Transportation Problem in Excel
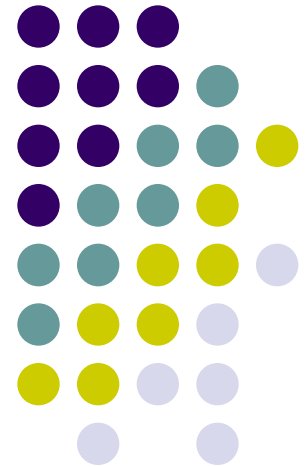
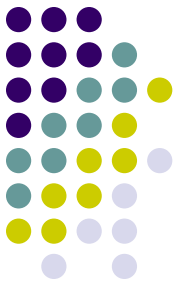Liz Livingstone

APMA 1210

Prof. Dobrushkin

Fall 2009
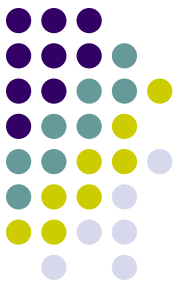
The Problem

- P&T Shipping problem
- Minimize cost subject to constraints

| cannnery	Warehouse (shipping cost per truckload)				OUTPUT
	1	2	3	4	OUTPUT
1	464	513	654	867	75
2	352	416	690	791	125
3	995	682	388	685	100
allocation	80	65	70	85	

Three questions

- What are the decisions to be made?
  - Number of truckloads from each cannery to each warehouse
- What are the constraints on these decisions?
  - Total amount shipped from each cannery must be equal to its output (supply)
  - The total amount received by each warehouse must equal its allocation (demand)
- What is the overall measure of performance for these decisions?
 - Minimized shipping costs
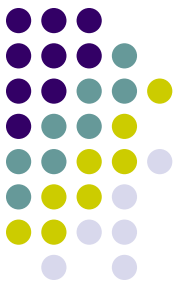
The Problem

- Production scheduling data for Northern Airplane Co
- Minimize cost subject to constraints

	Cost per unit distributed					
	Destination: 1	2	3	4	5	supply
Source : 1	1.08	1.095	1.11	1.125	0	25
2	100000	1.11	1.125	1.14	0	35
3	100000	100000	1.1	1.115	0	30
4	100000	100000	100000	1.13	0	10
demand	10	15	25	20	30	
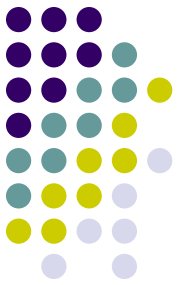
Three questions

- What are the decisions to be made?
  - Number of engines produced in month i for installation is month j
- What are the constraints on these decisions?
  - Number engines produced (supply)
  - Number of engines installed (demand)
- What is the overall measure of performance for these decisions?
  - Minimized cost
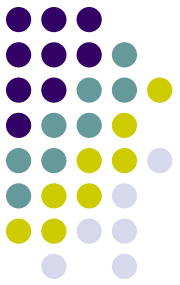
Excel

- Identify the decision variables
- Identify the constraints
- Program the objective function

- Input into the solver to get optimal solution
  - Depending on the problem, the constraints may be equalities or inequalities