A03 – Individual activity

1) In a given continuous production flow of 2-step process, workstation B assembles parts which has its components produced at station A. The demand, properly stabilized, is 5 units/minute. Determine the number of Kanbans for this component between these two workstations, knowing that there is no safety stock and that the parts are transported in containers, with a capacity for 150 units. The times, in minutes, to determine the production cycle, are given below:

Process	Time (min)	
	Workstation A	Workstation B
Setup	6	6
Unitary Production Cycle Time	0.2	0.6
Motion	10	7
Waiting	10	20

Solution:

Lead time = Order delivered – order received

Cycle time (is shorter) = time interval between two batches/produced units

Takt time = customer- demand

Takt time = number of working hours/demand quantity

PT – process time

First it is needed to calculate the process cycle time given by the formula

$CT = [PT_A + PT_B + C.(OT_A + OT_B) + (WT_A + WT_B) + (MT_A + MT_B)$,
Where:
$PT_A = 6min$
$PT_B = 6min$
$OT_A = 0.2$ min
$OT_B = 0.6$ min
$WT_A = 10min$
$WT_B = 20min$
$MT_A = 10min$
$MT_B = 7min$
C = 150 units

Series process time = Sum (operation time + process time + waste time)

Sum of set up time (PTA + PTB) + (OTA + OTB) + (MA + MB+ WA + WB)

We need to unify the process in one...

CT = (6+6) + C.PCTa + C. PCTB

CT = (6+6) + 150.(0,2 + 0,6) + (10 + 20) + (10 + 7)   = 12 + 120 + 30 + 17 = 179min

The number of Kanbans is given by the formula

$N_K = (D.CT) / C$
$N_K = (5$ units/min .179min) / 150 units = 5.97, ie, 6 Kanbans