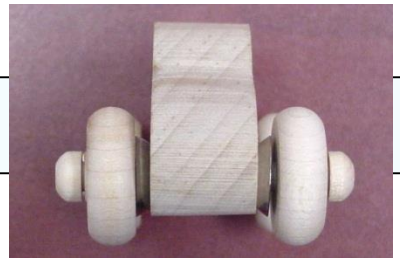
Inspection Criteria:

1 All 4 wheels rotate freely.

2 All 4 wheels unpainted.

Return any reject to previous operation for repair, ***and tell the stock keeper to stop using painted wheels***

3 If acceptable, pass completed cars in a batch of three pieces to Finished Goods



Lean Flow - Step 3

Finished Goods / Timekeeper

1 Start the exercise by starting the stopwatch and calling go.

2 Record the metrics in the spaces provided on the metric sheet for exercise “B”. Pay attention to the time when the first car reaches Finished Goods and record it.

3 When ten minutes are up - call stop. Complete the metrics by recording the number of cars in WIP, Quality Defects, etc.

	Total Cars Completed	Number Reworked	Number In WIP	Rate Cars/Minute	1st PC to FGI in SEC
Batch 'n Queue "A"	_____	_____	_____	(total # cars / sim run time) _____	(time in sec) _____
Lean "B"	_____	_____	_____	(total # cars / sim run time) _____	(time in sec) _____
	=B/A*100	=A/B*100	=A/B*100	=B/A*100	=A/B*100
Improvement	%	%	%	%	%

Batch ‘n Queue - Step 5

Finished Goods / Timekeeper

1 Start the exercise by starting the stopwatch and calling go.
2 Record the metrics in the spaces provided on the metric sheet for exercise “A”. Pay attention to the time when the first set of cars reaches Finished Goods and record the time.
3 When ten minutes are up - call stop. Complete the metrics by recording the number of cars in WIP, Quality Defects, etc.

	Total Cars Completed	Number Reworked	Number In WIP	Rate Cars/Minute	1st PC to FGI in SEC
Batch 'n Queue "A"	_____	_____	_____	(total # cars / sim run time) _____	(time in sec) _____
Lean "B"	_____	_____	_____	(total # cars / sim run time) _____	(time in sec) _____
	=B/A*100	=A/B*100	=A/B*100	=B/A*100	=A/B*100
Improvement	%	%	%	%	%

Lean Flow

Finished Goods