1) Let,

I = proportion of cabinets that are Italian

F = proportion of cabinets that are French Country

C = proportion of cabinets that are Caribbean

Max P = 72I + 65F +78C

Subject to:

Time: 3i + 2.25F + 2.25C <= 1360

1.5i + F + 1.25C <= 700

.75I + .75F + .85C <= 430

Minimum order:

I >= 60

F>= 60

C>=60

2) Let,

GAM = Gear A that are manufactured in house

GAB = Gear A that are manufactured in outsourced location

GBM = Gear B that are manufactured in house

GBB = Gear B that are manufactured in outsourced location

GCM = Gear C that are manufactured in house

GCB = Gear C that are manufactured in outsourced location

GDM = Gear D that are manufactured in house

GDB = Gear D that are manufactured in outsourced location

Max P = 5.95GAM + 7.71GBM + 9.44GCM + 10.74GDM + 5.40GAB + 7.50GBB + 9GCB +10.30GDB

Subject to:

.3 GAM + .36 GAB + .38GCM + .45GDM <= 500

.2GAM + .3GBM + .24GCM + .33GDM <=300

.3GAM + .3GBM +.35GCM +.25GDM <=310

GAB <= 300

GBB <= 300

GCB <= 300

GDB <= 300

GAM + GAB = 400

GBM + GBB = 500

GCM + GCB = 450

GDM + GDB = 600

3. Let,

D1 = machine 1

D2 = machine 2

D3 = machine 3

D4 = machine 4

Min ($d_1 + d_2 + d_3 + d_4$) = Min [$|x_1-3|+|x_2|+|x_1|+|x_2+3|+|x_1-2|+|x_2-1|+|x_1-1|+|x_2-4|$]

Subject to:

$|x_1-1| + |x_2-4| < 4$

$|x_1-3| + |x_2-0| < 2$

$|x_1-0| + |x_2+3| < 6$

$|x_1-2| + |x_2-1| < 2$

4) Let,

CMB = City of Miami (municipal) bonds

ASC = American Smart Car

GEE = GreanEarth Energy

RP = Rosslyn Pharmaceuticals

RCR = RealCo (real estate)

.053CMB +.088ASC + .049GEE + .084RP + .104RCR

Subject to:

Budget <= $500,000

Min municipal bonds >= .2x(CMB + ASC + GEEE + RP + RCR)

Min real estate >= .1x(CMB + ASC + GEEE + RP + RCR)

Min pharma >= .1x(CMB + ASC + GEEE + RP + RCR)

Min energy and auto >= .4x(CMB + ASC + GEEE + RP + RCR)

Min energy >= .15x(CMB + ASC + GEEE + RP + RCR)

Min auto >= .15x(CMB + ASC + GEEE + RP + RCR)

Max real estate and pharma >= .5x(CMB + ASC + GEEE + RP + RCR)

5)