Overview and Concepts of JIT and the Organization

[**Kanbans**](http://www.devryu.net/ec/crs/contentItem.learn?CourseID=4536700&47=4214017&dt=2%2F2%2F2011+12%3A15%3A20+AM&UnitNumber=5&COID=73&UPK=22582938&UDPK=119663612&UT=1#1) **|** [**Kanban Calculation**](http://www.devryu.net/ec/crs/contentItem.learn?CourseID=4536700&47=4214017&dt=2%2F2%2F2011+12%3A15%3A20+AM&UnitNumber=5&COID=73&UPK=22582938&UDPK=119663612&UT=1#2) **|** [**References**](http://www.devryu.net/ec/crs/contentItem.learn?CourseID=4536700&47=4214017&dt=2%2F2%2F2011+12%3A15%3A20+AM&UnitNumber=5&COID=73&UPK=22582938&UDPK=119663612&UT=1#3)

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| **Kanbans** |  |

Kanbans are an integral part of any JIT program. In general, kanban can probably be translated as a visual record. A kanban is a part of a pull system. The primary purpose of a kanban system is to help synchronize the movement of materials within a company from one point to the next point in the manufacturing process. Kanbans help to keep inventories at each workstation at the lowest levels possible. In a simple pull system, when the last item in a kanban container is used, the container is returned to the previous workstation, and the process of refilling that container begins again. No part in a kanban system or no container in a kanban system can be moved to the workstation until a visual message is sent to the holding area for those parts or components, indicating that the next kanban container is needed. The use of kanbans greatly reduces the amount of WIP in a traditional manufacturing process. We need to remember that kanban containers are only that—containers of parts or components that will be needed at some point in the process.

The term **card** set is used to represent a full kanban container. When the kanban container contents drop to a predetermined number of items remaining, a visual signal is sent to release the next kanban container.

In our problem just below, we will be determining the number of card sets that we need to have to support an 8-hour work shift. Notice that we are not trying to figure out the number of parts in our kanban container. We already know that number. We are looking to see how many card sets that we need to generate to support that 8-hour shift.

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| **Kanban Calculation** |  |

**Problem:** Answer the following question in the problem by typing your response in the blank field, then click on the link to view the answer. The solution to the problem is found directly below the problem box.

**Solution:**

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| 1. The demand in the problem is presented in daily usage, but lead-time is hours. These need to be in the same units of measure before we can use them in any mathematical calculation. So the first thing that we need to do is determine the number parts that will be used in 1 hour. Using an 8-hour day, the hourly usage is (300/8), or 37.5 parts per hour.  2. Now, using the following kanban formula, the values are substituted into the equation and solved.   |  | | --- | | Demand Rate X Lead Time X [1+Policy Variable (i.e., Safety Stock)]/Container Size |     Or in the formula:   |  | | --- | | Y=[DL(1+alpha)]/A  Y = number of kanban card sets  D = demand per unit of time  L = lead time  A = container capacity  alpha = policy variable (safety stock) |   Substitute the values into the equation:   |  | | --- | | 37.5 X 4 X [1+0.05 /35  = (150)(1.05)/35  = 157.5/35  = 4.5 |   Note! icon Round up to the next whole number no matter how small the remainder might be.  Since we can't have part of a card, we round the answer up to the next whole number. The card is our visual indicator to release the next kanban container. |