

L1 (By Peter Lohmander 2009-08-31)

Ex1:

model:

sets:

```
resource/1..2/: cap;
product/1..2/: x;
resprod(resource, product):a;
endsets
```

```
[eq_1] a(1,1)*x(1) + a(1,2)*x(2) = cap(1);
```

```
[eq_2] a(2,1)*x(1) + a(2,2)*x(2) = cap(2);
```

data:

```
cap = 10 10;
```

```
a = 1 2
    2 1;
```

enddata

end

```
Feasible solution found.
Infeasibilities:
Total solver iterations:
```

```
0.000000
0
```

Variable	Value
CAP(1)	10.00000
CAP(2)	10.00000
X(1)	3.333333
X(2)	3.333333
A(1, 1)	1.000000
A(1, 2)	2.000000
A(2, 1)	2.000000
A(2, 2)	1.000000

Row	Slack or Surplus
EQ_1	0.000000
EQ_2	0.000000

Ex2:

model:

sets:

```
resource/1..2/: cap;
product/1..2/: x;
resprod(resource, product):a;
endsets
```

```
[eq_1] a(1,1)*x(1) + a(1,2)*x(2) = cap(1);
```

```
[eq_2] a(2,1)*x(1) + a(2,2)*x(2) = cap(2);
```

data:

```
cap = @OLE('ex2.XLS');
```

```
a = 1  2
    2  1;
```

```
@OLE('ex2.XLS') = x;
```

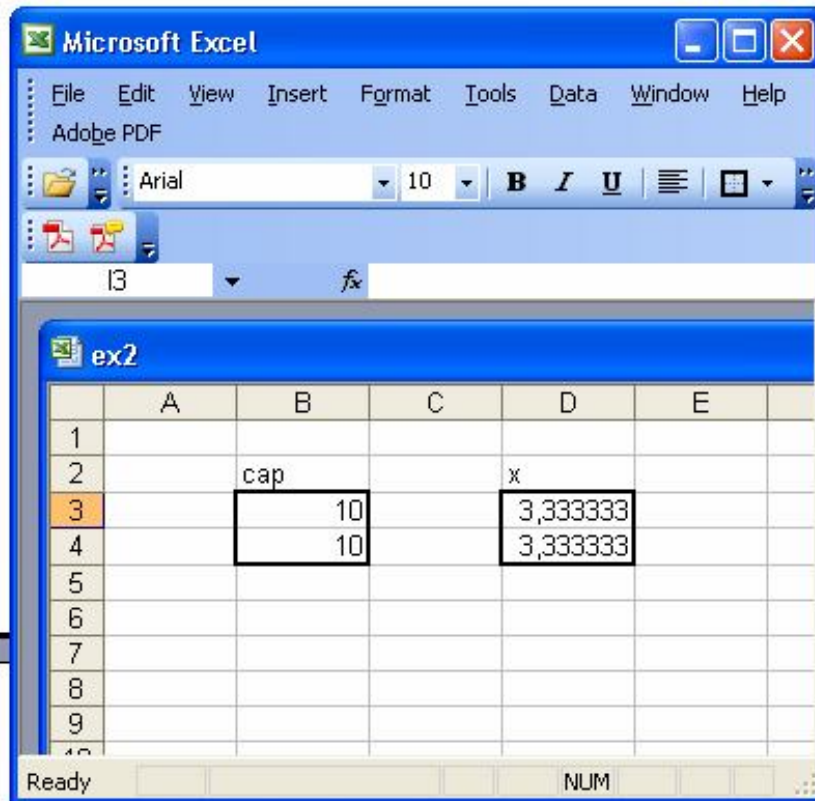
enddata

end

The screenshot shows a Microsoft Excel window with the following data in the spreadsheet:

	A	B	C	D	E
1					
2		cap		x	
3		10			
4		10			
5					
6					
7					
8					
9					

The status bar at the bottom of the Excel window displays: Ready, Sum=20, NUM.



Feasible solution found.
 Infeasibilities:
 Total solver iterations:

0.000000
 0

Export Summary Report

 Transfer Method: OLE BASED
 Workbook: ex2.XLS
 Ranges Specified: 1
 X
 Ranges Found: 1
 Range Size Mismatches: 0
 Values Transferred: 2

Variable	Value
CAP(1)	10.00000
CAP(2)	10.00000
X(1)	3.333333
X(2)	3.333333
A(1, 1)	1.000000
A(1, 2)	2.000000
A(2, 1)	2.000000
A(2, 2)	1.000000
Row	Slack or Surplus
EQ_1	0.000000
EQ_2	0.000000

Ex3:

```
model:
```

```
sets:
```

```
resource/1..2/: cap;  
product/1..2/: x;  
resprod(resource, product):a;  
endsets
```

```
[eq_1] a(1,1)*x(1) + a(1,2)*x(2) = cap(1);
```

```
[eq_2] a(2,1)*x(1) + a(2,2)*x(2) = cap(2);
```

```
data:
```

```
cap = 10 1;
```

```
a = 1 2  
    2 1;
```

```
enddata
```

```
end
```

```
No feasible solution found.  
Infeasibilities:
```

```
4.000000
```

Ex 4:

```
model:
```

```
sets:
```

```
resource/1..2/: cap;
product/1..2/: x;
resprod(resource, product):a;
endsets
```

```
[eq_1] a(1,1)*x(1) + a(1,2)*x(2) = cap(1);
```

```
[eq_2] a(2,1)*x(1) + a(2,2)*x(2) = cap(2);
```

```
@free(x(1));
```

```
@free(x(2));
```

```
data:
```

```
cap = 10 1;
```

```
a = 1 2
    2 1;
```

```
enddata
```

```
end
```

```
Feasible solution found.
```

```
Infeasibilities: 0.000000
```

```
Total solver iterations: 0
```

Variable	Value
CAP(1)	10.00000
CAP(2)	1.000000
X(1)	-2.666667
X(2)	6.333333
A(1, 1)	1.000000
A(1, 2)	2.000000
A(2, 1)	2.000000
A(2, 2)	1.000000
Row	Slack or Surplus
EQ_1	0.000000
EQ_2	0.000000

Ex 5:

```
model:
```

```
sets:
```

```
resource/1..2/: cap;
product/1..2/: x;
resprod(resource, product):a;
endsets
```

```
[eq_1] a(1,1)*x(1) + a(1,2)*x(2) = cap(1);
```

```
[eq_2] a(2,1)*x(1) + a(2,2)*x(2) = cap(2);
```

```
@FOR( product(j) : @free(x(j)) );
```

```
data:
```

```
cap = 10 1;
```

```
a = 1 2
    2 1;
```

```
enddata
```

```
end
```

```
Feasible solution found.
```

```
  Infeasibilities:                0.000000
```

```
  Total solver iterations:        0
```

Variable	Value
CAP(1)	10.00000
CAP(2)	1.000000
X(1)	-2.666667
X(2)	6.333333
A(1, 1)	1.000000
A(1, 2)	2.000000
A(2, 1)	2.000000
A(2, 2)	1.000000

Row	Slack or Surplus
EQ_1	0.000000
EQ_2	0.000000

Ex 6:

```

model:

sets:

resource/1..2/: cap;
product/1..2/: x;
resprod(resource, product):a;
endsets

@for( resource(i) : [equation] @sum( product(j) : a(i,j)*x(j)) = cap(i));

@FOR( product(j) : @free(x(j)) );

data:

cap = 10  1;

a = 1  2
    2  1;

enddata

end

```

```

Feasible solution found.
Infeasibilities:                0.000000
Total solver iterations:        0

```

Variable	Value
CAP(1)	10.00000
CAP(2)	1.000000
X(1)	-2.666667
X(2)	6.333333
A(1, 1)	1.000000
A(1, 2)	2.000000
A(2, 1)	2.000000
A(2, 2)	1.000000
Row	Slack or Surplus
EQUATION(1)	0.000000
EQUATION(2)	0.000000

Ex 7:

sets:

```
resource/1..2/: cap;  
product/1..2/: x;  
resprod(resource, product):a;  
endsets
```

```
@for( resource(i) : [equation] @sum( product(j) : a(i,j)*x(j)) = cap(i));
```

```
@FOR( product(j) : @free(x(j)) );
```

data:

```
cap = 10 1;
```

```
a = 4 2  
    2 1;
```

```
enddata
```

```
end
```

No feasible solution found.
Infeasibilities:

4.000000

Ex 8:

```

model:
sets:
product/1..2/: x;
endsets
[first] 10*x(1) + 1*x(2) = 14;
[second] x(1)*x(1) = 1.2;
@free(x(1));
end

```

Feasible solution found.

Infeasibilities:	0.7754610E-09
Extended solver steps:	5
Total solver iterations:	4

Variable	Value
X(1)	1.095445
X(2)	3.045549

Row	Slack or Surplus
FIRST	0.000000
SECOND	0.000000

Ex 9:

```

model:
sets:
product/1..2/: x;
endsets

[first] 10*x(1) + 1*x(2) = 14;

[second] x(1)*x(1) = 1.2;

@free(x(1));
@free(x(2));

[const_1] x(1) <= 0.5;

end

```

Feasible solution found.

Infeasibilities:	0.2220446E-15
Extended solver steps:	5
Total solver iterations:	12

Variable	Value
X(1)	-1.095445
X(2)	24.95445

Row	Slack or Surplus
FIRST	0.000000
SECOND	0.000000
CONST_1	1.595445

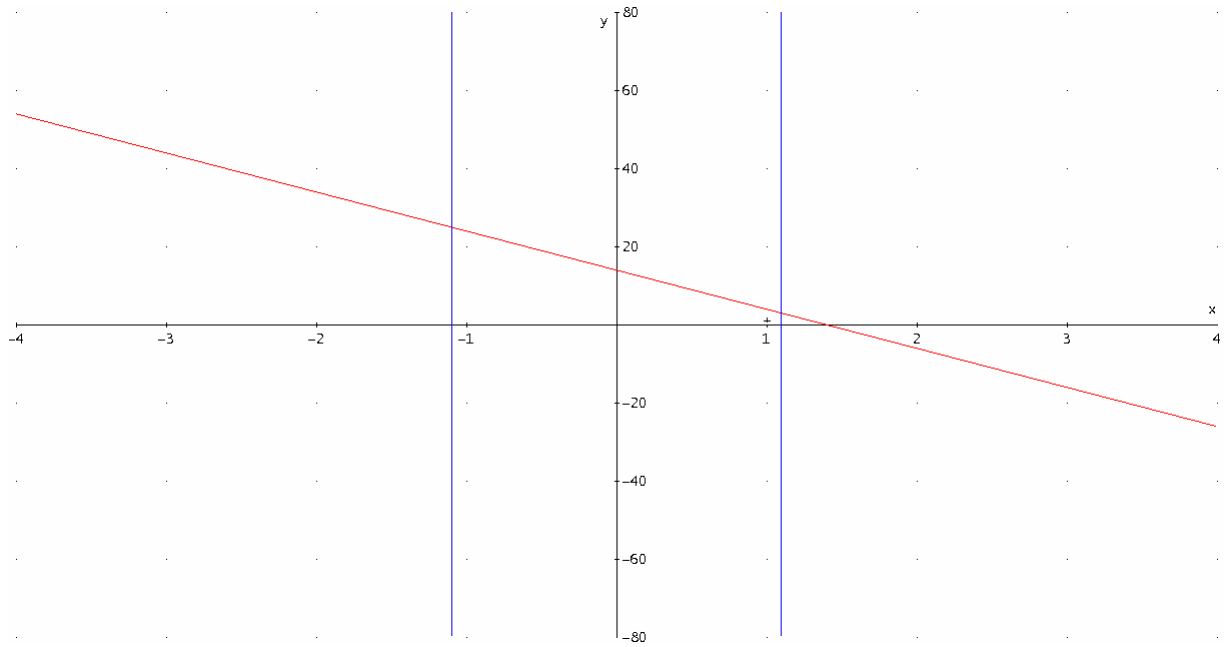


Figure 1.
Illustration to Ex 8. and Ex 9.