The Feed 'N Ship Ranch fattens cattle for local farmers and ships them to meat markets. The owners of the ranch seek to determine the amounts of cattle feed to buy so that minimum nutritional standards are satisfied, and at the same time, total feed costs are minimized.
The feed mix used can be made up of the three feed stocks that contain the following ingredients (in ounces) per pound of feed. *(16 ounces = 1 pound.)*

Ingredient	Stock X	Stock Y	Stock Z
A	3	2	4
B	2	3	1
C	1	0	2
D	6	8	4

The cost per pound of stocks X, Y, and Z are $**2**, $**4**, and $**2.50**, respectively. The minimum requirements per cow per month is

- **4** pounds (= **64** ounces) of ingredient A,
- **5** pounds (=**80** ounces) of ingredient B,
- **1** pound (=**16** ounces) of ingredient C, and
- **8** pounds (=**128** ounces) of ingredient D.

The ranch faces one additional restriction: it can only obtain **500** pounds of stock Z per month from the feed supplier regardless of its need. Because there are usually **100** cows at the Feed 'N Ship Ranch at any given time, this means that no more than **5** pounds of stock Z can be counted on for use in the feed of each cow per month.

Define variables

X = number of pounds of stock X per cow per month

```
min= 2*X + 4*Y + 2.5*Z;
     3*X + 2*Y + 4*Z >= 64;
     2*X + 3*Y + Z >= 80;
     X + Z >= 16;
     6*X + 8*Y + 4*Z >= 128;
     Z <= 5;
```

```
Global optimal solution found at step:             5
 Objective value:                              80.00000

                     Variable           Value        Reduced Cost
                            X        40.00000           0.0000000
                            Y       0.0000000            1.000000
                            Z       0.0000000            1.500000

                          Row    Slack or Surplus      Dual Price
                            1        80.00000            1.000000
                            2        56.00000           0.0000000
                            3       0.0000000           -1.000000
                            4        24.00000           0.0000000
                            5        112.0000           0.0000000
                            6        5.000000           0.0000000
```