

In [1]:

```
###default values
### mass : kg / length : au : km / time.period : sec /
g=6.67384*1e-11*1e-9

m_solar = 1.989*1e30
m_mercury = 3.3022*1e23
m_venus = 4.8690*1e24
m_earth = 5.9742*1e24
m_mars = 6.4191*1e23
m_jupiter = 1.8988*1e27
m_saturn = 5.6852*1e26
m_uranus = 8.6840*1e25
m_neptune = 1.0245*1e26
m_pluto = 1.3*1e22

d = 1.496*1e8 ###au km convert

r_solar = 0 *d
r_mercury = 0.39 *d
r_venus = 0.7 *d
r_earth = 1 *d
r_mars = 1.52 *d
r_jupiter = 5 *d
r_saturn = 10 *d
r_uranus = 20 *d
r_neptune = 30 *d
r_pluto = 39.48 *d

tt = 24*60*60 ###day hour minute seconde

t_mercury = 87.97 *tt
t_venus = 224.7 *tt
t_earth = 365.26 *tt
t_mars = 686.96 *tt
t_jupiter = 43333.29 *tt
t_saturn = 10756.20 *tt
t_uranus = 30707.49 *tt
t_neptune = 30225.35 *tt
t_pluto = 990623.31 *tt
```

In [2]:

```
import numpy as np
import matplotlib.pyplot as plt

###cartesian_newton :x y vx vy m
t = 0
tt = 24*60*60

###solar:0
x0=r_solar
y0=0
px0 = [x0]
py0 = [y0]
vx0=0
vy0=0
m0=m_solar

###mercury:1
x1=r_mercury
y1=0
px1 = [x1]
py1 = [y1]
vx1=0
vy1=r_mercury*2*np.pi/t_mercury
m1=m_mercury

###venus:2
x2=r_venus
y2=0
px2 = [x2]
py2 = [y2]
vx2=0
vy2=r_venus*2*np.pi/t_venus
m2=m_venus

### earth:3
x3=r_earth
y3=0
px3 = [x3]
py3 = [y3]
vx3=0
vy3=r_earth*2*np.pi/t_earth
m3=m_earth

### mars:4
x4=r_mars
y4=0
px4 = [x4]
py4 = [y4]
vx4=0
vy4=r_mars*2*np.pi/t_mars
m4=m_mars

###jupiter:5
x5=r_jupiter
y5=0
px5 = [x5]
py5 = [y5]
vx5=0
vy5=r_jupiter*2*np.pi/t_jupiter
```

```

m5=m_jupiter

###saturn:6
x6=r_saturn
y6=0
px6 = [x6]
py6 = [y6]
vx6=0
vy6=r_saturn*2*np.pi/t_saturn
m6=m_saturn

### uranus:7
x7=r_uranus
y7=0
px7 = [x7]
py7 = [y7]
vx7=0
vy7=r_uranus*2*np.pi/t_uranus
m7=m_uranus

### neptune:8
x8=r_neptune
y8=0
px8 = [x8]
py8 = [y8]
vx8=0
vy8=r_neptune*2*np.pi/t_neptune
m8=m_neptune

### pluto:9
x9=r_pluto
y9=0
px9 = [x9]
py9 = [y9]
vx9=0
vy9=r_pluto*2*np.pi/t_pluto
m9=m_pluto

print(t,"\n solar x",x0,"y",y0,"\n mercury x",x1,"y",y1,"\n venus x",x2,"y",y2,"\n

```

```

0
solar x 0.0 y 0
mercury x 58344000.0 y 0
venus x 104720000.0 y 0
earth x 149600000.0 y 0
mars x 227392000.0 y 0
jupiter x 748000000.0 y 0
saturn x 1496000000.0 y 0
uranus x 2992000000.0 y 0
neptune x 4488000000.0 y 0
pluto x 5906208000.0 y 0

```

In [3]:

```

while t <= t_earth :
    t = t+tt
    x1 = x1 + vx1*tt
    y1 = y1 + vy1*tt
    vx1 =vx1+ ((g*m0*m1*abs(x0-x1)/(x0-x1)**3)/m1)*1
    vy1 =vy1+ ((g*m0*m1*abs(y0-y1)/(y0-y1)**3)/m1)*1
    px1.insert(1,x1)
    py1.insert(1,y1)

    x2 = x2 + vx2*tt
    y2 = y2 + vy2*tt
    vx2 =vx2+ ((g*m0*m2*abs(x0-x2)/(x0-x2)**3)/m2)*1
    vy2 =vy2+ ((g*m0*m2*abs(y0-y2)/(y0-y2)**3)/m2)*1
    px2.insert(1,x2)
    py2.insert(1,y2)

    x3 = x3 + vx3*tt
    y3 = y3 + vy3*tt
    vx3 =vx3+ ((g*m0*m3*abs(x0-x3)/(x0-x3)**3)/m3)*1
    vy3 =vy3+ ((g*m0*m3*abs(y0-y3)/(y0-y3)**3)/m3)*1
    px3.insert(1,x3)
    py3.insert(1,y3)

    x4 = x4 + vx4*tt
    y4 = y4 + vy4*tt
    vx4 =vx4+ ((g*m0*m4*abs(x0-x4)/(x0-x4)**3)/m4)*1
    vy4 =vy4+ ((g*m0*m4*abs(y0-y4)/(y0-y4)**3)/m4)*1
    px4.insert(1,x4)
    py4.insert(1,y4)

    x5 = x5 + vx5*tt
    y5 = y5 + vy5*tt
    vx5 =vx5+ ((g*m0*m5*abs(x0-x5)/(x0-x5)**3)/m5)*1
    vy5 =vy5+ ((g*m0*m5*abs(y0-y5)/(y0-y5)**3)/m5)*1
    px5.insert(1,x5)
    py5.insert(1,y5)

    x6 = x6 + vx6*tt
    y6 = y6 + vy6*tt
    vx6 =vx6+ ((g*m0*m6*abs(x0-x6)/(x0-x6)**3)/m6)*1
    vy6 =vy6+ ((g*m0*m6*abs(y0-y6)/(y0-y6)**3)/m6)*1
    px6.insert(1,x6)
    py6.insert(1,y6)

    x7 = x7 + vx7*tt
    y7 = y7 + vy7*tt
    vx7 =vx7+ ((g*m0*m7*abs(x0-x7)/(x0-x7)**3)/m7)*1
    vy7 =vy7+ ((g*m0*m7*abs(y0-y7)/(y0-y7)**3)/m7)*1
    px7.insert(1,x7)
    py7.insert(1,y7)

    x8 = x8 + vx8*tt
    y8 = y8 + vy8*tt
    vx8 =vx8+ ((g*m0*m8*abs(x0-x8)/(x0-x8)**3)/m8)*1
    vy8 =vy8+ ((g*m0*m8*abs(y0-y8)/(y0-y8)**3)/m8)*1
    px8.insert(1,x8)
    py8.insert(1,y8)

```

```

x9 = x9 + vx9*tt
y9 = y9 + vy9*tt
vx9 =vx9+ ((g*m0*m9*abs(x0-x9)/(x0-x9)**3)/m9)*1
vy9 =vy9+ ((g*m0*m9*abs(y0-y9)/(y0-y9)**3)/m9)*1
px9.insert(1,x9)
py9.insert(1,y9)

print(t,"\n solar x",x0,"y",y0,"\n mercury x",x1,"y",y1,"\n venus x",x2,"y",y2,

###for t in range(1,t_earth) :
fig = plt.figure(figsize=(100,100))

plt.plot(px0, py0 , '*r')
plt.plot(px1, py1 , 'ob')
plt.plot(px2, py2 , 'og')
plt.plot(px3, py3 , '*g')
plt.plot(px4, py4 , 'or')
plt.plot(px5, py5 , 'oc')
plt.plot(px6, py6 , 'om')
plt.plot(px7, py7 , 'oy')
plt.plot(px8, py8 , 'ok')
plt.plot(px9, py9 , '*k')

plt.suptitle("position")

```

86400

```

solar x 0.0 y 0
mercury x 58344000.0 y 4167172.4856438083
venus x 104720000.0 y 2928238.3861497384
earth x 149600000.0 y 2573412.150123381
mars x 227392000.0 y 2079809.7027049323
jupiter x 748000000.0 y 108457.55329840707
saturn x 1496000000.0 y 873881.5956881297
uranus x 2992000000.0 y 612205.3752710274
neptune x 4488000000.0 y 932956.4639821204
pluto x 5906208000.0 y 37461.06007413305

```

172800

```

solar x 0.0 y 0
mercury x 58343996.63076025 y 8333684.51913153
venus x 104719998.95416048 y 5855139.217890637
earth x 149599999.48753864 y 5145092.468797502
mars x 227391999.77819365 y 4156967.9940278134
jupiter x 747999999.9795015 y -758085.1058355102
saturn x 1495999999.9948754 y 1732744.948270131
uranus x 2991999999.9987187 y 1193810.1436872259
neptune x 4487999999.999431 y 1852736.3826447562
pluto x 5906207999.999671 y -8097752.156868221

```

259200

```

solar x 0.0 y 0
mercury x 58343989.89228038 y 12500031.413408473
venus x 104719996.86248142 y 8781705.508235678
earth x 149599998.4626159 y 7716339.538094145
mars x 227391999.334581 y 6233462.586669434
jupiter x 747999999.9385046 y -1604671.0806317956

```

```
saturn x 1495999999.9846263 y 2587788.3741161795
uranus x 2991999999.996156 y 1767367.545493368
neptune x 4487999999.998292 y 2769175.1429779883
pluto x 5906207999.999013 y -16232790.471577136
```

345600

```
solar x 0.0 y 0
mercury x 58343979.784559585 y 16666304.906663336
venus x 104719993.72496277 y 11708123.07953912
earth x 149599996.92523178 y 10287393.987267133
mars x 227391998.66916198 y 8309662.01380589
jupiter x 747999999.8770092 y -2446803.0343851848
saturn x 1495999999.9692523 y 3441119.157129796
uranus x 2991999999.992313 y 2337253.218763416
neptune x 4487999999.996584 y 3684118.27572475
pluto x 5906207999.998027 y -24367785.26136918
```

432000

```
solar x 0.0 y 0
mercury x 58343966.30759671 y 20832537.109843325
venus x 104719989.54160447 y 14634456.984697789
earth x 149599994.8753863 y 12858340.065317914
mars x 227391997.78193662 y 10385695.345545439
jupiter x 747999999.7950153 y -3287019.293448968
saturn x 1495999999.9487538 y 4293481.383791981
uranus x 2991999999.9871883 y 2905039.4069997575
neptune x 4487999999.994307 y 4598216.407540756
pluto x 5906207999.996712 y -32502760.73627303
```

518400

```
solar x 0.0 y 0
mercury x 58343949.46139021 y 24998742.886502616
venus x 104719984.31240645 y 17560737.338424135
earth x 149599992.31307942 y 15429216.7761149
mars x 227391996.6729049 y 12461622.347935107
jupiter x 747999999.692523 y -4126174.0529741095
saturn x 1495999999.9231308 y 5145221.446067755
uranus x 2991999999.9807825 y 3471466.5927218795
neptune x 4487999999.99146 y 5511772.107106417
pluto x 5906207999.995068 y -40637725.35482743
```

604800

```
solar x 0.0 y 0
mercury x 58343929.24593813 y 29164930.31096854
venus x 104719978.0373686 y 20486980.501067746
earth x 149599989.2383111 y 18000045.31026667
mars x 227391995.34206685 y 14537475.496133864
jupiter x 747999999.5695323 y -4964655.170387309
saturn x 1495999999.892383 y 5996528.280686641
uranus x 2991999999.9730954 y 4036942.0822429177
neptune x 4487999999.988044 y 6424950.285066978
pluto x 5906207999.993094 y -48772683.02848922
```

691200

```
solar x 0.0 y 0
mercury x 58343905.66123813 y 33331104.251940962
```

```
venus x 104719970.71649078 y 23413196.33819307
earth x 149599985.65108135 y 20570838.44654929
mars x 227391993.78942245 y 16613274.376019172
jupiter x 747999999.426043 y -5802670.973780696
saturn x 149599999.8565109 y 6847516.1638828
uranus x 299199999.9641275 y 4601713.820352539
neptune x 448799999.984058 y 7337850.629423171
pluto x 5906207999.990793 y -56907635.88077478
```

777600

```
solar x 0.0 y 0
mercury x 58343878.70728748 y 37497267.86946211
venus x 104719962.34977286 y 26339391.253332637
earth x 149599981.55139014 y 23141604.479646925
mars x 227391992.0149717 y 18689031.70180829
jupiter x 747999999.2620554 y -6640346.158522889
saturn x 149599999.8155138 y 7698259.446103878
uranus x 299199999.9538784 y 5165943.950421513
neptune x 448799999.979504 y 8250537.970356544
pluto x 5906207999.988163 y -65042585.19159311
```

864000

```
solar x 0.0 y 0
mercury x 58343848.38408309 y 41663423.33008462
venus x 104719952.93721466 y 29265569.636949833
earth x 149599976.93923745 y 25712349.096792653
mars x 227391990.0187146 y 20764756.191562038
jupiter x 747999999.0775692 y -7477761.241752919
saturn x 149599999.7693923 y 8548809.202365592
uranus x 299199999.942348 y 5729744.321533971
neptune x 448799999.974379 y 9163056.82685661
pluto x 5906207999.985204 y -73177531.79141638
```

950400

```
solar x 0.0 y 0
mercury x 58343814.691621445 y 45829572.18355338
venus x 104719942.478816 y 32191734.62964897
earth x 149599971.8146232 y 28283076.36628227
mars x 227391987.80065113 y 22840454.081989083
jupiter x 747999998.8725847 y -8314971.217678366
saturn x 149599999.718146 y 9399202.026064351
uranus x 299199999.9295363 y 6293195.348210595
neptune x 448799999.968684 y 10075439.085603388
pluto x 5906207999.981915 y -81312476.24948952
```

1036800

```
solar x 0.0 y 0
mercury x 58343777.62989865 y 49995715.57651839
venus x 104719930.97457668 y 35117888.55520417
earth x 149599966.17754743 y 30853789.29835135
mars x 227391985.3607813 y 24916129.98800441
jupiter x 747999998.6471016 y -9152015.310246797
saturn x 149599999.6617754 y 10249465.02954114
uranus x 299199999.9154434 y 6856356.786001227
neptune x 448799999.96242 y 10987708.365707496
pluto x 5906207999.978299 y -89447418.97292031
```

1123200

```
solar x 0.0 y 0
mercury x 58343737.19891043 y 54161854.38111015
venus x 104719918.42449646 y 38044033.18108968
earth x 149599960.02801004 y 33424490.18263297
mars x 227391982.6991051 y 26991787.419926107
jupiter x 747999998.4011202 y -9988922.475264376
saturn x 1495999999.60028 y 11099618.858339803
uranus x 2991999999.9000697 y 7419274.253189652
neptune x 4487999999.955587 y 11899882.648772703
pluto x 5906207999.974354 y -97582360.26288085
```

1209600

```
solar x 0.0 y 0
mercury x 58343693.398652114 y 58327989.27605744
venus x 104719904.82857509 y 40970169.8828521
earth x 149599953.36601102 y 35995180.80106889
mars x 227391979.81562254 y 29067429.109807268
jupiter x 747999998.1346402 y -10825714.696090134
saturn x 1495999999.5336602 y 11949679.596033791
uranus x 2991999999.8834147 y 7981983.366558671
neptune x 4487999999.948185 y 12811975.940428058
pluto x 5906207999.970079 y -105717300.34841105
```

1296000

```
solar x 0.0 y 0
mercury x 58343646.22911864 y 62494120.79991505
venus x 104719890.1868123 y 43896299.75197063
earth x 149599946.1915503 y 38565862.567623176
mars x 227391976.7103336 y 31143057.225587554
jupiter x 747999997.8476619 y -11662409.055575166
saturn x 1495999999.4619155 y 12799660.015929544
uranus x 2991999999.8654785 y 8544512.467421092
neptune x 4487999999.940213 y 13723999.361867178
pluto x 5906207999.965476 y -113852239.40774085
```

1382400

```
solar x 0.0 y 0
mercury x 58343595.69030456 y 66660249.38716458
venus x 104719874.4992078 y 46822423.669012845
earth x 149599938.50462788 y 41136536.623044044
mars x 227391973.38323826 y 33218673.51634935
jupiter x 747999997.540185 y -12499019.091724934
saturn x 1495999999.3850462 y 13649570.43108513
uranus x 2991999999.846261 y 9106884.477849137
neptune x 4487999999.931672 y 14635961.890927859
pluto x 5906207999.960545 y -121987177.58227868
```

1468800

```
solar x 0.0 y 0
mercury x 58343541.78220404 y 70826375.39339958
venus x 104719857.76576126 y 49748542.354671836
earth x 149599930.30524364 y 43707203.9009752
mars x 227391969.83433655 y 35294279.41366085
jupiter x 747999997.2122097 y -13335555.714962335
saturn x 1495999999.3030524 y 14499419.287978878
```



```
uranus x 2991999999.8257627 y 9669118.200224489
neptune x 4487999999.922562 y 15547870.879568234
pluto x 5906207999.955284 y -130122114.98609772
```

1555200

```
solar x 0.0 y 0
mercury x 58343484.504810855 y 74992499.11332898
venus x 104719839.98647235 y 52674656.4062501
earth x 149599921.59339756 y 46277865.175216235
mars x 227391966.06362844 y 37369876.10402462
jupiter x 747999996.8637359 y -14172027.846758904
saturn x 1495999999.215934 y 15349213.591312371
uranus x 2991999999.803983 y 10231229.249150328
neptune x 4487999999.912882 y 16459732.424080972
pluto x 5906207999.949695 y -138257051.71255282
```

1641600

```
solar x 0.0 y 0
mercury x 58343423.858118385 y 79158620.79392295
venus x 104719821.16134074 y 55600766.32430027
earth x 149599912.36908957 y 48848521.09423275
mars x 227391962.0711139 y 39445464.58178216
jupiter x 747999996.4947637 y -15008442.875371797
saturn x 1495999999.123691 y 16198959.214479124
uranus x 2991999999.7809224 y 10793230.73387306
neptune x 4487999999.902633 y 17371551.635620236
pluto x 5906207999.943776 y -146391987.83901
```

1728000

```
solar x 0.0 y 0
mercury x 58343359.84211963 y 83324740.64419332
venus x 104719801.29036604 y 58526872.53244567
earth x 149599902.63231963 y 51419172.20683195
mars x 227391957.856793 y 41521045.68847599
jupiter x 747999996.105293 y -15844806.988129452
saturn x 1495999999.0263233 y 17048661.130737033
uranus x 2991999999.7565804 y 11355133.767309774
neptune x 4487999999.891814 y 18283332.84160327
pluto x 5906207999.93753 y -154526923.43029973
```

1814400

```
solar x 0.0 y 0
mercury x 58343292.45680719 y 87490858.84259176
venus x 104719780.37354784 y 61452975.39237343
earth x 149599892.38308766 y 53989818.98158489
mars x 227391953.42066562 y 43596620.14262588
jupiter x 747999995.695324 y -16681125.41832959
saturn x 1495999998.923831 y 17898323.588205345
uranus x 2991999999.7309575 y 11916947.852005204
neptune x 4487999999.880426 y 19195079.738149814
pluto x 5906207999.930954 y -162661858.54128566
```

1900800

```
solar x 0.0 y 0
mercury x 58343221.702173285 y 91656975.54268959
venus x 104719758.41088574 y 64379075.21534528
```

```
earth x 149599881.6213936 y 56560461.82173797
mars x 227391948.76273185 y 45672188.562590055
jupiter x 747999995.2648563 y -17517402.631791417
saturn x 1495999998.816214 y 18747950.244307026
uranus x 2991999999.7040534 y 12478681.177085916
neptune x 4487999999.868469 y 20106795.507179637
pluto x 5906207999.924049 y -170796793.2188078
```

1987200

```
solar x 0.0 y 0
mercury x 58343147.57820975 y 95823090.87759687
venus x 104719735.40237929 y 67305172.27115345
earth x 149599870.34723735 y 59131101.07681458
mars x 227391943.88299164 y 47747751.4843525
jupiter x 747999994.8138903 y -18353642.469935644
saturn x 1495999998.7034726 y 19597544.270434413
uranus x 2991999999.675868 y 13040340.84976064
neptune x 4487999999.855943 y 21018482.90756436
pluto x 5906207999.916816 y -178931727.50317392
```

2073600

```
solar x 0.0 y 0
mercury x 58343070.084908016 y 99989204.96344224
venus x 104719711.34802803 y 70231266.79517305
earth x 149599858.56061885 y 61701737.05175116
mars x 227391938.78144497 y 49823309.375530235
jupiter x 747999994.3424258 y -19189848.26100691
saturn x 1495999998.5856066 y 20447108.434416257
uranus x 2991999999.6464014 y 13601933.07795238
neptune x 4487999999.842847 y 21930144.34693909
pluto x 5906207999.909254 y -187066661.42932025
```

2160000

```
solar x 0.0 y 0
mercury x 58342989.222259134 y 104155317.90214321
venus x 104719686.2478315 y 73157358.9939766
earth x 149599846.261538 y 64272370.01417054
mars x 227391933.45809186 y 51898862.646525
jupiter x 747999993.8504629 y -20026022.907587368
saturn x 1495999998.4626157 y 21296645.16620584
uranus x 2991999999.6156535 y 14163463.31594253
neptune x 4487999999.829182 y 22841781.938897382
pluto x 5906207999.901363 y -195201595.027725
```

2246400

```
solar x 0.0 y 0
mercury x 58342904.99025376 y 108321429.78363381
venus x 104719660.10178916 y 76083449.04984869
earth x 149599833.44999474 y 66843000.20023052
mars x 227391927.91293225 y 53974411.65949058
jupiter x 747999993.3380015 y -20862168.95621806
saturn x 1495999998.3345003 y 22146156.61072655
uranus x 2991999999.583625 y 14724936.381668465
neptune x 4487999999.814946 y 23753397.548999917
pluto x 5906207999.893144 y -203336528.32513595
```

2332800

```
solar x 0.0 y 0
mercury x 58342817.388882175 y 112487540.68767217
venus x 104719632.90990052 y 79009537.12444957
earth x 149599820.125989 y 69413627.81936982
mars x 227391922.14596617 y 56049956.73560964
jupiter x 747999992.8050417 y -21698288.653345227
saturn x 1495999998.2012603 y 22995644.670774493
uranus x 2991999999.550315 y 15286356.552048443
neptune x 4487999999.800141 y 24664992.832123313
pluto x 5906207999.884595 y -211471461.34515515
```

2419200

```
solar x 0.0 y 0
mercury x 58342726.41813425 y 116653650.68531975
venus x 104719604.67216502 y 81935623.36181302
earth x 149599806.28952062 y 71984253.05819196
mars x 227391916.1571936 y 58125498.16104883
jupiter x 747999992.2515833 y -22534383.99069297
saturn x 1495999998.0628958 y 23845111.042141616
uranus x 2991999999.5157237 y 15847727.641095813
neptune x 4487999999.784767 y 25576569.263034098
pluto x 5906207999.875718 y -219606394.10871366
```

2505600

```
solar x 0.0 y 0
mercury x 58342632.07799949 y 120819759.84016128
venus x 104719575.38858211 y 84861707.89081885
earth x 149599791.94058958 y 74554876.08366808
mars x 227391909.94661453 y 60201036.19186977
jupiter x 747999991.6776266 y -23370456.742372956
saturn x 1495999997.9194067 y 24694557.24259288
uranus x 2991999999.4798512 y 16409053.064422227
neptune x 4487999999.768824 y 26488128.161610823
pluto x 5906207999.866512 y -227741326.63445985
```

2592000

```
solar x 0.0 y 0
mercury x 58342534.36846699 y 124985868.20931795
venus x 104719545.0591512 y 87787790.82724643
earth x 149599777.07919574 y 77125497.0457975
mars x 227391903.51422894 y 62276571.0581085
jupiter x 747999991.0831714 y -24206508.49547349
saturn x 1495999997.770793 y 25543984.635944378
uranus x 2991999999.442698 y 16970335.89288059
neptune x 4487999999.752311 y 27399670.713800494
pluto x 5906207999.856977 y -235876258.93907964
```

2678400

```
solar x 0.0 y 0
mercury x 58342433.289525464 y 129151975.84429473
venus x 104719513.68387169 y 90713872.27549191
earth x 149599761.705339 y 79696116.0798322
mars x 227391896.86003682 y 64352102.967186496
jupiter x 747999990.4682177 y -25042540.675456125
saturn x 1495999997.6170545 y 26393394.45220381
uranus x 2991999999.4042635 y 17531578.897470977
```

```
neptune x 4487999999.735229 y 28311197.989146683
pluto x 5906207999.847114 y -244011191.03756246
```

2764800

```
solar x 0.0 y 0
mercury x 58342328.84116324 y 133318082.79169314
venus x 104719481.26274294 y 93639952.33001299
earth x 149599745.8190193 y 82266733.30814858
mars x 227391889.98403817 y 66427632.10678069
jupiter x 747999989.8327656 y -25878554.567382865
saturn x 1495999997.4581914 y 27242787.80452155
uranus x 2991999999.3645477 y 18092784.58716368
neptune x 4487999999.717577 y 29222710.955541022
pluto x 5906207999.836922 y -252146122.94342375
```

2851200

```
solar x 0.0 y 0
mercury x 58342221.02336825 y 137484189.09381452
venus x 104719447.7957643 y 96566031.07655153
earth x 149599729.42023644 y 84837348.84183137
mars x 227391882.88623297 y 68503158.64725225
jupiter x 747999989.176815 y -26714551.333769172
saturn x 1495999997.2942038 y 28092165.70353982
uranus x 2991999999.3235507 y 18653955.240939192
neptune x 4487999999.699356 y 30134210.491709657
pluto x 5906207999.826401 y -260281054.66889203
```

2937600

```
solar x 0.0 y 0
mercury x 58342109.83612804 y 141650294.7891733
venus x 104719413.28293511 y 99492108.59317377
earth x 149599712.50899038 y 87407962.78202124
mars x 227391875.5666212 y 70578682.74371299
jupiter x 747999988.500366 y -27550532.02968665
saturn x 1495999997.1250916 y 28941529.06960495
uranus x 2991999999.2812724 y 19215092.93507501
neptune x 4487999999.680566 y 31045697.3978396
pluto x 5906207999.815551 y -268415986.22506723
```

3024000

```
solar x 0.0 y 0
mercury x 58341995.27942977 y 145816399.91293588
venus x 104719377.72425468 y 102418184.95115995
earth x 149599695.08528098 y 89978575.22106722
mars x 227391868.02520287 y 72654204.5377926
jupiter x 747999987.8034185 y -28386497.61560858
saturn x 1495999996.9508548 y 29790878.743213534
uranus x 2991999999.2377133 y 19776199.566501155
neptune x 4487999999.661206 y 31957172.40466784
pluto x 5906207999.804372 y -276550917.6220555
```

3110400

```
solar x 0.0 y 0
mercury x 58341877.35326021 y 149982504.49729767
venus x 104719341.1197223 y 105344260.21576855
earth x 149599677.14910814 y 92549186.24351694
```

```
mars x 227391860.2619779 y 74729724.15915695
jupiter x 747999987.0859725 y -29222448.968391445
saturn x 1495999996.7714932 y 30640215.493990414
uranus x 2991999999.192873 y 20337276.87288521
neptune x 4487999999.641277 y 32868636.181292612
pluto x 5906207999.792865 y -284685848.8690841
```

3196800

```
solar x 0.0 y 0
mercury x 58341756.057605736 y 154148608.57180864
venus x 104719303.46933725 y 108270334.44689599
earth x 149599658.70047173 y 95119795.92697118
mars x 227391852.27694637 y 76805241.72681868
jupiter x 747999986.3480282 y -30058386.89070779
saturn x 1495999996.587007 y 31489540.028439276
uranus x 2991999999.1467514 y 20898326.449981555
neptune x 4487999999.620779 y 33780089.34191646
pluto x 5906207999.781029 y -292820779.97460103
```

3283200

```
solar x 0.0 y 0
mercury x 58341631.39245234 y 158314712.1636554
venus x 104719264.77309877 y 111196407.6996484
earth x 149599639.7393716 y 97690404.34282465
mars x 227391844.07010818 y 78880757.350273
jupiter x 747999985.5895853 y -30894312.11918542
saturn x 1495999996.3973963 y 32338852.996661913
uranus x 2991999999.0993485 y 21459349.76668024
neptune x 4487999999.599711 y 34691532.45169176
pluto x 5906207999.768864 y -300955710.9463597
```

3369600

```
solar x 0.0 y 0
mercury x 58341503.35778561 y 162480815.29790664
venus x 104719225.03100607 y 114122480.02483912
earth x 149599620.26580763 y 100261011.5569105
mars x 227391835.64146334 y 80956271.1304861
jupiter x 747999984.810644 y -31730225.331460055
saturn x 1495999996.202661 y 33188154.998206556
uranus x 2991999999.050665 y 22020348.17811208
neptune x 4487999999.578074 y 35602966.03180837
pluto x 5906207999.75637 y -309090641.7914935
```

3456000

```
solar x 0.0 y 0
mercury x 58341371.95359077 y 166646917.99772754
venus x 104719184.24305837 y 117048551.46942328
earth x 149599600.2797797 y 102831617.63006333
mars x 227391826.99101186 y 83031783.16075854
jupiter x 747999984.0112042 y -32566127.15231104
saturn x 1495999996.0028012 y 34037446.5871773
uranus x 2991999999.0007 y 22581322.937103726
neptune x 4487999999.555868 y 36514390.563938215
pluto x 5906207999.743547 y -317225572.51657987
```

3542400

```
solar x 0.0 y 0
mercury x 58341237.17985264 y 170813020.28456777
venus x 104719142.40925486 y 119974622.07687876
earth x 149599579.78128767 y 105402222.61861269
mars x 227391818.1187537 y 85107293.52748202
jupiter x 747999983.1912661 y -33402018.15901953
saturn x 1495999995.7978165 y 34886728.2767139
uranus x 2991999998.949454 y 23142275.204225987
neptune x 4487999999.5330925 y 37425806.49413214
pluto x 5906207999.730396 y -325360503.12769693
```

3628800

```
solar x 0.0 y 0
mercury x 58341099.03655565 y 174979122.1783267
venus x 104719099.5295947 y 122900691.88754117
earth x 149599558.77033138 y 107972826.57481726
mars x 227391809.02468884 y 87182802.31080508
jupiter x 747999982.3508294 y -34237898.88606447
saturn x 1495999995.5877073 y 35736000.54293285
uranus x 2991999998.8969264 y 23703206.056637704
neptune x 4487999999.5097475 y 38337214.23624788
pluto x 5906207999.716916 y -333495433.63047254
```

3715200

```
solar x 0.0 y 0
mercury x 58340957.52368384 y 179145223.69749936
venus x 104719055.60407704 y 125826760.93889965
earth x 149599537.24691072 y 110543429.54724774
mars x 227391799.70881727 y 89258309.58522047
jupiter x 747999981.4898943 y -35073769.82925219
saturn x 1495999995.3724735 y 36585263.82840559
uranus x 2991999998.843118 y 24264116.495894466
neptune x 4487999999.485832 y 39248614.17497543
pluto x 5906207999.703107 y -341630364.03012776
```

3801600

```
solar x 0.0 y 0
mercury x 58340812.64122086 y 183311324.85930553
venus x 104719010.632701 y 128752829.2658584
earth x 149599515.21102554 y 113114031.58112599
mars x 227391790.17113897 y 91333815.42008504
jupiter x 747999980.6084607 y -35909631.44935969
saturn x 1495999995.152115 y 37434518.5452376
uranus x 2991999998.7880287 y 24825007.45486421
neptune x 4487999999.461348 y 40160006.668515086
pluto x 5906207999.68897 y -349765294.3315152
```

3888000

```
solar x 0.0 y 0
mercury x 58340664.389149986 y 187477425.67980427
venus x 104718964.61546566 y 131678896.90096903
earth x 149599492.66267565 y 115684632.7186259
mars x 227391780.41165394 y 93409319.88008125
jupiter x 747999979.7065287 y -36745484.17535875
saturn x 1495999994.9266322 y 38283765.077802174
uranus x 2991999998.731658 y 25385879.803869616
neptune x 4487999999.436294 y 41071392.05095511
```

```
pluto x 5906207999.674503 y -357900224.5391527
```

3974400

```
solar x 0.0 y 0
mercury x 58340512.76745408 y 191643526.17399603
venus x 104718917.55237012 y 134604963.87463737
earth x 149599469.6018609 y 118255232.9991413
mars x 227391770.43036214 y 95484823.02562799
jupiter x 747999978.7840981 y -37581328.407277405
saturn x 1495999994.6960247 y 39133003.78517423
uranus x 2991999998.674006 y 25946734.356158722
neptune x 4487999999.41067 y 41982770.63438841
pluto x 5906207999.659708 y -366035154.6572536
```

4060800

```
solar x 0.0 y 0
mercury x 58340357.77611564 y 195809626.35591367
venus x 104718869.44341344 y 137531030.21530798
earth x 149599446.02858117 y 120825832.45952505
mars x 227391760.22726354 y 97560324.9132472
jupiter x 747999977.8411692 y -38417164.51874671
saturn x 1495999994.4602923 y 39982235.003302865
uranus x 2991999998.6150727 y 26507571.872790128
neptune x 4487999999.384478 y 42894142.710801974
pluto x 5906207999.644584 y -374170084.6897536
```

4147200

```
solar x 0.0 y 0
mercury x 58340199.41511675 y 199975726.23870388
venus x 104718820.28859466 y 140457095.94962922
earth x 149599421.94283628 y 123396431.13430291
mars x 227391749.80235812 y 99635825.59589195
jupiter x 747999976.8777418 y -39252992.85927342
saturn x 1495999994.2194355 y 40831459.0469556
uranus x 2991999998.5548587 y 27068393.067006335
neptune x 4487999999.357716 y 43805508.55376767
pluto x 5906207999.629131 y -382305014.64033425
```

4233600

```
solar x 0.0 y 0
mercury x 58340037.68443912 y 204141825.8347003
venus x 104718770.0879128 y 143383161.10260144
earth x 149599397.34462607 y 125967029.0558655
mars x 227391739.15564588 y 101711325.12324071
jupiter x 747999975.893816 y -40088813.756273165
saturn x 1495999993.973454 y 41680676.211462475
uranus x 2991999998.4933634 y 27629198.608158305
neptune x 4487999999.330384 y 44716868.41995898
pluto x 5906207999.61335 y -390439944.5124448
```

4320000

```
solar x 0.0 y 0
mercury x 58339872.584064074 y 208307925.15548915
venus x 104718718.84136684 y 146309225.69771007
earth x 149599372.23395038 y 128537626.25464073
mars x 227391728.2871268 y 103786823.54196186
```

```
jupiter x 747999974.8893917 y -40924627.51689393
saturn x 1495999993.722348 y 42529886.774284266
uranus x 2991999998.430587 y 28189989.12523539
neptune x 4487999999.302484 y 45628222.55051467
pluto x 5906207999.5972395 y -398574874.30932105
```

4406400

```
solar x 0.0 y 0
mercury x 58339704.11397253 y 212474024.21196854
venus x 104718666.54895578 y 149235289.75704563
earth x 149599346.610809 y 131108222.75924928
mars x 227391717.19680086 y 105862320.89595208
jupiter x 747999973.8644689 y -41760434.42965513
saturn x 1495999993.4661174 y 43379090.99642566
uranus x 2991999998.366529 y 28750765.210047312
neptune x 4487999999.2740135 y 46539571.17226771
pluto x 5906207999.5808 y -406709804.0340027
```

4492800

```
solar x 0.0 y 0
mercury x 58339532.27414504 y 216640123.0144018
venus x 104718613.21067856 y 152161353.301412
earth x 149599320.4752018 y 133678818.59664491
mars x 227391705.88466802 y 107937817.22655152
jupiter x 747999972.8190477 y -42596234.76592426
saturn x 1495999993.204762 y 44228289.12371143
uranus x 2991999998.3011904 y 29311527.42009858
neptune x 4487999999.244974 y 47450914.49885498
pluto x 5906207999.564033 y -414844733.689349
```

4579200

```
solar x 0.0 y 0
mercury x 58339357.06456173 y 220806221.5724658
venus x 104718558.82653412 y 155087416.35042444
earth x 149599293.82712856 y 136249413.7922414
mars x 227391694.35072827 y 110013312.5727386
jupiter x 747999971.753128 y -43432028.781250134
saturn x 1495999992.938282 y 45077481.387941286
uranus x 2991999998.2345705 y 29872276.281190332
neptune x 4487999999.215365 y 48362252.73172137
pluto x 5906207999.546936 y -422979663.2780525
```

4665600

```
solar x 0.0 y 0
mercury x 58339178.48520238 y 224972319.89529493
venus x 104718503.39652137 y 158013478.9225985
earth x 149599266.6665891 y 138820008.37002775
mars x 227391682.59498158 y 112088806.97130653
jupiter x 747999970.6667099 y -44267816.71656895
saturn x 1495999992.6666775 y 45926668.00793688
uranus x 2991999998.1666694 y 30433012.28978004
neptune x 4487999999.185187 y 49273586.06103027
pluto x 5906207999.5295105 y -431114592.802652
```

4752000

```
solar x 0.0 y 0
```



```
mercury x 58338996.536046356 y 229138417.99152082
venus x 104718446.92063922 y 160939541.0354307
earth x 149599238.9935833 y 141390602.3526727
mars x 227391670.61742795 y 114164300.45702362
jupiter x 747999969.5597934 y -45103598.79929764
saturn x 149599992.3899484 y 46775849.19049295
uranus x 2991999998.097487 y 30993735.91512566
neptune x 4487999999.15444 y 50184914.66649052
pluto x 5906207999.511756 y -439249522.2655439
```

4838400

```
solar x 0.0 y 0
mercury x 58338811.217072636 y 233304515.86930856
venus x 104718389.39888652 y 163865602.70547187
earth x 149599210.8081109 y 143961195.76161978
mars x 227391658.4180673 y 116239793.06277919
jupiter x 747999968.4323783 y -45939375.24432681
saturn x 149599992.1080947 y 47625025.131242886
uranus x 2991999998.0270233 y 31554447.601237405
neptune x 4487999999.123123 y 51096238.718109
pluto x 5906207999.493673 y -447384451.6689926
```

4924800

```
solar x 0.0 y 0
mercury x 58338622.52825981 y 237470613.53638974
venus x 104718330.83126213 y 166791663.94839424
earth x 149599182.1101717 y 146531788.61717415
mars x 227391645.99689966 y 118315284.8197166
jupiter x 747999967.2844648 y -46775146.254924126
saturn x 1495999991.8211162 y 48474196.01544777
uranus x 2991999997.955279 y 32115147.768657494
neptune x 4487999999.091237 y 52007558.37687669
pluto x 5906207999.475262 y -455519381.01514024
```

5011200

```
solar x 0.0 y 0
mercury x 58338430.469586074 y 241636711.00009266
venus x 104718271.21776487 y 169717724.77905238
earth x 149599152.89976555 y 149102380.93858173
mars x 227391633.353925 y 120390775.75735468
jupiter x 747999966.1160529 y -47610912.02355776
saturn x 1495999991.5290132 y 49323362.01871696
uranus x 2991999997.882253 y 32675836.816085786
neptune x 4487999999.058782 y 52918873.795395136
pluto x 5906207999.456521 y -463654310.3060152
```

5097600

```
solar x 0.0 y 0
mercury x 58338235.041029245 y 245802808.26736978
venus x 104718210.55839357 y 172643785.21153927
earth x 149599123.17689225 y 151672972.74410164
mars x 227391620.48914328 y 122466265.90369871
jupiter x 747999964.9271425 y -48446672.73264813
saturn x 1495999991.2317855 y 50172523.30766708
uranus x 2991999997.807946 y 33236515.121867005
neptune x 4487999999.025756 y 53830185.11844942
pluto x 5906207999.437451 y -471789239.54354
```

5184000

```
solar x 0.0 y 0
mercury x 58338036.24256675 y 249968905.34482312
venus x 104718148.853147 y 175569845.25923735
earth x 149599092.94155157 y 154243564.05107248
mars x 227391607.40255448 y 124541755.28534228
jupiter x 747999963.7177336 y -49282428.555255346
saturn x 149599990.9294333 y 51021680.04052577
uranus x 299199997.732358 y 33797183.04535349
neptune x 448799998.992161 y 54741492.48353305
pluto x 5906207999.418054 y -479924168.7295386
```

5270400

```
solar x 0.0 y 0
mercury x 58337834.07417561 y 254135002.23872733
venus x 104718086.10202393 y 178495904.9348656
earth x 149599062.1937433 y 156814154.8759732
mars x 227391594.0941586 y 126617243.92756046
jupiter x 747999962.4878263 y -50118179.65570891
saturn x 149599990.6219566 y 51870832.36768563
uranus x 299199997.655489 y 34357840.92815576
neptune x 448799998.957996 y 55652796.021329515
pluto x 5906207999.398327 y -488059097.865743
```

5356800

```
solar x 0.0 y 0
mercury x 58337628.53583248 y 258301098.955051
venus x 104718022.3050231 y 181421964.2505226
earth x 149599030.93346724 y 159384745.234479
mars x 227391580.56395555 y 128692731.85439566
jupiter x 747999961.2374206 y -50953926.19018527
saturn x 149599990.3093553 y 52719980.43221309
uranus x 299199997.5773387 y 34918489.09529179
neptune x 448799998.923263 y 56564095.85615474
pluto x 5906207999.378271 y -496194026.9537992
```

5443200

```
solar x 0.0 y 0
mercury x 58337419.62751361 y 262467195.49947628
venus x 104717957.46214326 y 184348023.21772632
earth x 149598999.16072318 y 161955335.14151284
mars x 227391566.81194535 y 130768219.08873644
jupiter x 747999959.9665164 y -51789668.30723842
saturn x 149599989.9916291 y 53569124.3703167
uranus x 299199997.497907 y 35479127.85624473
neptune x 448799998.8879595 y 57475392.106364146
pluto x 5906207999.357886 y -504328955.9952731
```

5529600

```
solar x 0.0 y 0
mercury x 58337207.34919486 y 266633291.8774169
venus x 104717891.5733831 y 187274081.84745055
earth x 149598966.8755109 y 164525924.61129266
mars x 227391552.83812797 y 132843705.65239021
jupiter x 747999958.6751137 y -52625406.14828802
```

```
saturn x 1495999989.6687784 y 54418264.31177855
uranus x 2991999997.4171944 y 36039757.50593755
neptune x 4487999998.852087 y 58386684.88472773
pluto x 5906207999.337173 y -512463884.99165535
```

5616000

```
solar x 0.0 y 0
mercury x 58336991.70085171 y 270799388.0940348
venus x 104717824.6387413 y 190200140.15015882
earth x 149598934.07783017 y 167096513.65737525
mars x 227391538.64250338 y 134919191.56615025
jupiter x 747999957.3632126 y -53461139.848069064
saturn x 1495999989.3408031 y 55267400.38035235
uranus x 2991999997.3352003 y 36600378.32563256
neptune x 4487999998.815645 y 59297974.29877609
pluto x 5906207999.316132 y -520598813.9443661
```

5702400

```
solar x 0.0 y 0
mercury x 58336772.682459235 y 274965484.15425545
venus x 104717756.65821654 y 193126198.1358354
earth x 149598900.76768076 y 169667102.2926965
mars x 227391524.22507155 y 136994676.8498576
jupiter x 747999956.030813 y -54296869.53504666
saturn x 1495999989.0077033 y 56116532.69413105
uranus x 2991999997.2519255 y 37160990.58376239
neptune x 4487999998.778634 y 60209260.451120034
pluto x 5906207999.294761 y -528733742.8547595
```

5788800

```
solar x 0.0 y 0
mercury x 58336550.29399214 y 279131580.0627823
venus x 104717687.63180743 y 196052255.81401426
earth x 149598866.9450625 y 172237690.52960888
mars x 227391509.58583245 y 139070161.52245843
jupiter x 747999954.677915 y -55132595.331799135
saturn x 1495999988.669479 y 56965661.365886964
uranus x 2991999997.1673694 y 37721594.5366988
neptune x 4487999998.741054 y 61120543.43974623
pluto x 5906207999.273061 y -536868671.72412777
```

5875200

```
solar x 0.0 y 0
mercury x 58336324.535424724 y 283297675.8241096
venus x 104717617.55951262 y 198978313.1938056
earth x 149598832.60997507 y 174808278.37991583
mars x 227391494.72478607 y 141145645.60205692
jupiter x 747999953.3045185 y -55968317.355372325
saturn x 1495999988.3261297 y 57814786.503386684
uranus x 2991999997.081532 y 38282190.42946467
neptune x 4487999998.702904 y 62031823.35829095
pluto x 5906207999.251033 y -545003600.5537047
```

5961600

```
solar x 0.0 y 0
mercury x 58336095.40673091 y 287463771.4425349
```

```
venus x 104717546.4413307 y 201904370.28392076
earth x 149598797.7624183 y 177378865.85490397
mars x 227391479.64193237 y 143221129.10596454
jupiter x 747999951.9106234 y -56804035.71760757
saturn x 149599987.977656 y 58663908.209683
uranus x 299199996.9944134 y 38842778.49639426
neptune x 448799998.664185 y 62943100.296293825
pluto x 5906207999.228676 y -553138529.3446695
```

6048000

```
solar x 0.0 y 0
mercury x 58335862.907884225 y 291629866.9221703
venus x 104717474.27726026 y 204830427.092695
earth x 149598762.4023919 y 179949452.96537277
mars x 227391464.3372713 y 145296612.05074558
jupiter x 747999950.49623 y -57639750.525445834
saturn x 149599987.6240575 y 59513026.58338591
uranus x 299199996.906014 y 39403358.96174614
neptune x 448799998.624896 y 63854374.33943344
pluto x 5906207999.20599 y -561273458.0981492
```

6134400

```
solar x 0.0 y 0
mercury x 58335627.038857795 y 295795962.26695275
venus x 104717401.06729984 y 207756483.62810898
earth x 149598726.5298957 y 182520039.72166222
mars x 227391448.81080285 y 147372094.4522596
jupiter x 747999949.0613381 y -58475461.88120982
saturn x 149599987.2653346 y 60362141.71891436
uranus x 299199996.8163333 y 39963932.04027276
neptune x 448799998.585038 y 64765645.569746144
pluto x 5906207999.182975 y -569408386.8152227
```

6220800

```
solar x 0.0 y 0
mercury x 58335387.79962437 y 299962057.4806542
venus x 104717326.811448 y 210682539.89780852
earth x 149598690.14492938 y 185090626.13367847
mars x 227391433.062527 y 149447576.32570082
jupiter x 747999947.6059477 y -59311169.88286618
saturn x 149599986.901487 y 61211253.706730485
uranus x 299199996.7253714 y 40524497.93775033
neptune x 448799998.544611 y 65676914.06582964
pluto x 5906207999.159632 y -577543315.496923
```

6307200

```
solar x 0.0 y 0
mercury x 58335145.19015631 y 304128152.5668904
venus x 104717251.50970322 y 213608595.90912312
earth x 149598653.24749273 y 187661212.21091783
mars x 227391417.0924437 y 151523057.68563482
jupiter x 747999946.1300589 y -60146874.6242693
saturn x 149599986.5325148 y 62060362.633557625
uranus x 299199996.633128 y 41085056.85147235
neptune x 448799998.503614 y 66588179.90303251
pluto x 5906207999.13596 y -585678244.1442393
```

6393600

```
solar x 0.0 y 0
mercury x 58334899.21042558 y 308294247.5291297
venus x 104717175.16206403 y 216534651.66908312
earth x 149598615.83758548 y 190231797.96248904
mars x 227391400.90055293 y 153598538.54603273
jupiter x 747999944.6336716 y -60982576.195388295
saturn x 1495999986.158418 y 62909468.582583584
uranus x 2991999996.539604 y 41645608.970709555
neptune x 4487999998.462049 y 67499443.15363088
pluto x 5906207999.1119585 y -593813172.7581202
```

6480000

```
solar x 0.0 y 0
mercury x 58334649.860403754 y 312460342.37070054
venus x 104717097.7685289 y 219460707.18443576
earth x 149598577.9152074 y 192802383.3971341
mars x 227391384.48685464 y 155674018.92030317
jupiter x 747999943.1167859 y -61818274.682518564
saturn x 1495999985.7791965 y 63758571.633650236
uranus x 2991999996.444799 y 42206154.47713924
neptune x 4487999998.419913 y 68410703.88699324
pluto x 5906207999.087628 y -601948101.3394755
```

6566400

```
solar x 0.0 y 0
mercury x 58334397.14006203 y 316626437.0947994
venus x 104717019.32909626 y 222386762.4616602
earth x 149598539.48035818 y 195372968.52324766
mars x 227391367.85134882 y 157749498.82132208
jupiter x 747999941.5794017 y -62653970.16847911
saturn x 1495999985.3948505 y 64607671.8634306
uranus x 2991999996.3487124 y 42766693.54524612
neptune x 4487999998.377208 y 69321962.16973434
pluto x 5906207999.06297 y -610083029.8891785
```

6652800

```
solar x 0.0 y 0
mercury x 58334141.0493712 y 320792531.7044972
venus x 104716939.84376457 y 225312817.5069816
earth x 149598500.5330376 y 197943553.3488952
mars x 227391350.99403542 y 159824978.26146048
jupiter x 747999940.0215191 y -63489662.73279681
saturn x 1495999985.00538 y 65456769.34559435
uranus x 2991999996.2513447 y 43327226.34269713
neptune x 4487999998.333933 y 70233218.06585903
pluto x 5906207999.037983 y -618217958.4080676
```

6739200

```
solar x 0.0 y 0
mercury x 58333881.588301666 y 324958626.2027461
venus x 104716859.31253223 y 228238872.32638416
earth x 149598461.07324538 y 200514137.88183
mars x 227391333.91491443 y 161900457.2526106
jupiter x 747999938.443138 y -64325352.45187864
saturn x 1495999984.6107848 y 66305864.150962666
```

```
uranus x 2991999996.1526957 y 43887753.03069216
neptune x 4487999998.290089 y 71144471.63689688
pluto x 5906207999.012667 y -626352886.8969485
```

6825600

```
solar x 0.0 y 0
mercury x 58333618.75682345 y 329124720.5923854
venus x 104716777.73539764 y 231164926.92562333
earth x 149598421.10098127 y 203084722.12950912
mars x 227391316.61398578 y 163975935.80621022
jupiter x 747999936.8442584 y -65161039.39917274
saturn x 1495999984.2110648 y 67154956.34765321
uranus x 2991999996.052766 y 44448273.764292434
neptune x 4487999998.245675 y 72055722.94202815
pluto x 5906207998.987021 y -634487815.3565954
```

6912000

```
solar x 0.0 y 0
mercury x 58333352.55490618 y 333290814.87614733
venus x 104716695.11235917 y 234090981.31023744
earth x 149598380.61624497 y 205655306.09910822
mars x 227391299.09124947 y 166051413.93326563
jupiter x 747999935.2248805 y -65996723.645319276
saturn x 1495999983.8062203 y 68004046.00121602
uranus x 2991999995.951555 y 45008788.69272838
neptune x 4487999998.200692 y 72966972.03820193
pluto x 5906207998.961048 y -642622743.7877533
```

6998400

```
solar x 0.0 y 0
mercury x 58333082.982519105 y 337456909.0566622
venus x 104716611.44341515 y 237017035.48555842
earth x 149598339.6190362 y 208225889.79753554
mars x 227391281.34670544 y 168126891.6443729
jupiter x 747999933.585004 y -66832405.25829178
saturn x 1495999983.3962512 y 68853133.17476097
uranus x 2991999995.8490624 y 45569297.95968838
neptune x 4487999998.15514 y 73878218.98024692
pluto x 5906207998.934746 y -650757672.191139
```

7084800

```
solar x 0.0 y 0
mercury x 58332810.03963106 y 341623003.1364636
venus x 104716526.72856393 y 239943089.45672196
earth x 149598298.1093547 y 210796473.23144507
mars x 227391263.3803537 y 170202368.9497382
jupiter x 747999931.9246291 y -67668084.30352968
saturn x 1495999982.9811575 y 69702217.92907734
uranus x 2991999995.745289 y 46129801.703589916
neptune x 4487999998.109018 y 74789463.82097535
pluto x 5906207998.908114 y -658892600.5674423
```

7171200

```
solar x 0.0 y 0
mercury x 58332533.726210505 y 345789097.1179929
venus x 104716440.96780382 y 242869143.22867703
```

```
earth x 149598256.08720016 y 213367056.40724888
mars x 227391245.19219416 y 172277845.85919657
jupiter x 747999930.2437557 y -68503760.84406276
saturn x 149599982.5609393 y 70551300.32274634
uranus x 299199995.6402345 y 46690300.05783429
neptune x 448799998.062327 y 75700706.61128072
pluto x 5906207998.881154 y -667027528.9173279
```

7257600

```
solar x 0.0 y 0
mercury x 58332254.04222551 y 349955191.0036038
venus x 104716354.1611331 y 245795196.80619478
earth x 149598213.5525723 y 215937639.3311287
mars x 227391226.7822268 y 174353322.38222972
jupiter x 747999928.5423839 y -69339434.94062799
saturn x 149599982.1355963 y 71400380.41224664
uranus x 299199995.533899 y 47250793.15104614
neptune x 448799998.015067 y 76611947.40022963
pluto x 5906207998.853866 y -675162457.2414362
```

7344000

```
solar x 0.0 y 0
mercury x 58331970.987643756 y 354121284.79556656
venus x 104716266.30855002 y 248721250.19387698
earth x 149598170.50547087 y 218508222.0090467
mars x 227391208.1504516 y 176428798.5279828
jupiter x 747999926.8205136 y -70175106.65177947
saturn x 149599981.7051287 y 72249458.2520539
uranus x 299199995.426282 y 47811281.107298866
neptune x 448799997.967237 y 77523186.23514815
pluto x 5906207998.826248 y -683297385.5403848
```

7430400

```
solar x 0.0 y 0
mercury x 58331684.56243253 y 358287378.4960716
venus x 104716177.41005284 y 251647303.39616397
earth x 149598126.94589552 y 221078804.446756
mars x 227391189.29686853 y 178504274.30528012
jupiter x 747999925.0781449 y -71010776.03399174
saturn x 149599981.2695365 y 73098533.89473434
uranus x 299199995.317384 y 48371764.04632685
neptune x 448799997.9188385 y 78434423.16170323
pluto x 5906207998.798302 y -691432313.8147689
```

7516800

```
solar x 0.0 y 0
mercury x 58331394.76655872 y 362453472.10723346
venus x 104716087.46563978 y 254573356.41734207
earth x 149598082.873846 y 223649386.64981017
mars x 227391170.22147754 y 180579749.72263995
jupiter x 747999923.3152777 y -71846443.14175712
saturn x 149599980.8288198 y 73947607.39103295
uranus x 299199995.2072043 y 48932242.08372553
neptune x 448799997.86987 y 79345658.22397932
pluto x 5906207998.770026 y -699567242.0651634
```

7603200

```
solar x 0.0 y 0
mercury x 58331101.599988855 y 366619565.6310942
venus x 104715996.47530906 y 257499409.26155066
earth x 149598038.28932196 y 226219968.62357232
mars x 227391150.9242786 y 182655224.78828856
jupiter x 747999921.531912 y -72682108.02767743
saturn x 149599980.3829784 y 74796678.78995667
uranus x 299199995.095744 y 49492715.33113996
neptune x 448799997.820333 y 80256891.46455072
pluto x 5906207998.741423 y -707702170.2921228
```

7689600

```
solar x 0.0 y 0
mercury x 58330805.062689036 y 370785659.0696267
venus x 104715904.43905884 y 260425461.93278885
earth x 149597993.19232312 y 228790550.37322384
mars x 227391131.40527162 y 184730699.51017338
jupiter x 747999919.7280478 y -73517770.74255045
saturn x 149599979.9320123 y 75645748.1388529
uranus x 299199994.9830027 y 50053183.896442875
neptune x 448799997.770226 y 81168122.92454967
pluto x 5906207998.71249 y -715837098.4961829
```

7776000

```
solar x 0.0 y 0
mercury x 58330505.154625 y 374951752.4247376
venus x 104715811.35688728 y 263351514.43492165
earth x 149597947.58284914 y 231361131.90377247
mars x 227391111.66445664 y 186806173.8959755
jupiter x 747999917.9036852 y -74353431.33545142
saturn x 149599979.4759216 y 76494815.48348352
uranus x 299199994.86898 y 50613647.88390273
neptune x 448799997.719549 y 82079352.64373085
pluto x 5906207998.6832285 y -723972026.6778612
```

7862400

```
solar x 0.0 y 0
mercury x 58330201.87576208 y 379117845.6982704
venus x 104715717.22879253 y 266277566.771686
earth x 149597901.46089977 y 233931713.2200599
mars x 227391091.70183358 y 188881647.9531214
jupiter x 747999916.0588242 y -75189089.85381015
saturn x 149599979.0147064 y 77343880.86809501
uranus x 299199994.753676 y 51174107.39434256
neptune x 448799997.6683035 y 82990580.66053218
pluto x 5906207998.653638 y -732106954.8376578
```

7948800

```
solar x 0.0 y 0
mercury x 58329895.22606523 y 383283938.8920081
venus x 104715622.05477272 y 269203618.9466963
earth x 149597854.82647464 y 236502294.32676914
mars x 227391071.5174024 y 190957121.68879408
jupiter x 747999914.1934646 y -76024746.34348367
saturn x 149599978.5483665 y 78192944.33548452
uranus x 299199994.637091 y 51734562.52529012
```



```
neptune x 4487999997.6164875 y 83901807.01213232
pluto x 5906207998.623719 y -740241882.9760563
```

8035200

```
solar x 0.0 y 0
mercury x 58329585.20549901 y 387450032.00767606
venus x 104715525.83482593 y 272129670.9634497
earth x 149597807.67957345 y 239072875.22843128
mars x 227391051.11116308 y 193032595.10994363
jupiter x 747999912.3076067 y -76860400.8488251
saturn x 1495999978.0769022 y 79042005.92706259
uranus x 2991999994.519225 y 52295013.37111998
neptune x 4487999997.564102 y 84813031.73450513
pluto x 5906207998.593472 y -748376811.0935245
```

8121600

```
solar x 0.0 y 0
mercury x 58329271.81402758 y 391616125.0469441
venus x 104715428.56895025 y 275055722.8253313
earth x 149597760.02019587 y 241643455.9294321
mars x 227391030.48311558 y 195108068.22329715
jupiter x 747999910.4012502 y -77696053.41274863
saturn x 1495999977.6003132 y 79891065.68291232
uranus x 2991999994.400078 y 52855460.023188055
neptune x 4487999997.5111475 y 85724254.86247113
pluto x 5906207998.562895 y -756511739.1905147
```

8208000

```
solar x 0.0 y 0
mercury x 58328955.05161472 y 395782218.0114291
venus x 104715330.25714374 y 277981774.53561854
earth x 149597711.84834158 y 244214036.43401808
mars x 227391009.63325983 y 197183541.0353682
jupiter x 747999908.4743954 y -78531704.07679118
saturn x 1495999977.1185994 y 80740123.6418456
uranus x 2991999994.2796493 y 53415902.56995893
neptune x 4487999997.4576235 y 86635476.42974631
pluto x 5906207998.531989 y -764646667.2674652
```

8294400

```
solar x 0.0 y 0
mercury x 58328634.918223806 y 399948310.9026971
venus x 104715230.89940442 y 280907826.0974861
earth x 149597663.16401026 y 246784616.7463024
mars x 227390988.56159583 y 199259013.55246577
jupiter x 747999906.527042 y -79367352.88117063
saturn x 1495999976.631761 y 81589179.84145622
uranus x 2991999994.15794 y 53976341.0971267
neptune x 4487999997.40353 y 87546696.46898833
pluto x 5906207998.500755 y -772781595.3248001
```

8380800

```
solar x 0.0 y 0
mercury x 58328311.41381785 y 404114403.72226554
venus x 104715130.49573033 y 283833877.5140097
earth x 149597613.96720156 y 249355196.8702703
```

```
mars x 227390967.2681235 y 201334485.78070268
jupiter x 747999904.5591903 y -80202999.86484115
saturn x 1495999976.1397982 y 82438234.31817037
uranus x 2991999994.0349493 y 54536775.68772941
neptune x 4487999997.348867 y 88457915.01184036
pluto x 5906207998.4691925 y -780916523.3629302
```

8467200

```
solar x 0.0 y 0
mercury x 58327984.53835946 y 408280496.4716051
venus x 104715029.04611944 y 286759928.7881708
earth x 149597564.25791514 y 251925776.80978447
mars x 227390945.75284284 y 203409957.72600374
jupiter x 747999902.57084 y -81038645.06554554
saturn x 1495999975.6427107 y 83287287.10729447
uranus x 2991999993.9106774 y 55097206.42225776
neptune x 4487999997.293635 y 89369132.08897272
pluto x 5906207998.437301 y -789051451.3822534
```

8553600

```
solar x 0.0 y 0
mercury x 58327654.29181085 y 412446589.15214175
venus x 104714926.55056973 y 289685979.9228598
earth x 149597514.03615066 y 254496356.56858993
mars x 227390924.01575378 y 205485429.3941133
jupiter x 747999900.5619912 y -81874288.519865
saturn x 1495999975.1404986 y 84136338.24306065
uranus x 2991999993.7851243 y 55657633.378758244
neptune x 4487999997.237834 y 90280347.73012228
pluto x 5906207998.40508 y -797186379.3831556
```

8640000

```
solar x 0.0 y 0
mercury x 58327320.67413384 y 416612681.7652584
venus x 104714823.00907916 y 292612030.92087996
earth x 149597463.3019078 y 257066936.15031877
mars x 227390902.05685627 y 207560900.79060256
jupiter x 747999898.532644 y -82709930.26326631
saturn x 1495999974.6331618 y 84985387.75866982
uranus x 2991999993.65829 y 56218056.63293113
neptune x 4487999997.181463 y 91191561.96413003
pluto x 5906207998.372531 y -805321307.3660108
```

8726400

```
solar x 0.0 y 0
mercury x 58326983.68528987 y 420778774.31229657
venus x 104714718.42164566 y 295538081.784951
earth x 149597412.05518618 y 259637515.55849472
mars x 227390879.87615028 y 209636371.92087638
jupiter x 747999896.4827983 y -83545570.33014658
saturn x 1495999974.1207004 y 85834435.68633275
uranus x 2991999993.5301747 y 56778476.25822358
neptune x 4487999997.124523 y 92102774.81897666
pluto x 5906207998.339653 y -813456235.3311818
```

8812800

```
solar x 0.0 y 0
mercury x 58326643.32523998 y 424944866.7945584
venus x 104714612.78826712 y 298464132.5177121
earth x 149597360.29598546 y 262208094.79653734
mars x 227390857.47363576 y 211711842.79017994
jupiter x 747999894.4124542 y -84381208.7538759
saturn x 1495999973.6031144 y 86683482.05730902
uranus x 2991999993.4007783 y 57338892.32591821
neptune x 4487999997.067014 y 93013986.32181644
pluto x 5906207998.306446 y -821591163.2790204
```

8899200

```
solar x 0.0 y 0
mercury x 58326299.59394483 y 429110959.21330774
venus x 104714506.10894147 y 301390183.1217254
earth x 149597308.0243053 y 264778673.86776608
mars x 227390834.8493127 y 213787313.40360487
jupiter x 747999892.3216116 y -85216845.56683782
saturn x 1495999973.0804038 y 87532526.90194412
uranus x 2991999993.2701006 y 57899304.90521734
neptune x 4487999997.008935 y 93925196.4990095
pluto x 5906207998.27291 y -829726091.2098683
```

8985600

```
solar x 0.0 y 0
mercury x 58325952.49136469 y 433277051.5697719
venus x 104714398.38366655 y 304316233.59947854
earth x 149597255.24014536 y 267349252.77540424
mars x 227390812.003181 y 215862783.76609525
jupiter x 747999890.2102706 y -86052480.80046783
saturn x 1495999972.5525687 y 88381570.24970473
uranus x 2991999993.1381416 y 58459714.06332315
neptune x 4487999996.950287 y 94836405.37615246
pluto x 5906207998.239046 y -837861019.124057
```

9072000

```
solar x 0.0 y 0
mercury x 58325602.01745942 y 437443143.8651428
venus x 104714289.6124402 y 307242283.953388
earth x 149597201.94350523 y 269919831.5225826
mars x 227390788.93524066 y 217938253.88245323
jupiter x 747999888.0784311 y -86888114.48529005
saturn x 1495999972.0196087 y 89230612.12921238
uranus x 2991999993.004902 y 59020119.865514025
neptune x 4487999996.891069 y 95747612.97810762
pluto x 5906207998.204853 y -845995947.0219084
```

9158400

```
solar x 0.0 y 0
mercury x 58325248.17218852 y 441609236.10057867
venus x 104714179.79526027 y 310168334.1858013
earth x 149597148.13438454 y 272490410.1123428
mars x 227390765.6454916 y 220013723.75734445
jupiter x 747999885.9260932 y -87723746.65095209
saturn x 1495999971.4815242 y 90079652.56827538
uranus x 2991999992.870381 y 59580522.37521735
neptune x 4487999996.831283 y 96658819.32903081
```

```
pluto x 5906207998.170331 y -854130874.9037352
```

9244800

```
solar x 0.0 y 0
mercury x 58324890.95551108 y 445775328.27720493
venus x 104714068.93212456 y 313094384.2990001
earth x 149597093.81278297 y 275060988.5476409
mars x 227390742.1339338 y 222089193.3953031
jupiter x 747999883.7532568 y -88559377.32625829
saturn x 1495999970.9383152 y 90928691.59391943
uranus x 2991999992.7345786 y 60140921.654078804
neptune x 4487999996.770926 y 97570024.45239793
pluto x 5906207998.13548 y -862265802.7698411
```

9331200

```
solar x 0.0 y 0
mercury x 58324530.36738579 y 449941420.3961157
venus x 104713957.02303085 y 316020434.2952021
earth x 149597038.97870013 y 277631566.8313505
mars x 227390718.40056723 y 224164662.80073684
jupiter x 747999881.559922 y -89395006.53920142
saturn x 1495999970.3899815 y 91777729.23241664
uranus x 2991999992.597495 y 60701317.76202849
neptune x 4487999996.71 y 98481228.37103015
pluto x 5906207998.100301 y -870400730.6205214
```

9417600

```
solar x 0.0 y 0
mercury x 58324166.40777098 y 454107512.45837486
venus x 104713844.0679769 y 318946484.17656386
earth x 149596983.63213563 y 280202144.9662657
mars x 227390694.4453918 y 226240131.9779315
jupiter x 747999879.3460886 y -90230634.31699291
saturn x 1495999969.8365233 y 92626765.50931337
uranus x 2991999992.4591303 y 61261710.75734403
neptune x 4487999996.648504 y 99392431.10711811
pluto x 5906207998.064793 y -878535658.4560632
```

9504000

```
solar x 0.0 y 0
mercury x 58323799.07662456 y 458273604.4650171
venus x 104713730.06696047 y 321872533.9451829
earth x 149596927.77308908 y 282772722.955104
mars x 227390670.2684075 y 228315600.9310555
jupiter x 747999877.1117568 y -91066260.6860916
saturn x 1495999969.2779405 y 93475800.44945663
uranus x 2991999992.3194847 y 61822100.69671076
neptune x 4487999996.586439 y 100303632.68224493
pluto x 5906207998.028955 y -886670586.2767453
```

9590400

```
solar x 0.0 y 0
mercury x 58323428.373904064 y 462439696.417049
venus x 104713615.01997927 y 324798583.6030997
earth x 149596871.40156013 y 285343300.8005093
mars x 227390645.86961424 y 230391069.66416404
```

```
jupiter x 747999874.8569266 y -91901885.67223129
saturn x 1495999968.714233 y 94324834.07701945
uranus x 2991999992.178558 y 62382487.63527922
neptune x 4487999996.523805 y 101214833.11740813
pluto x 5906207997.992789 y -894805514.0828394
```

9676800

```
solar x 0.0 y 0
mercury x 58323054.299566634 y 466605788.31545013
venus x 104713498.927031 y 327724633.1522998
earth x 149596814.51754838 y 287913878.5050541
mars x 227390621.24901202 y 232466538.1812033
jupiter x 747999872.5815978 y -92737509.30044694
saturn x 1495999968.1454008 y 95173866.41552499
uranus x 2991999992.03635 y 62942871.6267201
neptune x 4487999996.460601 y 102126032.43304066
pluto x 5906207997.956295 y -902940441.8746094
```

9763200

```
solar x 0.0 y 0
mercury x 58322676.853569016 y 470771880.16117394
venus x 104713381.78811334 y 330650682.59471595
earth x 149596757.12105343 y 290484456.07124263
mars x 227390596.40660077 y 234542006.48601422
jupiter x 747999870.2857707 y -93573131.59509984
saturn x 1495999967.571444 y 96022897.48786965
uranus x 2991999991.8928604 y 63503252.72327668
neptune x 4487999996.396828 y 103037230.64903101
pluto x 5906207997.919472 y -911075369.6523122
```

9849600

```
solar x 0.0 y 0
mercury x 58322296.03586757 y 474937971.9551486
venus x 104713263.60322396 y 333576731.9322297
earth x 149596699.2120749 y 293055033.50151265
mars x 227390571.34238043 y 236617474.58233616
jupiter x 747999867.969445 y -94408752.57990146
saturn x 1495999966.9923627 y 96871927.31634514
uranus x 2991999991.7480903 y 64063630.97581504
neptune x 4487999996.332485 y 103948427.7847423
pluto x 5906207997.882319 y -919210297.4161979
```

9936000

```
solar x 0.0 y 0
mercury x 58321911.84641827 y 479104063.69827795
venus x 104713144.3723605 y 336502781.1666733
earth x 149596640.7906124 y 295625610.79823816
mars x 227390546.05635098 y 238692942.4738106
jupiter x 747999865.6326209 y -95244372.27793641
saturn x 1495999966.4081569 y 97720955.92265959
uranus x 2991999991.602039 y 64624006.433872044
neptune x 4487999996.267573 y 104859623.85903063
pluto x 5906207997.844838 y -927345225.1665101
```

10022400

```
solar x 0.0 y 0
```

```
mercury x 58321524.28517669 y 483270155.3914425
venus x 104713024.09552056 y 339428830.29983145
earth x 149596581.85666552 y 298196187.9637315
mars x 227390520.54851234 y 240768410.16398442
jupiter x 747999863.2752984 y -96079990.71168439
saturn x 149599965.8188262 y 98569983.32795773
uranus x 2991999991.454706 y 65184379.14570125
neptune x 4487999996.202092 y 105770818.89026274
pluto x 5906207997.807029 y -935480152.9034858
```

10108800

```
solar x 0.0 y 0
mercury x 58321133.35209801 y 487436247.0354999
venus x 104712902.77270176 y 342354879.3334429
earth x 149596522.41023386 y 300766765.0002456
mars x 227390494.81886446 y 242843877.65631312
jupiter x 747999860.8974774 y -96915607.90304103
saturn x 149599965.224371 y 99419009.55284025
uranus x 2991999991.3060923 y 65744749.15831689
neptune x 4487999996.136042 y 106682012.89633265
pluto x 5906207997.76889 y -943615080.6273559
```

10195200

```
solar x 0.0 y 0
mercury x 58320739.047137044 y 491602338.631286
venus x 104712780.40390165 y 345280928.26920205
earth x 149596462.45131698 y 303337341.9099756
mars x 227390468.86740732 y 244919344.95416403
jupiter x 747999858.4991579 y -97751223.87333807
saturn x 149599964.6247911 y 100268034.61738226
uranus x 2991999991.1561975 y 66305116.51753591
neptune x 4487999996.069422 y 107593205.89467783
pluto x 5906207997.730423 y -951750008.3383455
```

10281600

```
solar x 0.0 y 0
mercury x 58320341.37024818 y 495768430.17961556
venus x 104712656.98911782 y 348206977.10876024
earth x 149596401.97991452 y 305907918.69506127
mars x 227390442.69414085 y 246994812.06081924
jupiter x 747999856.0803399 y -98586838.64336246
saturn x 149599964.0200868 y 101117058.54115108
uranus x 2991999991.0050216 y 66865481.268018335
neptune x 4487999996.002233 y 108504397.9022946
pluto x 5906207997.691627 y -959884936.0366738
```

10368000

```
solar x 0.0 y 0
mercury x 58319940.32138544 y 499934521.68128276
venus x 104712532.52834778 y 351133025.8537275
earth x 149596340.99602604 y 308478495.3575886
mars x 227390416.29906502 y 249070278.97947842
jupiter x 747999853.6410235 y -99422452.23337482
saturn x 149599963.4102578 y 101966081.34322314
uranus x 2991999990.8525643 y 67425843.45330587
neptune x 4487999995.934474 y 109415588.93575285
pluto x 5906207997.652502 y -968019863.7225544
```

10454400

```
solar x 0.0 y 0
mercury x 58319535.90050245 y 504100613.1370621
venus x 104712407.02158904 y 354059074.5056738
earth x 149596279.49965113 y 311049071.8995916
mars x 227390389.68217975 y 251145745.7132616
jupiter x 747999851.1812086 y -100258064.66312702
saturn x 149599962.795304 y 102815103.04220036
uranus x 2991999990.698826 y 67986203.11585894
neptune x 4487999995.866146 y 110326779.01121022
pluto x 5906207997.613049 y -976154791.3961959
```

10540800

```
solar x 0.0 y 0
mercury x 58319128.10755244 y 508266704.54770887
venus x 104712280.46883911 y 356985123.0661303
earth x 149596217.49078935 y 313619648.32305425
mars x 227390362.843485 y 253221212.26521182
jupiter x 747999848.7008953 y -101093675.95187913
saturn x 149599962.1752257 y 103664123.65622567
uranus x 2991999990.543806 y 68546560.2970922
neptune x 4487999995.797249 y 111237968.14442563
pluto x 5906207997.573266 y -984289719.0578011
```

10627200

```
solar x 0.0 y 0
mercury x 58318716.94248825 y 512432795.9139599
venus x 104712152.87009545 y 359911171.5365906
earth x 149596154.9694403 y 316190224.6299117
mars x 227390335.7829807 y 255296678.63829753
jupiter x 747999846.2000835 y -101929286.11841553
saturn x 149599961.5500228 y 104513143.20299804
uranus x 2991999990.3875055 y 69106915.03740862
neptune x 4487999995.727782 y 112149156.35077232
pluto x 5906207997.5331545 y -992424646.7075684
```

10713600

```
solar x 0.0 y 0
mercury x 58318302.405262336 y 516598887.23653424
venus x 104712024.2253555 y 362837219.91851205
earth x 149596091.93560356 y 318760800.82205224
mars x 227390308.50066686 y 257372144.83541512
jupiter x 747999843.6787733 y -102764895.18106054
saturn x 149599960.9196954 y 105362161.69978687
uranus x 2991999990.2299237 y 69667267.37623216
neptune x 4487999995.657746 y 113060343.64525035
pluto x 5906207997.492715 y -1000559574.345691
```

10800000

```
solar x 0.0 y 0
mercury x 58317884.49582675 y 520764978.51613337
venus x 104711894.53461671 y 365763268.213317
earth x 149596028.38927865 y 321331376.9013186
mars x 227390280.99654335 y 259447610.8593912
jupiter x 747999841.1369646 y -103600503.15769324
```

```
saturn x 1495999960.2842433 y 106211179.1634457
uranus x 2991999990.0710607 y 70227617.35203916
neptune x 4487999995.58714 y 113971530.04249853
pluto x 5906207997.451946 y -1008694501.9723574
```

10886400

```
solar x 0.0 y 0
mercury x 58317463.21413317 y 524931069.7534422
venus x 104711763.79787648 y 368689316.4223936
earth x 149595964.33046517 y 323901952.8695096
mars x 227390253.27061015 y 261523076.7129848
jupiter x 747999838.5746573 y -104436110.06576182
saturn x 1495999959.6436667 y 107060195.61042552
uranus x 2991999989.9109163 y 70787965.00238843
neptune x 4487999995.5159645 y 114882715.55680595
pluto x 5906207997.410849 y -1016829429.5877517
```

10972800

```
solar x 0.0 y 0
mercury x 58317038.560132876 y 529097160.9491294
venus x 104711632.0151322 y 371615364.5470973
earth x 149595899.75916266 y 326472528.72838116
mars x 227390225.3228672 y 263598542.3988895
jupiter x 747999835.9918517 y -105271715.92229731
saturn x 1495999958.9979653 y 107909211.05678748
uranus x 2991999989.749491 y 71348310.36395027
neptune x 4487999995.44422 y 115793900.20212308
pluto x 5906207997.369422 y -1024964357.1920536
```

11059200

```
solar x 0.0 y 0
mercury x 58316610.533776745 y 533263252.10384774
venus x 104711499.18638124 y 374541412.58875155
earth x 149595834.67537072 y 329043104.47964805
mars x 227390197.15331447 y 265674007.91973555
jupiter x 747999833.3885475 y -106107320.7439268
saturn x 1495999958.3471394 y 108758225.51821509
uranus x 2991999989.586785 y 71908653.47253421
neptune x 4487999995.371905 y 116705083.9920723
pluto x 5906207997.327667 y -1033099284.7854383
```

11145600

```
solar x 0.0 y 0
mercury x 58316179.13501527 y 537429343.2182349
venus x 104711365.31162094 y 377467460.54864883
earth x 149595769.07908887 y 331613680.12498504
mars x 227390168.76195186 y 267749473.27809176
jupiter x 747999830.764745 y -106942924.54688603
saturn x 1495999957.6911888 y 109607239.010026
uranus x 2991999989.422797 y 72468994.36311579
neptune x 4487999995.299022 y 117616266.93995817
pluto x 5906207997.2855835 y -1041234212.3680772
```

11232000

```
solar x 0.0 y 0
mercury x 58315744.363798566 y 541595434.2929137
```



```
venus x 104711230.39084862 y 380393508.42805177
earth x 149595702.97031668 y 334184255.66602796
mars x 227390140.14877936 y 269824938.4764675
jupiter x 747999828.1204439 y -107778527.34703168
saturn x 149599957.0301137 y 110456251.54718325
uranus x 299199989.2575283 y 73029333.06986225
neptune x 448799995.225569 y 118527449.05877723
pluto x 5906207997.243171 y -1049369139.9401375
```

11318400

```
solar x 0.0 y 0
mercury x 58315306.22007634 y 545761525.3284928
venus x 104711094.42406161 y 383319556.228194
earth x 149595636.34905368 y 336754831.1043752
mars x 227390111.31379688 y 271900403.5173143
jupiter x 747999825.4556445 y -108614129.15985304
saturn x 149599956.363914 y 111305263.14430617
uranus x 299199989.090978 y 73589669.62615722
neptune x 448799995.1515465 y 119438630.3612274
pluto x 5906207997.200429 y -1057504067.5017827
```

11404800

```
solar x 0.0 y 0
mercury x 58314864.703797914 y 549927616.3255666
venus x 104710957.41125718 y 386245603.9502809
earth x 149595569.2152994 y 339325406.4415885
mars x 227390082.25700438 y 273975868.403028
jupiter x 747999822.7703465 y -109449730.00048324
saturn x 149599955.6925895 y 112154273.8156808
uranus x 299199988.923147 y 74150004.06462458
neptune x 448799995.076955 y 120349810.85971712
pluto x 5906207997.157358 y -1065638995.0531722
```

11491200

```
solar x 0.0 y 0
mercury x 58314419.81491222 y 554093707.2847166
venus x 104710819.35243258 y 389171651.5954907
earth x 149595501.5690534 y 341895981.6791945
mars x 227390052.9784018 y 276051333.13595
jupiter x 747999820.06455 y -110285329.88371013
saturn x 149599955.0161405 y 113003283.57526998
uranus x 299199988.754035 y 74710336.41715123
neptune x 448799995.001794 y 121260990.56637402
pluto x 5906207997.113959 y -1073773922.5944622
```

11577600

```
solar x 0.0 y 0
mercury x 58313971.5533678 y 558259798.2065108
venus x 104710680.24758506 y 392097699.164975
earth x 149595433.41031525 y 344466556.8186853
mars x 227390023.47798908 y 278126797.71836925
jupiter x 747999817.3382552 y -111120928.82398668
saturn x 149599954.3345668 y 113852292.436723
uranus x 299199988.5836415 y 75270666.71490923
neptune x 448799994.926064 y 122172169.49305339
pluto x 5906207997.070231 y -1081908850.125805
```

11664000

```
solar x 0.0 y 0
mercury x 58313519.9191128 y 562425889.0915047
venus x 104710540.09671184 y 395023746.65985984
earth x 149595364.73908442 y 347037131.86151975
mars x 227389993.75576615 y 280202262.15252346
jupiter x 747999814.5914618 y -111956526.83544102
saturn x 1495999953.6478686 y 114701300.41338488
uranus x 2991999988.411967 y 75830994.98837695
neptune x 4487999994.849764 y 123083347.65134624
pluto x 5906207997.026175 y -1090043777.6473496
```

11750400

```
solar x 0.0 y 0
mercury x 58313064.91209498 y 566591979.9402415
venus x 104710398.89981012 y 397949794.08124626
earth x 149595295.55536047 y 349607706.8091245
mars x 227389963.81173298 y 282277726.44060093
jupiter x 747999811.82417 y -112792123.93188612
saturn x 1495999952.9560459 y 115550307.51830545
uranus x 2991999988.2390113 y 76391321.26735951
neptune x 4487999994.772895 y 123994525.05258708
pluto x 5906207996.981789 y -1098178705.159242
```

11836800

```
solar x 0.0 y 0
mercury x 58312606.53226171 y 570758070.7532523
venus x 104710256.65687709 y 400875841.4302112
earth x 149595225.85914293 y 352178281.66289485
mars x 227389933.6458895 y 284353190.58474183
jupiter x 747999809.0363797 y -113627720.12682906
saturn x 1495999952.2590983 y 116399313.76424788
uranus x 2991999988.0647745 y 76951645.58100851
neptune x 4487999994.6954565 y 124905701.70786145
pluto x 5906207996.937075 y -1106313632.6616242
```

11923200

```
solar x 0.0 y 0
mercury x 58312144.77955995 y 574924161.5310568
venus x 104710113.3679099 y 403801888.7078079
earth x 149595155.6504313 y 354748856.4241955
mars x 227389903.25823563 y 286428654.5870397
jupiter x 747999806.2280909 y -114463315.43348004
saturn x 1495999951.5570261 y 117248319.16369711
uranus x 2991999987.8892565 y 77511967.95784093
neptune x 4487999994.617449 y 125816877.62801321
pluto x 5906207996.892032 y -1114448560.154636
```

12009600

```
solar x 0.0 y 0
mercury x 58311679.65393629 y 579090252.2741634
venus x 104709969.03290567 y 406727935.915067
earth x 149595084.92922512 y 357319431.0943618
mars x 227389872.64877135 y 288504118.44954264
jupiter x 747999803.3993037 y -115298909.864761
saturn x 1495999950.8498294 y 118097323.72886781
```

```
uranus x 2991999987.712457 y 78072288.42575748  
neptune x 4487999994.538872 y 126728052.82365142  
pluto x 5906207996.84666 y -1122583487.6384132
```

12096000

```
solar x 0.0 y 0  
mercury x 58311211.155336924 y 583256342.9830695  
venus x 104709823.65186153 y 409653983.05299693  
earth x 149595013.6955239 y 359890005.6747002  
mars x 227389841.81749657 y 290579582.1742548  
jupiter x 747999800.550018 y -116134503.4333139  
saturn x 1495999950.1375082 y 118946327.47171217  
uranus x 2991999987.5343766 y 78632607.0120602  
neptune x 4487999994.459725 y 127639227.30515714  
pluto x 5906207996.800959 y -1130718415.1130896
```

12182400

```
solar x 0.0 y 0  
mercury x 58310739.28370765 y 587422433.6582621  
venus x 104709677.22477458 y 412580030.12258446  
earth x 149594941.94932714 y 362460580.16648936  
mars x 227389810.76441124 y 292655045.7631374  
jupiter x 747999797.6802338 y -116970096.15150885  
saturn x 1495999949.4200623 y 119795330.40392734  
uranus x 2991999987.3550153 y 79192923.74346946  
neptune x 4487999994.380009 y 128550401.0826899  
pluto x 5906207996.75493 y -1138853342.5787954
```

12268800

```
solar x 0.0 y 0  
mercury x 58310264.03899387 y 591588524.3002176  
venus x 104709529.7516419 y 415506077.1247956  
earth x 149594869.69063437 y 365031154.57098085  
mars x 227389779.4895153 y 294730509.2181102  
jupiter x 747999794.7899512 y -117805688.03145176  
saturn x 1495999948.6974916 y 120644332.53696263  
uranus x 2991999987.1743727 y 79753238.64614043  
neptune x 4487999994.299723 y 129461574.16619393  
pluto x 5906207996.708571 y -1146988270.0356586
```

12355200

```
solar x 0.0 y 0  
mercury x 58309785.42114061 y 595754614.9094025  
venus x 104709381.23246053 y 418432124.06057596  
earth x 149594796.9194451 y 367601728.8893998  
mars x 227389747.9928087 y 296805972.5410526  
jupiter x 747999791.8791701 y -118641279.08499184  
saturn x 1495999947.9697964 y 121493333.8820265  
uranus x 2991999986.992449 y 80313551.74567881  
neptune x 4487999994.218867 y 130372746.56540425  
pluto x 5906207996.661884 y -1155123197.483804
```

12441600

```
solar x 0.0 y 0  
mercury x 58309303.43009249 y 599920705.4862734  
venus x 104709231.6672275 y 421358170.9308513
```

```
earth x 149594723.6357588 y 370172303.1229459
mars x 227389716.27429137 y 298881435.7338045
jupiter x 747999788.9478905 y -119476869.32372881
saturn x 1495999947.2369766 y 122342334.45009322
uranus x 2991999986.8092437 y 80873863.06715621
neptune x 4487999994.137443 y 131283918.28985246
pluto x 5906207996.614868 y -1163258124.923354
```

12528000

```
solar x 0.0 y 0
mercury x 58308818.065793745 y 604086796.0312777
venus x 104709081.05593985 y 424284217.7365283
earth x 149594649.83957496 y 372742877.2727937
mars x 227389684.33396325 y 300956898.7981679
jupiter x 747999785.9961125 y -120312458.75901987
saturn x 1495999946.4990323 y 123191334.25190943
uranus x 2991999986.624758 y 81434172.63512485
neptune x 4487999994.055449 y 132195089.34887238
pluto x 5906207996.567524 y -1171393052.3544283
```

12614400

```
solar x 0.0 y 0
mercury x 58308329.32818822 y 608252886.5448532
venus x 104708929.39859454 y 427210264.4784948
earth x 149594575.53089312 y 375313451.3400937
mars x 227389652.17182428 y 303032361.7359073
jupiter x 747999783.023836 y -121148047.40198638
saturn x 1495999945.7559633 y 124040333.29800028
uranus x 2991999986.4389906 y 81994480.47363183
neptune x 4487999993.972885 y 133106259.7516055
pluto x 5906207996.519851 y -1179527979.7771442
```

12700800

```
solar x 0.0 y 0
mercury x 58307837.21721936 y 612418977.0274292
venus x 104708776.69518855 y 430136311.15762067
earth x 149594500.70971274 y 377884025.3259727
mars x 227389619.78787437 y 305107824.5487514
jupiter x 747999780.031061 y -121983635.26352036
saturn x 1495999945.0077698 y 124889331.59867553
uranus x 2991999986.251942 y 82554786.60623288
neptune x 4487999993.889752 y 134017429.5070062
pluto x 5906207996.4718485 y -1187662907.1916168
```

12787200

```
solar x 0.0 y 0
mercury x 58307341.73283023 y 616585067.479426
venus x 104708622.94571882 y 433062357.7747579
earth x 149594425.37603334 y 380454599.2315348
mars x 227389587.1821135 y 307183287.23839355
jupiter x 747999777.0177876 y -122819222.3542908
saturn x 1495999944.2544515 y 125738329.16403544
uranus x 2991999986.0636125 y 83115091.05600566
neptune x 4487999993.80605 y 134928598.62384686
pluto x 5906207996.423517 y -1195797834.5979586
```

12873600

```
solar x 0.0 y 0
mercury x 58306842.87496348 y 620751157.9012554
venus x 104708468.1501823 y 435988404.33074135
earth x 149594349.52985436 y 383025173.05786157
mars x 227389554.35454157 y 309258749.8064929
jupiter x 747999773.9840157 y -123654808.6847496
saturn x 1495999943.4960086 y 126587326.00397632
uranus x 2991999985.874002 y 83675393.84556262
neptune x 4487999993.721779 y 135839767.1107227
pluto x 5906207996.374858 y -1203932761.9962797
```

12960000

```
solar x 0.0 y 0
mercury x 58306340.6435614 y 624917248.2933208
venus x 104708312.30857588 y 438914450.8263891
earth x 149594273.1711753 y 385595746.80601305
mars x 227389521.30515853 y 311334212.2546754
jupiter x 747999770.9297453 y -124490394.26513755
saturn x 1495999942.7324412 y 127436322.12819602
uranus x 2991999985.68311 y 84235694.99706344
neptune x 4487999993.636938 y 136750934.97605655
pluto x 5906207996.32587 y -1212067689.3866882
```

13046400

```
solar x 0.0 y 0
mercury x 58305835.03856587 y 629083338.6560179
venus x 104708155.42089646 y 441840497.26250285
earth x 149594196.29999566 y 388166320.477028
mars x 227389488.0339643 y 313409674.58453447
jupiter x 747999767.8549765 y -125325979.10548986
saturn x 1495999941.9637492 y 128285317.54619922
uranus x 2991999985.490937 y 84795994.53222698
neptune x 4487999993.551528 y 137662102.2281035
pluto x 5906207996.276552 y -1220202616.76929
```

13132800

```
solar x 0.0 y 0
mercury x 58305326.059918374 y 633249428.9897344
venus x 104707997.48714088 y 444766543.6398686
earth x 149594118.91631487 y 390736894.07192475
mars x 227389454.54095885 y 315485136.7976321
jupiter x 747999764.7597092 y -126161563.2156417
saturn x 1495999941.1899326 y 129134312.26730251
uranus x 2991999985.297483 y 85356292.47234294
neptune x 4487999993.4655485 y 138573268.87495515
pluto x 5906207996.226906 y -1228337544.1441886
```

13219200

```
solar x 0.0 y 0
mercury x 58304813.70756002 y 637415519.2948503
venus x 104707838.50730601 y 447692589.95925677
earth x 149594041.02013242 y 393307467.5917015
mars x 227389420.8261421 y 317560598.89549947
jupiter x 747999761.6439434 y -126997146.60523349
saturn x 1495999940.4109912 y 129983306.30063932
uranus x 2991999985.1027474 y 85916588.8382831
```

```
neptune x 4487999993.379 y 139484434.92454413
pluto x 5906207996.176931 y -1236472471.511486
```

13305600

```
solar x 0.0 y 0
mercury x 58304297.98143151 y 641581609.5717384
venus x 104707678.48138866 y 450618636.22142273
earth x 149593962.61144778 y 395878041.037337
mars x 227389386.88951397 y 319636060.8796379
jupiter x 747999758.5076792 y -127832729.28371592
saturn x 149599939.6269252 y 130832299.65516467
uranus x 299199984.906731 y 86476883.65051219
neptune x 4487999993.291882 y 140395600.38464803
pluto x 5906207996.126628 y -1244607398.8712819
```

13392000

```
solar x 0.0 y 0
mercury x 58303778.881473154 y 645747699.8207638
venus x 104707517.40938564 y 453544682.4271072
earth x 149593883.6902604 y 398448614.409791
mars x 227389352.73107442 y 321711522.75151944
jupiter x 747999755.3509165 y -128668311.26035498
saturn x 149599938.8377347 y 131681292.33965985
uranus x 299199984.7094336 y 87037176.92909835
neptune x 4487999993.204194 y 141306765.2628935
pluto x 5906207996.075995 y -1252742326.2236738
```

13478400

```
solar x 0.0 y 0
mercury x 58303256.407624885 y 649913790.0422851
venus x 104707355.29129373 y 456470728.5770367
earth x 149593804.25656977 y 401019187.7100047
mars x 227389318.35082334 y 323786984.5125879
jupiter x 747999752.1736554 y -129503892.54423675
saturn x 149599938.0434196 y 132530284.3627368
uranus x 299199984.5108547 y 87597468.69372338
neptune x 4487999993.115937 y 142217929.56676015
pluto x 5906207996.025034 y -1260877253.5687575
```

13564800

```
solar x 0.0 y 0
mercury x 58302730.55982623 y 654079880.2366537
venus x 104707192.12710968 y 459396774.6719236
earth x 149593724.31037533 y 403589760.9389012
mars x 227389283.7487607 y 325862446.1642594
jupiter x 747999748.9758958 y -130339473.14427194
saturn x 149599937.24398 y 133379275.73284252
uranus x 299199984.3109946 y 88157758.96369258
neptune x 4487999993.027111 y 143129093.3035843
pluto x 5906207995.973744 y -1269012180.9066272
```

13651200

```
solar x 0.0 y 0
mercury x 58302201.33801633 y 658245970.4042144
venus x 104707027.91683024 y 462322820.7124669
earth x 149593643.85167652 y 406160334.0973861
```

```
mars x 227389248.92488644 y 327937907.7079229
jupiter x 747999745.7576376 y -131175053.06920047
saturn x 1495999936.4394155 y 134228266.45826316
uranus x 2991999984.1098537 y 88718047.75794426
neptune x 4487999992.937715 y 144040256.4805626
pluto x 5906207995.922126 y -1277147108.237375
```

13737600

```
solar x 0.0 y 0
mercury x 58301668.74213393 y 662412060.5453055
venus x 104706862.66045213 y 465248866.6993523
earth x 149593562.8804728 y 408730907.18634796
mars x 227389213.87920046 y 330013369.1449412
jupiter x 747999742.5188811 y -132010632.32759576
saturn x 1495999935.6297264 y 135077256.5471282
uranus x 2991999983.9074316 y 89278335.095059
neptune x 4487999992.847749 y 144951419.10475552
pluto x 5906207995.870178 y -1285282035.5610914
```

13824000

```
solar x 0.0 y 0
mercury x 58301132.77211738 y 666578150.6602588
venus x 104706696.35797204 y 468174912.6332527
earth x 149593481.39676362 y 411301480.20665836
mars x 227389178.6117027 y 332088830.4766516
jupiter x 747999739.259626 y -132846210.92786892
saturn x 1495999934.8149128 y 135926246.00741425
uranus x 2991999983.703728 y 89838620.99326867
neptune x 4487999992.757214 y 145862581.18309084
pluto x 5906207995.817902 y -1293416962.8778653
```

13910400

```
solar x 0.0 y 0
mercury x 58300593.42790464 y 670744240.7494
venus x 104706529.00938666 y 471100958.51482815
earth x 149593399.4005484 y 413872053.15917283
mars x 227389143.1223931 y 334164291.7043662
jupiter x 747999735.9798726 y -133681788.87827285
saturn x 1495999933.9949746 y 136775234.84694895
uranus x 2991999983.4987435 y 90398905.47046496
neptune x 4487999992.666109 y 146773742.72236687
pluto x 5906207995.765297 y -1301551890.1877835
```

13996800

```
solar x 0.0 y 0
mercury x 58300050.709433295 y 674910330.813049
venus x 104706360.61469263 y 474027004.34472674
earth x 149593316.8918266 y 416442626.0447309
mars x 227389107.4112716 y 336239752.8293728
jupiter x 747999732.6796206 y -134517366.18690616
saturn x 1495999933.1699119 y 137624223.07341462
uranus x 2991999983.2924776 y 90959188.54420793
neptune x 4487999992.574435 y 147684903.72925574
pluto x 5906207995.712363 y -1309686817.4909315
```

14083200

```
solar x 0.0 y 0
mercury x 58299504.61664051 y 679076420.8515192
venus x 104706191.17388658 y 476953050.12358445
earth x 149593233.87059763 y 419013198.8641566
mars x 227389071.47833812 y 338315213.8529355
jupiter x 747999729.3588701 y -135352942.86171705
saturn x 1495999932.3397245 y 138473210.69435185
uranus x 2991999983.084931 y 91519470.2317341
neptune x 4487999992.482192 y 148596064.21030644
pluto x 5906207995.659101 y -1317821744.787393
```

14169600

```
solar x 0.0 y 0
mercury x 58298955.149463065 y 683242510.8651189
venus x 104706020.68696515 y 479879095.8520256
earth x 149593150.33686092 y 421583771.6182589
mars x 227389035.32359257 y 340390674.776295
jupiter x 747999726.0176213 y -136188518.91050693
saturn x 1495999931.5044124 y 139322197.71716294
uranus x 2991999982.876103 y 92079750.54996432
neptune x 4487999992.3893795 y 149507224.17194784
pluto x 5906207995.605509 y -1325956672.0772507
```

14256000

```
solar x 0.0 y 0
mercury x 58298402.30783736 y 687408600.8541503
venus x 104705849.15392493 y 482805141.5306632
earth x 149593066.29061595 y 424154344.30783194
mars x 227388998.9470349 y 342466135.6006696
jupiter x 747999722.6558739 y -137024094.34093407
saturn x 1495999930.6639757 y 140171184.14911523
uranus x 2991999982.6659937 y 92640029.5155115
neptune x 4487999992.295998 y 150418383.62049168
pluto x 5906207995.551589 y -1334091599.360585
```

14342400

```
solar x 0.0 y 0
mercury x 58297846.09169939 y 691574690.8189104
venus x 104705676.57476246 y 485731187.160099
earth x 149592981.7318621 y 426724916.93365556
mars x 227388962.34866503 y 344541596.3272554
jupiter x 747999719.273628 y -137859669.16051704
saturn x 1495999929.8184144 y 141020169.9973445
uranus x 2991999982.454603 y 93200307.14468797
neptune x 4487999992.202046 y 151329542.5621353
pluto x 5906207995.49734 y -1342226526.6374753
```

14428800

```
solar x 0.0 y 0
mercury x 58297286.50098477 y 695740780.7596905
venus x 104705502.94947433 y 488657232.7409241
earth x 149592896.66059878 y 429295489.4964954
mars x 227388925.5284829 y 346617056.95722705
jupiter x 747999715.8708837 y -138695243.37663808
saturn x 1495999928.9677286 y 141869155.26885796
uranus x 2991999982.241932 y 93760583.45351273
neptune x 4487999992.107526 y 152240701.00296444
```



```
pluto x 5906207995.442762 y -1350361453.9079995
```

```
14515200
```

```
solar x 0.0 y 0  
mercury x 58296723.53562872 y 699906870.6767772  
venus x 104705328.27805705 y 491583278.27371883  
earth x 149592811.07682544 y 431866061.99710363  
mars x 227388888.48648846 y 348692517.491738  
jupiter x 747999712.4476409 y -139530816.9965465  
saturn x 1495999928.1119182 y 142718139.97053745  
uranus x 2991999982.0279794 y 94320858.45771845  
neptune x 4487999992.012436 y 153151858.9489559  
pluto x 5906207995.387856 y -1358496381.172234
```

```
14601600
```

```
solar x 0.0 y 0  
mercury x 58296157.19556605 y 704072960.5704516  
venus x 104705152.56050713 y 494509323.7590533  
earth x 149592724.98054147 y 434436634.43621874  
mars x 227388851.22268158 y 350767977.9319213  
jupiter x 747999709.0038997 y -140366390.0273617  
saturn x 1495999927.250983 y 143567124.1091423  
uranus x 2991999981.8127456 y 94881132.17275822  
neptune x 4487999991.916777 y 154063016.4059801  
pluto x 5906207995.332621 y -1366631308.4302542
```

```
14688000
```

```
solar x 0.0 y 0  
mercury x 58295587.4807312 y 708239050.44099  
venus x 104704975.79682107 y 497435369.1974875  
earth x 149592638.3717463 y 437007206.8145663  
mars x 227388813.73706222 y 352843438.2788899  
jupiter x 747999705.53966 y -141201962.47607625  
saturn x 1495999926.3849232 y 144416107.6913123  
uranus x 2991999981.5962305 y 95441404.61381216  
neptune x 4487999991.820548 y 154974173.37980366  
pluto x 5906207995.277057 y -1374766235.6821337
```

```
14774400
```

```
solar x 0.0 y 0  
mercury x 58295014.39105819 y 712405140.2886636  
venus x 104704797.98699534 y 500361414.58957154  
earth x 149592551.25043932 y 439577779.13285923  
mars x 227388776.0296303 y 354918898.5337371  
jupiter x 747999702.0549217 y -142037534.34955907  
saturn x 1495999925.5137389 y 145265090.72357053  
uranus x 2991999981.3784347 y 96001675.79579379  
neptune x 4487999991.72375 y 155885329.8760917  
pluto x 5906207995.221164 y -1382901162.9279447
```

```
14860800
```

```
solar x 0.0 y 0  
mercury x 58294437.92648069 y 716571230.1137393  
venus x 104704619.13102637 y 503287459.935846  
earth x 149592463.61661994 y 442148351.3917977  
mars x 227388738.10038576 y 356994358.6975373
```

```
jupiter x 747999698.5496851 y -142873105.65455812
saturn x 149599924.63743 y 146114073.21232593
uranus x 299199981.1593575 y 96561945.73335625
neptune x 448799991.626383 y 156796485.90041035
pluto x 5906207995.164942 y -1391036090.1677587
```

14947200

```
solar x 0.0 y 0
mercury x 58293858.08693193 y 720737319.9164789
venus x 104704439.2289106 y 506213505.2368419
earth x 149592375.47028756 y 444718923.59207
mars x 227388699.9493285 y 359069818.7713459
jupiter x 747999695.02395 y -143708676.39770335
saturn x 149599923.7559965 y 146963055.16387612
uranus x 299199980.938999 y 97122214.44089837
neptune x 448799991.528446 y 157707641.458229
pluto x 5906207995.108392 y -1399171017.4016454
```

15033600

```
solar x 0.0 y 0
mercury x 58293274.87234478 y 724903409.69714
venus x 104704258.28064442 y 509139550.4930813
earth x 149592286.81144157 y 447289495.73435223
mars x 227388661.57645848 y 361145278.7562003
jupiter x 747999691.4777163 y -144544246.58550936
saturn x 149599922.8694382 y 147812036.58440983
uranus x 299199980.7173595 y 97682481.93257043
neptune x 448799991.429939 y 158618796.55492246
pluto x 5906207995.051513 y -1407305944.6296737
```

15120000

```
solar x 0.0 y 0
mercury x 58292688.2826517 y 729069499.4559757
venus x 104704076.28622422 y 512065595.70507705
earth x 149592197.64008138 y 449860067.8193091
mars x 227388622.9817756 y 363220738.65312
jupiter x 747999687.9109843 y -145379816.2243781
saturn x 149599921.9777553 y 148661017.48000956
uranus x 299199980.4944386 y 98242748.2222799
neptune x 448799991.330863 y 159529951.1957732
pluto x 5906207994.994305 y -1415440871.851911
```

15206400

```
solar x 0.0 y 0
mercury x 58292098.31778477 y 733235589.1932346
venus x 104703893.24564637 y 514991640.8733334
earth x 149592107.95620635 y 452430639.8475939
mars x 227388584.1652798 y 365296198.463107
jupiter x 747999684.3237537 y -146215385.32060152
saturn x 149599921.0809479 y 149509997.85665378
uranus x 299199980.270237 y 98803013.32369702
neptune x 448799991.231217 y 160441105.38597345
pluto x 5906207994.936768 y -1423575799.068424
```

15292800

```
solar x 0.0 y 0
```

```
mercury x 58291504.97767567 y 737401678.9091612
venus x 104703709.1589072 y 517917685.9983459
earth x 149592017.7598159 y 455001211.8198487
mars x 227388545.126971 y 367371658.18714637
jupiter x 747999680.7160246 y -147050953.8803639
saturn x 149599920.1790159 y 150358977.72021946
uranus x 299199980.044754 y 99363277.25026003
neptune x 448799991.131002 y 161352259.13062721
pluto x 5906207994.878902 y -1431710726.2792776
```

15379200

```
solar x 0.0 y 0
mercury x 58290908.26225568 y 741567768.6039959
venus x 104703524.02600305 y 520843731.0806019
earth x 149591927.05090937 y 457571783.7367049
mars x 227388505.86684912 y 369447117.82620645
jupiter x 747999677.0877972 y -147886521.9097445
saturn x 149599919.2719593 y 151207957.0764843
uranus x 299199979.81799 y 99923540.01518051
neptune x 448799991.030218 y 162263412.4347523
pluto x 5906207994.820708 y -1439845653.484536
```

15465600

```
solar x 0.0 y 0
mercury x 58290308.17145571 y 745733858.277975
venus x 104703337.8469302 y 523769776.1205803
earth x 149591835.82948616 y 460142355.5987831
mars x 227388466.3849141 y 371522577.38123935
jupiter x 747999673.4390712 y -148722089.4147197
saturn x 149599918.359778 y 152056935.93112892
uranus x 299199979.5899444 y 100483801.63144842
neptune x 448799990.9288645 y 163174565.3032821
pluto x 5906207994.762185 y -1447980580.6842623
```

15552000

```
solar x 0.0 y 0
mercury x 58289704.705206245 y 749899947.9313308
venus x 104703150.62168495 y 526695821.1187523
earth x 149591744.09554565 y 462712927.40669364
mars x 227388426.68116584 y 373598036.8531813
jupiter x 747999669.7698467 y -149557656.40116554
saturn x 149599917.442472 y 152905914.2897391
uranus x 299199979.360618 y 101044062.11183698
neptune x 448799990.8269415 y 164085717.7410678
pluto x 5906207994.703333 y -1456115507.8785183
```

15638400

```
solar x 0.0 y 0
mercury x 58289097.8634374 y 754066037.564292
venus x 104702962.35026355 y 529621866.075581
earth x 149591651.8490872 y 465283499.16103673
mars x 227388386.75560427 y 375673496.2429529
jupiter x 747999666.0801238 y -150393222.8748598
saturn x 149599916.5200415 y 153754892.15780777
uranus x 299199979.1300106 y 101604321.46890754
neptune x 448799990.724449 y 164996869.75287983
pluto x 5906207994.644153 y -1464250435.0673652
```

15724800

```
solar x 0.0 y 0
mercury x 58288487.64607889 y 758232127.1770831
venus x 104702773.03266223 y 532547910.9915221
earth x 149591559.0901102 y 467854070.8624026
mars x 227388346.6082293 y 377748955.55145955
jupiter x 747999662.3699024 y -151228788.84148422
saturn x 149599915.5924864 y 154603869.54073718
uranus x 299199978.898122 y 102164579.71501416
neptune x 448799990.6213875 y 165908021.34340984
pluto x 5906207994.584643 y -1472385362.2508628
```

15811200

```
solar x 0.0 y 0
mercury x 58287874.05306004 y 762398216.7699254
venus x 104702582.66887721 y 535473955.8670235
earth x 149591465.818614 y 470424642.51137185
mars x 227388306.23904088 y 379824414.7795918
jupiter x 747999658.6391824 y -152064354.30662662
saturn x 149599914.6598067 y 155452846.4438408
uranus x 299199978.664952 y 102724836.86230823
neptune x 448799990.517756 y 166819172.51727244
pluto x 5906207994.524805 y -1480520289.4290702
```

15897600

```
solar x 0.0 y 0
mercury x 58287257.08430977 y 766564306.343036
venus x 104702391.2589047 y 538400000.7025261
earth x 149591372.03459796 y 472995214.1085155
mars x 227388265.64803892 y 381899873.92822564
jupiter x 747999654.8879641 y -152899919.27578294
saturn x 149599913.7220025 y 156301822.87234527
uranus x 299199978.4305005 y 103285092.92274283
neptune x 448799990.413556 y 167730323.27900678
pluto x 5906207994.464638 y -1488655216.6020453
```

15984000

```
solar x 0.0 y 0
mercury x 58286636.73975663 y 770730395.8966291
venus x 104702198.80274086 y 541326045.4984634
earth x 149591277.73806146 y 475565785.65439534
mars x 227388224.83522332 y 383975332.99822277
jupiter x 747999651.1162473 y -153735483.7543593
saturn x 149599912.7790735 y 157150798.8313923
uranus x 299199978.1947684 y 103845347.90807702
neptune x 448799990.308786 y 168641473.63307825
pluto x 5906207994.404142 y -1496790143.769845
```

16070400

```
solar x 0.0 y 0
mercury x 58286013.01932875 y 774896485.430915
venus x 104702005.30038184 y 544252090.255262
earth x 149591182.9290038 y 478136357.1495641
mars x 227388183.80059403 y 386050791.99043095
jupiter x 747999647.3240321 y -154571047.7476739
```

```
saturn x 1495999911.8310199 y 157999774.32604045
uranus x 2991999977.957755 y 104405601.82988003
neptune x 4487999990.203447 y 169552623.58388007
pluto x 5906207994.343318 y -1504925070.9325256
```

16156800

```
solar x 0.0 y 0
mercury x 58285385.92295388 y 779062574.9461007
venus x 104701810.75182378 y 547178134.9733416
earth x 149591087.60742438 y 480706928.5945655
mars x 227388142.54415095 y 388126250.9056844
jupiter x 747999643.5113183 y -155406611.2609589
saturn x 1495999910.8778417 y 158848749.36126703
uranus x 2991999977.7194605 y 104965854.69953534
neptune x 4487999990.097539 y 170463773.13573483
pluto x 5906207994.282165 y -1513059998.0901423
```

16243200

```
solar x 0.0 y 0
mercury x 58284755.450559385 y 783228664.44239
venus x 104701615.1570628 y 550104179.6531152
earth x 149590991.77332252 y 483277499.98993474
mars x 227388101.065894 y 390201709.7448039
jupiter x 747999639.6781061 y -156242174.29936233
saturn x 1495999909.919539 y 159697723.94196972
uranus x 2991999977.4798846 y 105526106.5282446
neptune x 4487999989.991061 y 171374922.29289594
pluto x 5906207994.220682 y -1521194925.242749
```

16329600

```
solar x 0.0 y 0
mercury x 58284121.60207222 y 787394753.9199833
venus x 104701418.51609498 y 553030224.2949891
earth x 149590895.42669758 y 485848071.3361984
mars x 227388059.36582312 y 392277168.50859725
jupiter x 747999635.8243954 y -157077736.86794978
saturn x 1495999908.9561117 y 160546698.0729683
uranus x 2991999977.239028 y 106086357.3270315
neptune x 4487999989.884014 y 172286071.0595492
pluto x 5906207994.158872 y -1529329852.3903995
```

16416000

```
solar x 0.0 y 0
mercury x 58283484.37741895 y 791560843.379078
venus x 104701220.8289164 y 555956268.8993635
earth x 149590798.5675489 y 488418642.63387465
mars x 227388017.4439382 y 394352627.19785935
jupiter x 747999631.9501863 y -157913298.97170627
saturn x 1495999907.9875596 y 161395671.7590063
uranus x 2991999976.99689 y 106646607.10674551
neptune x 4487999989.776398 y 173197219.43981415
pluto x 5906207994.096732 y -1537464779.5331464
```

16502400

```
solar x 0.0 y 0
mercury x 58282843.77652576 y 795726932.8198683
```

```
venus x 104701022.0955231 y 558882313.466632
earth x 149590701.1958758 y 490989213.88347363
mars x 227387975.30023918 y 396428085.8133727
jupiter x 747999628.0554786 y -158748860.61553788
saturn x 149599907.0138829 y 162244645.00475252
uranus x 299199976.753471 y 107206855.87806559
neptune x 448799989.668211 y 174108367.43774548
pluto x 5906207994.034264 y -1545599706.6710413
```

16588800

```
solar x 0.0 y 0
mercury x 58282199.79931842 y 799893022.2425454
venus x 104700822.31591111 y 561808357.9971821
earth x 149590603.31167763 y 493559785.08549744
mars x 227387932.93472597 y 398503544.3559074
jupiter x 747999624.1402725 y -159584421.80427343
saturn x 149599906.0350816 y 163093617.81480274
uranus x 299199976.5087705 y 107767103.65150364
neptune x 448799989.559455 y 175019515.0573344
pluto x 5906207993.971466 y -1553734633.804135
```

16675200

```
solar x 0.0 y 0
mercury x 58281552.44572232 y 804059111.6472974
venus x 104700621.49007644 y 564734402.4913954
earth x 149590504.9149537 y 496130356.24044037
mars x 227387890.3473985 y 400579002.8262217
jupiter x 747999620.2045679 y -160419982.54266605
saturn x 149599905.0511558 y 163942590.19368112
uranus x 299199976.262789 y 108327350.43740806
neptune x 448799989.4501295 y 175930662.30250993
pluto x 5906207993.90834 y -1561869560.9324782
```

16761600

```
solar x 0.0 y 0
mercury x 58280901.71566246 y 808225201.0343096
venus x 104700419.61801507 y 567660446.9496472
earth x 149590406.00570336 y 498700927.348789
mars x 227387847.53825665 y 402654461.2250621
jupiter x 747999616.2483648 y -161255542.83539486
saturn x 149599904.0621054 y 164791562.14584175
uranus x 299199976.0155263 y 108887596.24596709
neptune x 448799989.340235 y 176841809.17714024
pluto x 5906207993.844886 y -1570004488.05612
```

16848000

```
solar x 0.0 y 0
mercury x 58280247.60906344 y 812391290.4037645
venus x 104700216.69972298 y 570586491.3723075
earth x 149590306.5839259 y 501271498.4110224
mars x 227387804.50730035 y 404729919.55316335
jupiter x 747999612.2716632 y -162091102.68706638
saturn x 149599903.0679302 y 165640533.67567
uranus x 299199975.7669826 y 109447841.08721207
neptune x 448799989.229771 y 177752955.6850338
pluto x 5906207993.781102 y -1578139415.1751087
```

16934400

```
solar x 0.0 y 0
mercury x 58279590.12584946 y 816557379.7558416
venus x 104700012.7351961 y 573512535.7597404
earth x 149590206.64962068 y 503842069.4276124
mars x 227387761.25452954 y 406805377.8112492
jupiter x 747999608.2744632 y -162926662.10221606
saturn x 1495999902.0686305 y 166489504.78748402
uranus x 2991999975.5171576 y 110008084.97102068
neptune x 4487999989.118737 y 178664101.8299407
pluto x 5906207993.7169895 y -1586274342.2894924
```

17020800

```
solar x 0.0 y 0
mercury x 58278929.26594435 y 820723469.0907178
venus x 104699807.72443035 y 576438580.1123043
earth x 149590106.20278698 y 506412640.39902353
mars x 227387717.77994412 y 408880836.00003225
jupiter x 747999604.2567647 y -163762221.0853098
saturn x 1495999901.0642061 y 167338475.48553604
uranus x 2991999975.2660513 y 110568327.90712008
neptune x 4487999989.007134 y 179575247.61555383
pluto x 5906207993.652549 y -1594409269.3993182
```

17107200

```
solar x 0.0 y 0
mercury x 58278265.029271506 y 824889558.4085673
venus x 104699601.66742165 y 579364624.4303524
earth x 149590005.24342415 y 508983211.3257133
mars x 227387674.08354402 y 410956294.1202142
jupiter x 747999600.2185676 y -164597779.64074525
saturn x 1495999900.0546572 y 168187445.77401376
uranus x 2991999975.0136642 y 111128569.90508988
neptune x 4487999988.894962 y 180486393.04550993
pluto x 5906207993.587779 y -1602544196.5046325
```

17193600

```
solar x 0.0 y 0
mercury x 58277597.41575396 y 829055647.7095617
venus x 104699394.56416588 y 582290668.7142324
earth x 149589903.77153146 y 511553782.2081322
mars x 227387630.16532913 y 413031752.1724863
jupiter x 747999596.1598722 y -165433337.7728533
saturn x 1495999899.0399837 y 169036415.6570416
uranus x 2991999974.759996 y 111688810.9743652
neptune x 4487999988.782221 y 181397538.12339088
pluto x 5906207993.52268 y -1610679123.605481
```

17280000

```
solar x 0.0 y 0
mercury x 58276926.42531435 y 833221736.9938699
venus x 104699186.41465889 y 585216712.9642869
earth x 149589801.7871082 y 514124353.04672414
mars x 227387586.02529937 y 415107210.1575293
jupiter x 747999592.0806782 y -166268895.48589942
saturn x 1495999898.0201855 y 169885385.13868204
```

```
uranus x 2991999974.5050464 y 112249051.1242395
neptune x 4487999988.66891 y 182308682.85272467
pluto x 5906207993.4572525 y -1618814050.7019083
```

17366400

```
solar x 0.0 y 0
mercury x 58276252.05787491 y 837387826.2616583
venus x 104698977.21889652 y 588142757.1808532
earth x 149589699.29015374 y 516694923.8419262
mars x 227387541.66345465 y 417182668.07601374
jupiter x 747999587.9809858 y -167104452.78408483
saturn x 1495999896.9952626 y 170734354.22293672
uranus x 2991999974.2488155 y 112809290.36386743
neptune x 4487999988.55503 y 183219827.23698655
pluto x 5906207993.391497 y -1626948977.7939594
```

17452800

```
solar x 0.0 y 0
mercury x 58275574.31335748 y 841553915.513091
venus x 104698766.9768746 y 591068801.3642639
earth x 149589596.28066733 y 519265494.59416914
mars x 227387497.0797949 y 419258125.92860025
jupiter x 747999583.8607949 y -167940009.67154792
saturn x 1495999895.9652152 y 171583322.91374782
uranus x 2991999973.991304 y 113369528.70226756
neptune x 4487999988.44058 y 184130971.27960002
pluto x 5906207993.325412 y -1635083904.8816774
```

17539200

```
solar x 0.0 y 0
mercury x 58274893.19168351 y 845720004.7483294
venus x 104698555.68858892 y 593994845.5148462
earth x 149589492.75864828 y 521836065.3038772
mars x 227387452.27432004 y 421333583.71593964
jupiter x 747999579.7201055 y -168775566.15236554
saturn x 1495999894.9300432 y 172432291.21499908
uranus x 2991999973.732511 y 113929766.14832507
neptune x 4487999988.325562 y 185042114.98393795
pluto x 5906207993.258998 y -1643218831.9651055
```

17625600

```
solar x 0.0 y 0
mercury x 58274208.69277406 y 849886093.9675328
venus x 104698343.35403526 y 596920889.6329229
earth x 149589388.72409585 y 524406635.9714683
mars x 227387407.24702996 y 423409041.43867314
jupiter x 747999575.5589176 y -169611122.23055404
saturn x 1495999893.8897467 y 173281259.13051704
uranus x 2991999973.472437 y 114490002.71079439
neptune x 4487999988.209973 y 185953258.35332343
pluto x 5906207993.192255 y -1651353759.0442863
```

17712000

```
solar x 0.0 y 0
mercury x 58273520.81654978 y 854052183.1708578
venus x 104698129.97320937 y 599846933.7188119
```



```
earth x 149589284.17700934 y 526977206.5973545
mars x 227387361.9979246 y 425484499.09743255
jupiter x 747999571.3772314 y -170446677.9100706
saturn x 1495999892.8443255 y 174130226.66407216
uranus x 2991999973.2110815 y 115050238.39830172
neptune x 4487999988.093816 y 186864401.39103085
pluto x 5906207993.125184 y -1659488686.1192613
```

17798400

```
solar x 0.0 y 0
mercury x 58272829.56293094 y 858218272.3584591
venus x 104697915.546107 y 602772977.7728263
earth x 149589179.11738804 y 529547777.1819415
mars x 227387316.52700382 y 427559956.69284046
jupiter x 747999567.1750466 y -171282233.19481435
saturn x 1495999891.7937796 y 174979193.81937984
uranus x 2991999972.948445 y 115610473.21934755
neptune x 4487999987.977089 y 187775544.10028684
pluto x 5906207993.057784 y -1667623613.1900716
```

17884800

```
solar x 0.0 y 0
mercury x 58272134.93183742 y 862384361.5304891
venus x 104697700.07272384 y 605699021.795275
earth x 149589073.54523125 y 532118347.72562945
mars x 227387270.8342676 y 429635414.2255104
jupiter x 747999562.9523633 y -172117788.0886275
saturn x 1495999890.738109 y 175828160.60010156
uranus x 2991999972.6845274 y 116170707.18230908
neptune x 4487999987.859792 y 188686686.48427114
pluto x 5906207992.990055 y -1675758540.2567577
```

17971200

```
solar x 0.0 y 0
mercury x 58271436.92318869 y 866550450.6870977
venus x 104697483.5530556 y 608625065.7864621
earth x 149588967.46053824 y 534688918.22881246
mars x 227387224.9197158 y 431710871.6960471
jupiter x 747999558.7091815 y -172953342.59529638
saturn x 1495999889.677314 y 176677127.00984588
uranus x 2991999972.4193287 y 116730940.29544257
neptune x 4487999987.741925 y 189597828.54611757
pluto x 5906207992.921997 y -1683893467.3193598
```

18057600

```
solar x 0.0 y 0
mercury x 58270735.53690383 y 870716539.8284328
venus x 104697265.98709795 y 611551109.7466874
earth x 149588860.86330825 y 537259488.691879
mars x 227387178.78334832 y 433786329.1050466
jupiter x 747999554.4455013 y -173788896.71855268
saturn x 1495999888.6113944 y 177526093.05216947
uranus x 2991999972.1528487 y 117291172.56688571
neptune x 4487999987.623489 y 190508970.28891486
pluto x 5906207992.853611 y -1692028394.377917
```

18144000

```
solar x 0.0 y 0
mercury x 58270030.772901535 y 874882628.9546403
venus x 104697047.37484655 y 614477153.6762466
earth x 149588753.75354058 y 539830059.1152122
mars x 227387132.42516512 y 435861786.45309615
jupiter x 747999550.1613226 y -174624450.46207428
saturn x 1495999887.5403502 y 178375058.7305781
uranus x 2991999971.8850875 y 117851404.00465983
neptune x 4487999987.504484 y 191420111.71570748
pluto x 5906207992.784896 y -1700163321.4324684
```

18230400

```
solar x 0.0 y 0
mercury x 58269322.631100096 y 879048718.0658638
venus x 104696827.71629702 y 617403197.5754311
earth x 149588646.13123447 y 542400629.4991895
mars x 227387085.8451661 y 437937243.740775
jupiter x 747999545.8566453 y -175460003.82948646
saturn x 1495999886.4641812 y 179224024.04852757
uranus x 2991999971.6160455 y 118411634.61667214
neptune x 4487999987.38491 y 192331252.82949662
pluto x 5906207992.715852 y -1708298248.483052
```

18316800

```
solar x 0.0 y 0
mercury x 58268611.11141741 y 883214807.1622453
venus x 104696607.01144497 y 620329241.4445281
earth x 149588537.9963892 y 544971199.844183
mars x 227387039.0433511 y 440012700.96865386
jupiter x 747999541.5314697 y -176295556.8243628
saturn x 1495999885.3828876 y 180072989.00942472
uranus x 2991999971.345722 y 118971864.41071787
neptune x 4487999987.264766 y 193242393.63324085
pluto x 5906207992.646479 y -1716433175.5297055
```

18403200

```
solar x 0.0 y 0
mercury x 58267896.213770986 y 887380896.2439241
venus x 104696385.26028599 y 623255285.2838207
earth x 149588429.34900406 y 547541770.1505595
mars x 227386992.01972014 y 442088158.13729566
jupiter x 747999537.1857955 y -177131109.45022625
saturn x 1495999884.2964694 y 180921953.6166283
uranus x 2991999971.0741177 y 119532093.39448237
neptune x 4487999987.1440525 y 194153534.12985703
pluto x 5906207992.576777 y -1724568102.5724661
```

18489600

```
solar x 0.0 y 0
mercury x 58267177.938077934 y 891546985.3110383
venus x 104696162.46281566 y 626181329.0935882
earth x 149588320.18907824 y 550112340.418681
mars x 227386944.77427304 y 444163615.2472552
jupiter x 747999532.8196229 y -177966661.71054992
saturn x 1495999883.2049267 y 181770917.87344986
uranus x 2991999970.801232 y 120092321.57554317
```

```
neptune x 4487999987.02277 y 195064674.322221  
pluto x 5906207992.506747 y -1732703029.6113706
```

18576000

```
solar x 0.0 y 0  
mercury x 58266456.28425496 y 895713074.3637234  
venus x 104695938.6190295 y 629107372.8741058  
earth x 149588210.51661104 y 552682910.648904  
mars x 227386897.30700976 y 446239072.29907966  
jupiter x 747999528.4329518 y -178802213.60875818  
saturn x 1495999882.1082594 y 182619881.78315473  
uranus x 2991999970.527065 y 120652548.96137199  
neptune x 4487999986.900918 y 195975814.21316847  
pluto x 5906207992.436388 y -1740837956.6464548
```

18662400

```
solar x 0.0 y 0  
mercury x 58265731.252218395 y 899879163.4021134  
venus x 104695713.72892307 y 632033416.6256449  
earth x 149588100.33160168 y 555253480.8415802  
mars x 227386849.61793017 y 448314529.29330856  
jupiter x 747999524.0257822 y -179637765.14822748  
saturn x 1495999881.0064673 y 183468845.34896275  
uranus x 2991999970.251617 y 121212775.5593367  
neptune x 4487999986.778497 y 196886953.8054956  
pluto x 5906207992.3657 y -1748972883.6777546
```

18748800

```
solar x 0.0 y 0  
mercury x 58265002.841884166 y 904045252.4263405  
venus x 104695487.79249184 y 634959460.3484733  
earth x 149587989.63404945 y 557824050.9970565  
mars x 227386801.7070342 y 450389986.23047394  
jupiter x 747999519.5981141 y -180473316.33228728  
saturn x 1495999879.8995507 y 184317808.57404917  
uranus x 2991999969.974888 y 121773001.37670326  
neptune x 4487999986.655506 y 197798093.10195988  
pluto x 5906207992.294683 y -1757107810.705305
```

18835200

```
solar x 0.0 y 0  
mercury x 58264271.0531678 y 908211341.4365346  
venus x 104695260.80973132 y 637885504.042855  
earth x 149587878.42395353 y 560394621.115675  
mars x 227386753.57432175 y 452465443.11110044  
jupiter x 747999515.1499475 y -181308867.1642209  
saturn x 1495999878.7875094 y 185166771.4615455  
uranus x 2991999969.6968775 y 122333226.42063753  
neptune x 4487999986.531946 y 198709232.10528076  
pluto x 5906207992.223338 y -1765242737.7291408
```

18921600

```
solar x 0.0 y 0  
mercury x 58263535.88598443 y 912377430.4328245  
venus x 104695032.78063695 y 640811547.7090503  
earth x 149587766.7013132 y 562965191.197773
```

```
mars x 227386705.21979272 y 454540899.9357056
jupiter x 747999510.6812825 y -182144417.64726636
saturn x 1495999877.6703436 y 186015734.0145402
uranus x 2991999969.417586 y 122893450.69820717
neptune x 4487999986.407817 y 199620370.8181404
pluto x 5906207992.151664 y -1773377664.749296
```

19008000

```
solar x 0.0 y 0
mercury x 58262797.34024879 y 916543519.4153367
venus x 104694803.70520419 y 643737591.3473161
earth x 149587654.4661277 y 565535761.2436833
mars x 227386656.64344704 y 456616356.7047999
jupiter x 747999506.192119 y -182979967.78461722
saturn x 1495999876.5480533 y 186864696.2360796
uranus x 2991999969.1370134 y 123453674.21638337
neptune x 4487999986.283118 y 200531509.24318424
pluto x 5906207992.07966 y -1781512591.7658043
```

19094400

```
solar x 0.0 y 0
mercury x 58262055.41587524 y 920709608.3841963
venus x 104694573.58342846 y 646663634.9579058
earth x 149587541.71839622 y 568106331.2537341
mars x 227386607.84528458 y 458691813.4188867
jupiter x 747999501.682457 y -183815517.5794234
saturn x 1495999875.420638 y 187713658.1291686
uranus x 2991999968.8551598 y 124013896.98204264
neptune x 4487999986.15785 y 201442647.3830218
pluto x 5906207992.007329 y -1789647518.778699
```

19180800

```
solar x 0.0 y 0
mercury x 58261310.112777725 y 924875697.3395264
venus x 104694342.41530515 y 649589678.541069
earth x 149587428.45811802 y 570676901.2282492
mars x 227386558.82530525 y 460767270.0784628
jupiter x 747999497.1522964 y -184651067.03479198
saturn x 1495999874.2880983 y 188562619.6967714
uranus x 2991999968.572025 y 124574119.00196849
neptune x 4487999986.032013 y 202353785.24022728
pluto x 5906207991.934669 y -1797782445.7880127
```

19267200

```
solar x 0.0 y 0
mercury x 58260561.4308698 y 929041786.2814487
venus x 104694110.20082965 y 652515722.0970526
earth x 149587314.68529233 y 573247471.167548
mars x 227386509.58350897 y 462842726.684018
jupiter x 747999492.6016375 y -185486616.1537879
saturn x 1495999873.150434 y 189411580.9418123
uranus x 2991999968.2876086 y 125134340.28285311
neptune x 4487999985.905606 y 203264922.81734014
pluto x 5906207991.861679 y -1805917372.793778
```

19353600

```
solar x 0.0 y 0
mercury x 58259809.37006463 y 933207875.2100832
venus x 104693876.93999732 y 655441765.6260995
earth x 149587200.39991835 y 575818041.0719455
mars x 227386460.11989564 y 464918183.2360358
jupiter x 747999488.03048 y -186322164.93943483
saturn x 1495999872.0076451 y 190260541.8671763
uranus x 2991999968.0019116 y 125694560.831299
neptune x 4487999985.778629 y 204176060.1168658
pluto x 5906207991.788361 y -1814052299.7960265
```

19440000

```
solar x 0.0 y 0
mercury x 58259053.93027497 y 937373964.1255484
venus x 104693642.63280348 y 658367809.1284498
earth x 149587085.6019953 y 578388610.9417529
mars x 227386410.43446517 y 466993639.73499316
jupiter x 747999483.438824 y -187157713.39471582
saturn x 1495999870.8597317 y 191109502.47570986
uranus x 2991999967.7149334 y 126254780.65382057
neptune x 4487999985.651083 y 205087197.1412762
pluto x 5906207991.714714 y -1822187226.7947898
```

19526400

```
solar x 0.0 y 0
mercury x 58258295.111413196 y 941540053.0279608
venus x 104693407.27924347 y 661293852.6043403
earth x 149586970.29152238 y 580959180.7772768
mars x 227386360.52721745 y 469069096.1813606
jupiter x 747999478.8266697 y -187993261.52257404
saturn x 1495999869.7066936 y 191958462.77022165
uranus x 2991999967.426674 y 126814999.7568457
neptune x 4487999985.522967 y 205998333.89301044
pluto x 5906207991.6407385 y -1830322153.7900991
```

19612800

```
solar x 0.0 y 0
mercury x 58257532.91339128 y 945706141.9174358
venus x 104693170.87931257 y 664219896.0540045
earth x 149586854.46849883 y 583529750.5788199
mars x 227386310.39815238 y 471144552.5756025
jupiter x 747999474.1940168 y -188828809.32591355
saturn x 1495999868.5485308 y 192807422.75348315
uranus x 2991999967.137133 y 127375218.14671724
neptune x 4487999985.394282 y 206909470.37447524
pluto x 5906207991.566434 y -1838457080.781985
```

19699200

```
solar x 0.0 y 0
mercury x 58256767.3361208 y 949872230.7940872
venus x 104692933.43300606 y 667145939.4776732
earth x 149586738.13292384 y 586100320.346681
mars x 227386260.04726988 y 473220008.918177
jupiter x 747999469.5408654 y -189664356.8075999
saturn x 1495999867.3852434 y 193656382.42822927
uranus x 2991999966.846311 y 127935435.82969455
neptune x 4487999985.265028 y 207820606.5880457
```

```
pluto x 5906207991.4918 y -1846592007.7704775
```

19785600

```
solar x 0.0 y 0
mercury x 58255998.379512936 y 954038319.6580272
venus x 104692694.9403192 y 670071982.8755736
earth x 149586621.28479663 y 588670890.0811548
mars x 227386209.47456986 y 475295465.20953643
jupiter x 747999464.8672155 y -190499903.9704609
saturn x 1495999866.2168314 y 194505341.79715905
uranus x 2991999966.5542083 y 128495652.81195495
neptune x 4487999985.135204 y 208731742.53606564
pluto x 5906207991.416839 y -1854726934.7556067
```

19872000

```
solar x 0.0 y 0
mercury x 58255226.04347848 y 958204408.5093665
venus x 104692455.4012472 y 672998026.2479306
earth x 149586503.92411637 y 591241459.7825325
mars x 227386158.6800522 y 477370921.45012707
jupiter x 747999460.1730672 y -191335450.81728718
saturn x 1495999865.043295 y 195354300.86293626
uranus x 2991999966.260824 y 129055869.09959507
neptune x 4487999985.004811 y 209642878.22084835
pluto x 5906207991.341548 y -1862861861.7374017
```

19958400

```
solar x 0.0 y 0
mercury x 58254450.32792783 y 962370497.3482145
venus x 104692214.81578529 y 675924069.5949657
earth x 149586386.05088228 y 593812029.451101
mars x 227386107.6637168 y 479446377.6403894
jupiter x 747999455.4584204 y -192170997.3508329
saturn x 1495999863.8646338 y 196203259.62819004
uranus x 2991999965.966159 y 129616084.69863237
neptune x 4487999984.873849 y 210554013.64467698
pluto x 5906207991.265928 y -1870996788.7158918
```

20044800

```
solar x 0.0 y 0
mercury x 58253671.23277097 y 966536586.1746792
venus x 104691973.18392865 y 678850112.9168975
earth x 149586267.66509354 y 596382599.0871438
mars x 227386056.42556354 y 481521833.7807582
jupiter x 747999450.7232751 y -193006543.57381642
saturn x 1495999862.680848 y 197052218.09551543
uranus x 2991999965.6702123 y 130176299.61500645
neptune x 4487999984.742317 y 211465148.80980512
pluto x 5906207991.18998 y -1879131715.6911058
```

20131200

```
solar x 0.0 y 0
mercury x 58252888.75791751 y 970702674.9888669
venus x 104691730.50567247 y 681776156.2139422
earth x 149586148.76674932 y 598953168.6909407
mars x 227386004.96559238 y 483597289.8716626
```

```
jupiter x 747999445.9676312 y -193842089.4889208
saturn x 1495999861.4919374 y 197901176.26747403
uranus x 2991999965.372985 y 130736513.85458033
neptune x 4487999984.610216 y 212376283.71845728
pluto x 5906207991.113703 y -1887266642.6630719
```

20217600

```
solar x 0.0 y 0
mercury x 58252102.90327665 y 974868763.790883
venus x 104691486.78101188 y 684702199.4863127
earth x 149586029.35584885 y 601523738.2627679
mars x 227385953.28380316 y 485672745.91352636
jupiter x 747999441.191489 y -194677635.09879452
saturn x 1495999860.2979023 y 198750134.14659452
uranus x 2991999965.0744762 y 131296727.42314185
neptune x 4487999984.477546 y 213287418.37282938
pluto x 5906207991.037097 y -1895401569.6318178
```

20304000

```
solar x 0.0 y 0
mercury x 58251313.6687572 y 979034852.580831
venus x 104691242.00994201 y 687628242.7342197
earth x 149585909.4323913 y 604094307.802898
mars x 227385901.38019583 y 487748201.90676767
jupiter x 747999436.3948482 y -195513180.40605202
saturn x 1495999859.0987427 y 199599091.73537332
uranus x 2991999964.7746863 y 131856940.32640493
neptune x 4487999984.344306 y 214198552.7750893
pluto x 5906207990.960162 y -1903536496.5973713
```

20390400

```
solar x 0.0 y 0
mercury x 58250521.05426757 y 983200941.3588138
venus x 104690996.19245797 y 690554285.9578707
earth x 149585788.9963758 y 606664877.3116003
mars x 227385849.25477025 y 489823657.8517994
jupiter x 747999431.577709 y -196348725.41327432
saturn x 1495999857.8944585 y 200448049.03627494
uranus x 2991999964.473615 y 132417152.57001077
neptune x 4487999984.210497 y 215109686.92737728
pluto x 5906207990.882898 y -1911671423.5597596
```

20476800

```
solar x 0.0 y 0
mercury x 58249725.059715785 y 987367030.1249322
venus x 104690749.32855485 y 693480329.1574711
earth x 149585668.04780155 y 609235446.7891406
mars x 227385796.90752634 y 491899113.74902934
jupiter x 747999426.7400712 y -197184270.1230095
saturn x 1495999856.6850495 y 201297006.05173275
uranus x 2991999964.1712627 y 132977364.15952913
neptune x 4487999984.076118 y 216020820.83180645
pluto x 5906207990.805306 y -1919806350.5190096
```

20563200

```
solar x 0.0 y 0
```

```
mercury x 58248925.68500946 y 991533118.8792863
venus x 104690501.41822772 y 696406372.3332231
earth x 149585546.58666775 y 611806016.2357811
mars x 227385744.338464 y 493974569.5988599
jupiter x 747999421.881935 y -198019814.53777337
saturn x 1495999855.470516 y 202145962.78414935
uranus x 2991999963.8676295 y 133537575.10045956
neptune x 4487999983.941171 y 216931954.49046323
pluto x 5906207990.7273855 y -1927941277.4751477
```

20649600

```
solar x 0.0 y 0
mercury x 58248122.93005581 y 995699207.6219747
venus x 104690252.4614716 y 699332415.485327
earth x 149585424.61297354 y 614376585.6517811
mars x 227385691.5475831 y 496050025.4016886
jupiter x 747999417.0033003 y -198855358.66004995
saturn x 1495999854.2508578 y 202994919.23589712
uranus x 2991999963.562715 y 134097785.39823247
neptune x 4487999983.805654 y 217843087.90540782
pluto x 5906207990.649136 y -1936076204.4282002
```

20736000

```
solar x 0.0 y 0
mercury x 58247316.79476168 y 999865296.3530949
venus x 104690002.45828153 y 702258458.61398
earth x 149585302.1267181 y 616947155.0373963
mars x 227385638.53488356 y 498125481.1579079
jupiter x 747999412.1041671 y -199690902.492292
saturn x 1495999853.0260751 y 203843875.40931877
uranus x 2991999963.2565193 y 134657995.0582104
neptune x 4487999983.669566 y 218754221.0786746
pluto x 5906207990.570557 y -1944211131.3781931
```

20822400

```
solar x 0.0 y 0
mercury x 58246507.2790335 y 1004031385.072743
venus x 104689751.40865251 y 705184501.7193774
earth x 149585179.1279006 y 619517724.3928795
mars x 227385585.30036527 y 500200936.86790544
jupiter x 747999407.1845354 y -200526446.0369215
saturn x 1495999851.7961679 y 204692831.30672777
uranus x 2991999962.9490423 y 135218204.08568907
neptune x 4487999983.532909 y 219665354.01227263
pluto x 5906207990.49165 y -1952346058.325152
```

20908800

```
solar x 0.0 y 0
mercury x 58245694.382777296 y 1008197473.7810141
venus x 104689499.31257953 y 708110544.8017116
earth x 149585055.61652017 y 622088293.7184802
mars x 227385531.84402812 y 502276392.53206396
jupiter x 747999402.2444052 y -201361989.29633036
saturn x 1495999850.5611358 y 205541786.93040887
uranus x 2991999962.6402845 y 135778412.4858985
neptune x 4487999983.395683 y 220576486.70818597
pluto x 5906207990.412414 y -1960480985.2691019
```


20995200

```
solar x 0.0 y 0
mercury x 58244878.105898716 y 1012363562.478002
venus x 104689246.17005754 y 711036587.8611728
earth x 149584931.59257597 y 624658863.014445
mars x 227385478.165872 y 504351848.1507615
jupiter x 747999397.2837765 y -202197532.27288064
saturn x 1495999849.320979 y 206390742.28261858
uranus x 2991999962.3302455 y 136338620.2640041
neptune x 4487999983.257888 y 221487619.16837418
pluto x 5906207990.332849 y -1968615912.2100677
```

21081600

```
solar x 0.0 y 0
mercury x 58244058.44830301 y 1016529651.1637993
venus x 104688991.98108147 y 713962630.897949
earth x 149584807.05606714 y 627229432.281017
mars x 227385424.26589683 y 506427303.72437143
jupiter x 747999392.3026494 y -203033074.96890527
saturn x 1495999848.075698 y 207239697.36558563
uranus x 2991999962.018925 y 136898827.42510778
neptune x 4487999983.119523 y 222398751.39477268
pluto x 5906207990.2529545 y -1976750839.1480742
```

21168000

```
solar x 0.0 y 0
mercury x 58243235.409895 y 1020695739.8384976
venus x 104688736.74564625 y 716888673.9122256
earth x 149584682.00699285 y 629800001.5184368
mars x 227385370.14410248 y 508502759.2532626
jupiter x 747999387.3010237 y -203868617.38670835
saturn x 1495999846.825292 y 208088652.18151137
uranus x 2991999961.7063236 y 137459033.9742489
neptune x 4487999982.980589 y 223309883.38929313
pluto x 5906207990.172732 y -1984885766.0831456
```

21254400

```
solar x 0.0 y 0
mercury x 58242408.990579166 y 1024861828.5021874
venus x 104688480.46374679 y 719814716.904186
earth x 149584556.44535223 y 632370570.726942
mars x 227385315.80048886 y 510578214.7377992
jupiter x 747999382.2788996 y -204704159.5285658
saturn x 1495999845.5697618 y 208937606.73257032
uranus x 2991999961.3924413 y 138019239.9164053
neptune x 4487999982.841085 y 224221015.15382385
pluto x 5906207990.092181 y -1993020693.015306
```

21340800

```
solar x 0.0 y 0
mercury x 58241579.190259546 y 1029027917.1549578
venus x 104688223.13537794 y 722740759.8740113
earth x 149584430.37114444 y 634941139.9067669
mars x 227385261.23505586 y 512653670.1783412
jupiter x 747999377.236277 y -205539701.39672562
```

```
saturn x 1495999844.3091068 y 209786561.02091053
uranus x 2991999961.0772777 y 138579445.25649437
neptune x 4487999982.701013 y 225132146.69023022
pluto x 5906207990.011301 y -2001155619.944579
```

21427200

```
solar x 0.0 y 0
mercury x 58240746.0088398 y 1033194005.7968972
venus x 104687964.76053458 y 725666802.8218802
earth x 149584303.7843686 y 637511709.0581435
mars x 227385206.44780338 y 514729125.57524407
jupiter x 747999372.1731559 y -206375242.99340856
saturn x 1495999843.043327 y 210635515.048654
uranus x 2991999960.760833 y 139139649.999374
neptune x 4487999982.56037 y 226043278.00035495
pluto x 5906207989.930092 y -2009290546.870988
```

21513600

```
solar x 0.0 y 0
mercury x 58239909.44622319 y 1037360094.4280927
venus x 104687705.33921154 y 728592845.7479695
earth x 149584176.68502384 y 640082278.1813008
mars x 227385151.4387313 y 516804580.928859
jupiter x 747999367.0895363 y -207210784.32080838
saturn x 1495999841.7724228 y 211484468.8178971
uranus x 2991999960.4431067 y 139699854.14984345
neptune x 4487999982.419159 y 226954409.08601856
pluto x 5906207989.848555 y -2017425473.7945561
```

21600000

```
solar x 0.0 y 0
mercury x 58239069.50231258 y 1041526183.0486305
venus x 104687444.87140362 y 731518888.6524538
earth x 149584049.0731093 y 642652847.2764648
mars x 227385096.20783955 y 518880036.23953295
jupiter x 747999361.9854182 y -208046325.3810924
saturn x 1495999840.496394 y 212333422.3307111
uranus x 2991999960.1240993 y 140260057.7126444
neptune x 4487999982.277378 y 227865539.94901967
pluto x 5906207989.766688 y -2025560400.7153065
```

21686400

```
solar x 0.0 y 0
mercury x 58238226.17701043 y 1045692271.6585956
venus x 104687183.35710561 y 734444931.5355055
earth x 149583920.94862407 y 645223416.3438591
mars x 227385040.75512797 y 520955491.50760883
jupiter x 747999356.8608016 y -208881866.17640182
saturn x 1495999839.2152405 y 213182375.58914235
uranus x 2991999959.803811 y 140820260.69246182
neptune x 4487999982.135028 y 228776670.59113538
pluto x 5906207989.684493 y -2033695327.6332614
```

21772800

```
solar x 0.0 y 0
mercury x 58237379.470218815 y 1049858360.2580721
```

```
venus x 104686920.7963123 y 737370974.3972952
earth x 149583792.3115673 y 647793985.3837044
mars x 227384985.08059648 y 523030946.7334253
jupiter x 747999351.7156866 y -209717406.70885226
saturn x 1495999837.9289625 y 214031328.5952129
uranus x 2991999959.4822416 y 141380463.09392485
neptune x 4487999981.992108 y 229687801.0141216
pluto x 5906207989.601969 y -2041830254.5484433
```

21859200

```
solar x 0.0 y 0
mercury x 58236529.38183941 y 1054024448.8471432
venus x 104686657.18901843 y 740297017.2379912
earth x 149583663.16193813 y 650364554.3962191
mars x 227384929.18424496 y 525106401.91731715
jupiter x 747999346.550073 y -210552946.98053405
saturn x 1495999836.6375597 y 214880281.35092077
uranus x 2991999959.159391 y 141940664.92160773
neptune x 4487999981.848619 y 230598931.21971336
pluto x 5906207989.519116 y -2049965181.4608743
```

21945600

```
solar x 0.0 y 0
mercury x 58235675.91177349 y 1058190537.4258908
venus x 104686392.53521873 y 743223060.05776
earth x 149583533.49973562 y 652935123.3816187
mars x 227384873.0660733 y 527181857.0596151
jupiter x 747999341.363961 y -211388486.99351272
saturn x 1495999835.3410323 y 215729233.8582403
uranus x 2991999958.835259 y 142500866.18003067
neptune x 4487999981.704561 y 231510061.20962518
pluto x 5906207989.435935 y -2058100108.3705761
```

22032000

```
solar x 0.0 y 0
mercury x 58234819.05992193 y 1062356625.9943962
venus x 104686126.8349079 y 746149102.856766
earth x 149583403.32495892 y 655505692.3401164
mars x 227384816.7260814 y 529257312.16064596
jupiter x 747999336.1573504 y -212224026.74982935
saturn x 1495999834.0393803 y 216578186.11912262
uranus x 2991999958.509846 y 143061066.8736606
neptune x 4487999981.559934 y 232421190.98555142
pluto x 5906207989.352425 y -2066235035.2775702
```

22118400

```
solar x 0.0 y 0
mercury x 58233958.82618522 y 1066522714.5527395
venus x 104685860.08808064 y 749075145.6351717
earth x 149583272.63760713 y 658076261.2719227
mars x 227384760.16426915 y 531332767.2207328
jupiter x 747999330.9302413 y -213059566.25150093
saturn x 1495999832.7326038 y 217427138.1354959
uranus x 2991999958.183152 y 143621267.0069121
neptune x 4487999981.414737 y 233332320.54916647
pluto x 5906207989.268585 y -2074369962.181878
```

22204800

```
solar x 0.0 y 0
mercury x 58233095.210463434 y 1070688803.101
venus x 104685592.29473163 y 752001188.3931377
earth x 149583141.43767935 y 660646830.1772457
mars x 227384703.38063645 y 533408222.24019486
jupiter x 747999325.6826339 y -213895105.50052083
saturn x 1495999831.4207027 y 218276089.90926582
uranus x 2991999957.855177 y 144181466.58414823
neptune x 4487999981.26897 y 234243449.90212518
pluto x 5906207989.184417 y -2082504889.0835207
```

22291200

```
solar x 0.0 y 0
mercury x 58232228.21265627 y 1074854891.6392558
venus x 104685323.45485549 y 754927231.1308228
earth x 149583009.7251747 y 663217399.0562911
mars x 227384646.37518317 y 535483677.21934766
jupiter x 747999320.4145279 y -214730644.49885902
saturn x 1495999830.1036768 y 219125041.44231585
uranus x 2991999957.5259204 y 144741665.60968125
neptune x 4487999981.122633 y 235154579.04606313
pluto x 5906207989.09992 y -2090639815.9825184
```

22377600

```
solar x 0.0 y 0
mercury x 58231357.83266301 y 1079020980.1675844
venus x 104685053.56844686 y 757853273.8483839
earth x 149582877.50009227 y 665787967.9092622
mars x 227384589.1479092 y 537559132.158503
jupiter x 747999315.1259234 y -215566183.2484626
saturn x 1495999828.7815263 y 219973992.7365076
uranus x 2991999957.1953826 y 145301864.08777344
neptune x 4487999980.975727 y 236065707.98259693
pluto x 5906207989.015095 y -2098774742.8788924
```

22464000

```
solar x 0.0 y 0
mercury x 58230484.07038255 y 1083187068.6860626
venus x 104684782.63550034 y 760779316.5459762
earth x 149582744.76243114 y 668358536.73636
mars x 227384531.69881442 y 539634587.0579693
jupiter x 747999309.8168204 y -216401721.75125596
saturn x 1495999827.4542513 y 220822943.79368117
uranus x 2991999956.863564 y 145862062.02263787
neptune x 4487999980.828252 y 236976836.71332452
pluto x 5906207988.92994 y -2106909669.7726626
```

22550400

```
solar x 0.0 y 0
mercury x 58229606.92571339 y 1087353157.1947656
venus x 104684510.65601051 y 763705359.2237529
earth x 149582611.5121904 y 670929105.537783
mars x 227384474.02789876 y 541710041.9180511
jupiter x 747999304.4872189 y -217237260.0091414
saturn x 1495999826.1218517 y 221671894.6156555
```

```
uranus x 2991999956.530464 y 146422259.41843918
neptune x 4487999980.680207 y 237887965.2398254
pluto x 5906207988.844457 y -2115044596.663849
```

22636800

```
solar x 0.0 y 0
mercury x 58228726.39855362 y 1091519245.6937683
venus x 104684237.62997194 y 766631401.8818655
earth x 149582477.74936914 y 673499674.3137277
mars x 227384416.13516206 y 543785496.7390497
jupiter x 747999299.1371189 y -218072798.02399915
saturn x 1495999824.7843275 y 222520845.20422867
uranus x 2991999956.196083 y 146982456.27929428
neptune x 4487999980.531593 y 238799093.563661
pluto x 5906207988.758645 y -2123179523.5524719
```

22723200

```
solar x 0.0 y 0
mercury x 58227842.48880094 y 1095685334.1831448
venus x 104683963.55737916 y 769557444.520464
earth x 149582343.47396648 y 676070243.0643883
mars x 227384358.02060422 y 545860951.5212628
jupiter x 747999293.7665205 y -218908335.79768804
saturn x 1495999823.4416785 y 223369795.56117818
uranus x 2991999955.8604207 y 147542652.60927314
neptune x 4487999980.38241 y 239710221.6863749
pluto x 5906207988.672504 y -2131314450.4385505
```

22809600

```
solar x 0.0 y 0
mercury x 58226955.19635266 y 1099851422.662968
venus x 104683688.43822668 y 772483487.1396962
earth x 149582208.68598145 y 678640811.7899565
mars x 227384299.68422514 y 547936406.2649847
jupiter x 747999288.3754236 y -219743873.3320455
saturn x 1495999822.093905 y 224218745.68826133
uranus x 2991999955.5234776 y 148102848.41239935
neptune x 4487999980.232657 y 240621349.60949308
pluto x 5906207988.586035 y -2139449377.3221042
```

22896000

```
solar x 0.0 y 0
mercury x 58226064.52110568 y 1104017511.13331
venus x 104683412.27250904 y 775409529.7397089
earth x 149582073.38541314 y 681211380.490622
mars x 227384241.1260247 y 550011860.9705067
jupiter x 747999282.9638281 y -220579410.6288881
saturn x 1495999820.7410069 y 225067695.58721548
uranus x 2991999955.185253 y 148663043.69265103
neptune x 4487999980.082335 y 241532477.33452424
pluto x 5906207988.499236 y -2147584304.203152
```

22982400

```
solar x 0.0 y 0
mercury x 58225170.4629565 y 1108183599.5942426
venus x 104683135.06022067 y 778335572.3206466
```

```
earth x 149581937.57226062 y 683781949.1665727
mars x 227384182.3460028 y 552087315.6381162
jupiter x 747999277.5317341 y -221414947.69001183
saturn x 1495999819.3829842 y 225916645.25975838
uranus x 2991999954.8457475 y 149223238.45396137
neptune x 4487999979.931444 y 242443604.86296004
pluto x 5906207988.412109 y -2155719231.0817137
```

23068800

```
solar x 0.0 y 0
mercury x 58224273.02180124 y 1112349688.045836
venus x 104682856.80135606 y 781261614.8826526
earth x 149581801.24652296 y 686352517.8179938
mars x 227384123.34415928 y 554162770.268098
jupiter x 747999272.0791416 y -222250484.51719233
saturn x 1495999818.019837 y 226765594.70758846
uranus x 2991999954.5049605 y 149783432.70021933
neptune x 4487999979.7799835 y 243354732.19627535
pluto x 5906207988.324654 y -2163854157.957807
```

23155200

```
solar x 0.0 y 0
mercury x 58223372.19753561 y 1116515776.4881604
venus x 104682577.49590963 y 784187657.4258685
earth x 149581664.40819925 y 688923086.4450687
mars x 227384064.12049407 y 556238224.8607334
jupiter x 747999266.6060507 y -223086021.11218533
saturn x 1495999816.6515648 y 227614543.93238512
uranus x 2991999954.1628923 y 150343626.43527034
neptune x 4487999979.627954 y 244265859.33592853
pluto x 5906207988.236869 y -2171989084.831451
```

23241600

```
solar x 0.0 y 0
mercury x 58222467.99005492 y 1120681864.9212844
venus x 104682297.14387581 y 787113699.9504341
earth x 149581527.05728853 y 691493655.0479789
mars x 227384004.67500705 y 558313679.4163004
jupiter x 747999261.1124613 y -223921557.47672677
saturn x 1495999815.2781682 y 228463492.93580893
uranus x 2991999953.8195434 y 150903819.6629169
neptune x 4487999979.475354 y 245176986.2833616
pluto x 5906207988.148755 y -2180124011.702664
```

23328000

```
solar x 0.0 y 0
mercury x 58221560.39925408 y 1124847953.3452768
venus x 104682015.74524897 y 790039742.4564879
earth x 149581389.19378987 y 694064223.6269037
mars x 227383945.00769806 y 560389133.9350742
jupiter x 747999255.5983734 y -224757093.6125333
saturn x 1495999813.899647 y 229312441.71950206
uranus x 2991999953.474913 y 151464012.38691923
neptune x 4487999979.3221855 y 246088113.04000062
pluto x 5906207988.060313 y -2188258938.5714636
```

23414400

```
solar x 0.0 y 0
mercury x 58220649.42502762 y 1129014041.7602048
venus x 104681733.30002351 y 792965784.9441667
earth x 149581250.8177023 y 696634792.1820203
mars x 227383885.11856702 y 562464588.4173268
jupiter x 747999250.063787 y -225592629.52130237
saturn x 1495999812.5160012 y 230161390.28508848
uranus x 2991999953.1290016 y 152024204.61099595
neptune x 4487999979.1684475 y 246999239.60725573
pluto x 5906207987.971542 y -2196393865.437868
```

23500800

```
solar x 0.0 y 0
mercury x 58219735.067269646 y 1133180130.166135
venus x 104681449.80819377 y 795891827.4136058
earth x 149581111.92902488 y 699205360.7135042
mars x 227383825.0076138 y 564540042.8633273
jupiter x 747999244.508702 y -226428165.20471266
saturn x 1495999811.127231 y 231010338.63417414
uranus x 2991999952.781809 y 152584396.33882457
neptune x 4487999979.01414 y 247910365.98652157
pluto x 5906207987.882442 y -2204528792.301895
```

23587200

```
solar x 0.0 y 0
mercury x 58218817.32587388 y 1137346218.563134
venus x 104681165.26975408 y 798817869.8649392
earth x 149580972.52775666 y 701775929.2215288
mars x 227383764.67483833 y 566615497.2733417
jupiter x 747999238.9331186 y -227263700.66442424
saturn x 1495999809.7333357 y 231859286.7683474
uranus x 2991999952.4333353 y 153144587.57404223
neptune x 4487999978.859262 y 248821492.1791774
pluto x 5906207987.793014 y -2212663719.1635623
```

23673600

```
solar x 0.0 y 0
mercury x 58217896.200733654 y 1141512306.9512665
venus x 104680879.68469876 y 801743912.2982993
earth x 149580832.6138967 y 704346497.7062657
mars x 227383704.12024045 y 568690951.6476331
jupiter x 747999233.3370366 y -228099235.902079
saturn x 1495999808.334316 y 232708234.68917918
uranus x 2991999952.0835805 y 153704778.32024622
neptune x 4487999978.703815 y 249732618.18658736
pluto x 5906207987.703257 y -2220798646.022887
```

23760000

```
solar x 0.0 y 0
mercury x 58216971.691741884 y 1145678395.3305974
venus x 104680593.05302209 y 804669954.713817
earth x 149580692.18744403 y 706917066.1678845
mars x 227383643.34382004 y 570766405.9864618
jupiter x 747999227.7204562 y -228934770.9193007
saturn x 1495999806.9301717 y 233557182.39822322
uranus x 2991999951.7325444 y 154264968.58099455
```

```
neptune x 4487999978.547799 y 250643744.0101007  
pluto x 5906207987.613171 y -2228933572.8798866
```

23846400

```
solar x 0.0 y 0  
mercury x 58216043.798791096 y 1149844483.7011907  
venus x 104680305.37471834 y 807595997.1116219  
earth x 149580551.2483977 y 709487634.606553  
mars x 227383582.34557697 y 572841860.2900852  
jupiter x 747999222.0833774 y -229770305.71769547  
saturn x 1495999805.5209029 y 234406129.89701638  
uranus x 2991999951.380227 y 154825158.3598065  
neptune x 4487999978.391213 y 251554869.65105194  
pluto x 5906207987.522756 y -2237068499.7345777
```

23932800

```
solar x 0.0 y 0  
mercury x 58215112.52177341 y 1154010572.0631094  
venus x 104680016.64978175 y 810522039.4918419  
earth x 149580409.79675674 y 712058203.0224372  
mars x 227383521.12551114 y 574917314.558758  
jupiter x 747999216.4258 y -230605840.2988519  
saturn x 1495999804.1065094 y 235255077.1870788  
uranus x 2991999951.026629 y 155385347.6601633  
neptune x 4487999978.234058 y 252465995.11076117  
pluto x 5906207987.432012 y -2245203426.5869765
```

24019200

```
solar x 0.0 y 0  
mercury x 58214177.86058057 y 1158176660.4164162  
venus x 104679726.87820655 y 813448081.854604  
earth x 149580267.8325202 y 714628771.4157015  
mars x 227383459.68362245 y 576992768.7927321  
jupiter x 747999210.747724 y -231441374.66434133  
saturn x 1495999802.6869915 y 236104024.26991424  
uranus x 2991999950.6717496 y 155945536.48550853  
neptune x 4487999978.076334 y 253377120.3905342  
pluto x 5906207987.3409395 y -2253338353.4371004
```

24105600

```
solar x 0.0 y 0  
mercury x 58213239.815103896 y 1162342748.7611728  
venus x 104679436.05998695 y 816374124.2000334  
earth x 149580125.35568705 y 717199339.7865082  
mars x 227383398.01991075 y 579068222.9922566  
jupiter x 747999205.0491496 y -232276908.8157181  
saturn x 1495999801.2623487 y 236952971.14701024  
uranus x 2991999950.315589 y 156505724.83924875  
neptune x 4487999977.91804 y 254288245.49166277  
pluto x 5906207987.249538 y -2261473280.2849655
```

24192000

```
solar x 0.0 y 0  
mercury x 58212298.38523432 y 1166508837.0974402  
venus x 104679144.19511713 y 819300166.5282543  
earth x 149579982.36625636 y 719769908.135018
```



```
mars x 227383336.13437593 y 581143677.1575781
jupiter x 747999199.3300767 y -233112442.75451985
saturn x 1495999799.8325813 y 237801917.8198384
uranus x 2991999949.958147 y 157065912.72475398
neptune x 4487999977.759177 y 255199370.4154248
pluto x 5906207987.157808 y -2269608207.130588
```

24278400

```
solar x 0.0 y 0
mercury x 58211353.57086237 y 1170674925.4252794
venus x 104678851.28359127 y 822226208.8393892
earth x 149579838.86422712 y 722340476.4613898
mars x 227383274.02701786 y 583219131.2889404
jupiter x 747999193.5905052 y -233947976.48226768
saturn x 1495999798.3976893 y 238650864.2898546
uranus x 2991999949.599424 y 157626100.14535826
neptune x 4487999977.599745 y 256110495.16308448
pluto x 5906207987.065749 y -2277743133.9739842
```

24364800

```
solar x 0.0 y 0
mercury x 58210405.371878184 y 1174841013.7447498
venus x 104678557.3254035 y 825152251.1335596
earth x 149579694.84959835 y 724911044.7657809
mars x 227383211.69783643 y 585294585.3865849
jupiter x 747999187.8304354 y -234783510.00046644
saturn x 1495999796.9576728 y 239499810.55849913
uranus x 2991999949.23942 y 158186287.10436013
neptune x 4487999977.439743 y 257021619.7358926
pluto x 5906207986.973362 y -2285878060.81517
```

24451200

```
solar x 0.0 y 0
mercury x 58209453.78817149 y 1179007102.0559108
venus x 104678262.32054794 y 828078293.4108856
earth x 149579550.3223691 y 727481613.0483471
mars x 227383149.1468315 y 587370039.4507501
jupiter x 747999182.049867 y -235619043.31060493
saturn x 1495999795.5125318 y 240348756.6271971
uranus x 2991999948.8781347 y 158746473.60502318
neptune x 4487999977.279172 y 257932744.1350866
pluto x 5906207986.880646 y -2294012987.6541605
```

24537600

```
solar x 0.0 y 0
mercury x 58208498.819631636 y 1183173190.3588212
venus x 104677966.26901868 y 831004335.671486
earth x 149579405.28253835 y 730052181.3092422
mars x 227383086.374003 y 589445493.4816723
jupiter x 747999176.2488002 y -236454576.41415617
saturn x 1495999794.0622659 y 241197702.49735847
uranus x 2991999948.5155683 y 159306659.65057647
neptune x 4487999977.1180315 y 258843868.36189088
pluto x 5906207986.7876005 y -2302147914.4909716
```

24624000

```
solar x 0.0 y 0
mercury x 58207540.46614755 y 1187339278.653539
venus x 104677669.17080982 y 833930377.9154783
earth x 149579259.7301051 y 732622749.5486187
mars x 227383023.37935075 y 591520947.479585
jupiter x 747999170.4272348 y -237290109.31257758
saturn x 1495999792.6068754 y 242046648.1703784
uranus x 2991999948.1517205 y 159866845.24421507
neptune x 4487999976.956322 y 259754992.41751695
pluto x 5906207986.694226 y -2310282841.3256187
```

24710400

```
solar x 0.0 y 0
mercury x 58206578.727607764 y 1191505366.9401214
venus x 104677371.02591541 y 836856420.142979
earth x 149579113.66506836 y 735193317.7666271
mars x 227382960.16287464 y 593596401.4447197
jupiter x 747999164.5851709 y -238125642.00731117
saturn x 1495999791.1463604 y 242895593.6476373
uranus x 2991999947.786592 y 160427030.38910055
neptune x 4487999976.794043 y 260666116.3031635
pluto x 5906207986.600524 y -2318417768.1581173
```

24796800

```
solar x 0.0 y 0
mercury x 58205613.60390042 y 1195671455.2186253
venus x 104677071.83432949 y 839782462.3541032
earth x 149578967.08742714 y 737763885.9634167
mars x 227382896.72457457 y 595671855.377305
jupiter x 747999158.7226084 y -238961174.4997838
saturn x 1495999789.6807208 y 243744538.93050125
uranus x 2991999947.420182 y 160987215.08836135
neptune x 4487999976.631194 y 261577240.0200168
pluto x 5906207986.506493 y -2326552694.988482
```

24883200

```
solar x 0.0 y 0
mercury x 58204645.09491325 y 1199837543.489107
venus x 104676771.59604606 y 842708504.5489647
earth x 149578819.99718043 y 740334454.139135
mars x 227382833.06445038 y 597747309.2775675
jupiter x 747999152.8395475 y -239796706.7914075
saturn x 1495999788.2099566 y 244593484.02032197
uranus x 2991999947.052491 y 161547399.34509334
neptune x 4487999976.467776 y 262488363.5692506
pluto x 5906207986.412132 y -2334687621.8167276
```

24969600

```
solar x 0.0 y 0
mercury x 58203673.200533606 y 1204003631.7516217
venus x 104676470.31105915 y 845634546.7276764
earth x 149578672.39432722 y 742905022.2939283
mars x 227382769.18250197 y 599822763.1457312
jupiter x 747999146.9359881 y -240632238.8835794
saturn x 1495999786.7340677 y 245442428.9184372
uranus x 2991999946.683519 y 162107583.16236025
neptune x 4487999976.303788 y 263399486.95202664
```

```
pluto x 5906207986.317443 y -2342822548.6428695
```

25056000

```
solar x 0.0 y 0
mercury x 58202697.92064842 y 1208169720.0062249
venus x 104676167.9793627 y 848560588.8903497
earth x 149578524.2788665 y 745475590.4279408
mars x 227382705.0787292 y 601898216.9820178
jupiter x 747999141.0119302 y -241467770.77768224
saturn x 1495999785.2530541 y 246291373.6261708
uranus x 2991999946.3132653 y 162667766.5431941
neptune x 4487999976.139231 y 264310610.16949442
pluto x 5906207986.222425 y -2350957475.466922
```

25142400

```
solar x 0.0 y 0
mercury x 58201719.25514423 y 1212335808.2529707
venus x 104675864.60095067 y 851486631.0370952
earth x 149578375.65079725 y 748046158.5413159
mars x 227382640.753132 y 603973670.7866467
jupiter x 747999135.0673739 y -242303302.47508433
saturn x 1495999783.766916 y 247140318.144833
uranus x 2991999945.941731 y 163227949.49059558
neptune x 4487999975.974104 y 265221733.2227917
pluto x 5906207986.127079 y -2359092402.288899
```

25228800

```
solar x 0.0 y 0
mercury x 58200737.203907184 y 1216501896.4919133
venus x 104675560.17581701 y 854412673.168022
earth x 149578226.51011842 y 750616726.6341951
mars x 227382576.20571017 y 606049124.5598353
jupiter x 747999129.102319 y -243138833.97713992
saturn x 1495999782.2756534 y 247989262.47572047
uranus x 2991999945.5689154 y 163788132.00753465
neptune x 4487999975.808408 y 266132856.1130445
pluto x 5906207986.031404 y -2367227329.108815
```

25315200

```
solar x 0.0 y 0
mercury x 58199751.766823016 y 1220667984.723106
venus x 104675254.70395562 y 857338715.2832384
earth x 149578076.85682905 y 753187294.7067184
mars x 227382511.43646362 y 608124578.3017985
jupiter x 747999123.1167656 y -243974365.2851893
saturn x 1495999780.779266 y 248838206.62011662
uranus x 2991999945.1948185 y 164348314.09695074
neptune x 4487999975.642142 y 267043978.8413673
pluto x 5906207985.935399 y -2375362255.926685
```

25401600

```
solar x 0.0 y 0
mercury x 58198762.94377707 y 1224834072.9466014
venus x 104674948.1853604 y 860264757.3828514
earth x 149577926.69092807 y 755757862.7590247
mars x 227382446.44539222 y 610200032.0127488
```

```
jupiter x 747999117.1107137 y -244809896.40055898
saturn x 1495999779.277754 y 249687150.5792918
uranus x 2991999944.8194404 y 164908495.76175332
neptune x 4487999975.475307 y 267955101.4088632
pluto x 5906207985.8390665 y -2383497182.742522
```

25488000

```
solar x 0.0 y 0
mercury x 58197770.734654285 y 1229000161.162452
venus x 104674640.62002522 y 863190799.4669669
earth x 149577776.01241446 y 758328430.7912513
mars x 227382381.23249584 y 612275485.6928972
jupiter x 747999111.0841633 y -245645427.32456195
saturn x 1495999777.7711174 y 250536094.35450336
uranus x 2991999944.4427814 y 165468677.00482225
neptune x 4487999975.307903 y 268866223.816624
pluto x 5906207985.742405 y -2391632109.55634
```

25574400

```
solar x 0.0 y 0
mercury x 58196775.1393392 y 1233166249.3707094
venus x 104674332.00794391 y 866116841.5356898
earth x 149577624.82128718 y 760898998.8035339
mars x 227382315.79777437 y 614350939.3424519
jupiter x 747999105.0371144 y -246480958.05849785
saturn x 1495999776.2593563 y 251385037.94699594
uranus x 2991999944.0648413 y 166028857.8290082
neptune x 4487999975.13993 y 269777346.0657305
pluto x 5906207985.645414 y -2399767036.3681536
```

25660800

```
solar x 0.0 y 0
mercury x 58195776.15771596 y 1237332337.571425
venus x 104674022.34911032 y 869042883.5891241
earth x 149577473.11754522 y 763469566.7960073
mars x 227382250.14122766 y 616426392.9616195
jupiter x 747999098.969567 y -247316488.60365304
saturn x 1495999774.7424705 y 252233981.35800153
uranus x 2991999943.68562 y 166589038.237133
neptune x 4487999974.971387 y 270688468.1572526
pluto x 5906207985.548095 y -2407901963.177975
```

25747200

```
solar x 0.0 y 0
mercury x 58194773.78966831 y 1241498425.7646494
venus x 104673711.64351824 y 871968925.6273724
earth x 149577320.90118754 y 766040134.7688044
mars x 227382184.2628556 y 618501846.5506041
jupiter x 747999092.881521 y -248152018.96130094
saturn x 1495999773.2204602 y 253082924.58873975
uranus x 2991999943.305117 y 167149218.23199007
neptune x 4487999974.802275 y 271599590.0922493
pluto x 5906207985.450447 y -2416036889.985819
```

25833600

```
solar x 0.0 y 0
```

```
mercury x 58193768.035079576 y 1245664513.9504328
venus x 104673399.89116146 y 874894967.6505364
earth x 149577168.17221308 y 768610702.7220572
mars x 227382118.16265804 y 620577300.1096079
jupiter x 747999086.7729765 y -248987549.13270208
saturn x 1495999771.693325 y 253931867.64041796
uranus x 2991999942.9233336 y 167709397.81634483
neptune x 4487999974.632593 y 272510711.871769
pluto x 5906207985.35247 y -2424171816.7916975
```

25920000

```
solar x 0.0 y 0
mercury x 58192758.893832706 y 1249830602.128825
venus x 104673087.09203374 y 877821009.658717
earth x 149577014.9306208 y 771181270.6558962
mars x 227382051.84063485 y 622652753.6388313
jupiter x 747999080.6439335 y -249823079.1191044
saturn x 1495999770.1610653 y 254780810.5142314
uranus x 2991999942.540269 y 168269576.992935
neptune x 4487999974.462342 y 273421833.49684966
pluto x 5906207985.254165 y -2432306743.5956244
```

26006400

```
solar x 0.0 y 0
mercury x 58191746.365810245 y 1253996690.299875
venus x 104672773.24612884 y 880747051.6520139
earth x 149576861.17640963 y 773751838.5704505
mars x 227381985.29678592 y 624728207.1384722
jupiter x 747999074.4943922 y -250658608.92174318
saturn x 1495999768.623681 y 255629753.21136343
uranus x 2991999942.155923 y 168829755.764471
neptune x 4487999974.291522 y 274332954.9685188
pluto x 5906207985.15553 y -2440441670.397613
```

26092800

```
solar x 0.0 y 0
mercury x 58190730.45089433 y 1258162778.4636316
venus x 104672458.35344046 y 883673093.6305257
earth x 149576706.90957853 y 776322406.4658481
mars x 227381918.53111112 y 626803660.608727
jupiter x 747999068.3243523 y -251494138.54184157
saturn x 1495999767.0811722 y 256478695.7329856
uranus x 2991999941.7702956 y 169389934.1336363
neptune x 4487999974.120132 y 275244076.28779376
pluto x 5906207985.056567 y -2448576597.1976757
```

26179200

```
solar x 0.0 y 0
mercury x 58189711.14896671 y 1262328866.620143
venus x 104672142.41396232 y 886599135.5943502
earth x 149576552.13012645 y 778892974.3422157
mars x 227381851.5436103 y 628879114.04979
jupiter x 747999062.1338139 y -252329667.9806104
saturn x 1495999765.5335388 y 257327638.08025783
uranus x 2991999941.383387 y 169950112.1030878
neptune x 4487999973.9481735 y 276155197.4556818
pluto x 5906207984.957275 y -2456711523.995826
```

26265600

```
solar x 0.0 y 0
mercury x 58188688.45990871 y 1266494954.7694569
venus x 104671825.42768809 y 889525177.5435842
earth x 149576396.83805233 y 781463542.1996785
mars x 227381784.33428335 y 630954567.4618536
jupiter x 747999055.9227769 y -253165197.23924854
saturn x 1495999763.9807806 y 258176580.25432867
uranus x 2991999940.995198 y 170510289.67545623
neptune x 4487999973.775645 y 277066318.47318023
pluto x 5906207984.857655 y -2464846450.792075
```

26352000

```
solar x 0.0 y 0
mercury x 58187662.38360127 y 1270661042.9116206
venus x 104671507.39461145 y 892451219.4783236
earth x 149576241.0333551 y 784034110.038361
mars x 227381716.90313014 y 633030020.8451082
jupiter x 747999049.6912415 y -254000726.31894305
saturn x 1495999762.4228978 y 259025522.25633526
uranus x 2991999940.605727 y 171070466.85334635
neptune x 4487999973.602548 y 277977439.3412765
pluto x 5906207984.757705 y -2472981377.586437
```

26438400

```
solar x 0.0 y 0
mercury x 58186632.91992494 y 1274827131.046681
venus x 104671188.31472601 y 895377261.3986633
earth x 149576084.71603367 y 786604677.8583858
mars x 227381649.25015053 y 635105474.1997423
jupiter x 747999043.4392076 y -254836255.2208692
saturn x 1495999760.8598905 y 259874464.08740363
uranus x 2991999940.2149754 y 171630643.6393374
neptune x 4487999973.42888 y 278888560.06094843
pluto x 5906207984.657427 y -2481116304.378924
```

26524800

```
solar x 0.0 y 0
mercury x 58185600.06875984 y 1278993219.1746843
venus x 104670868.18802541 y 898303303.3046972
earth x 149575927.886087 y 789175245.6598749
mars x 227381581.37534437 y 637180927.5259428
jupiter x 747999037.1666751 y -255671783.94619083
saturn x 1495999759.2917585 y 260723405.74864876
uranus x 2991999939.8229423 y 172190820.03598338
neptune x 4487999973.2546425 y 279799680.63316417
pluto x 5906207984.55682 y -2489251231.169547
```

26611200

```
solar x 0.0 y 0
mercury x 58184563.82998572 y 1283159307.2956765
venus x 104670547.01450324 y 901229345.1965182
earth x 149575770.543514 y 791745813.4429487
mars x 227381513.27871156 y 639256380.8238946
jupiter x 747999030.8736441 y -256507312.49606028
```

```
saturn x 1495999757.718502 y 261572347.2411748
uranus x 2991999939.4296284 y 172750996.04581347
neptune x 4487999973.079836 y 280710801.05888253
pluto x 5906207984.455884 y -2497386157.9583197
```

26697600

```
solar x 0.0 y 0
mercury x 58183524.20348192 y 1287325395.409703
venus x 104670224.79415308 y 904155387.0742186
earth x 149575612.68831363 y 794316381.2077267
mars x 227381444.96025193 y 641331834.0937808
jupiter x 747999024.5601146 y -257342840.87161875
saturn x 1495999756.140121 y 262421288.5660751
uranus x 2991999939.035033 y 173311171.6713322
neptune x 4487999972.90446 y 281621921.339053
pluto x 5906207984.354619 y -2505521084.745253
```

26784000

```
solar x 0.0 y 0
mercury x 58182481.18912736 y 1291491483.5168087
venus x 104669901.52696846 y 907081428.9378897
earth x 149575454.32048476 y 796886948.9543271
mars x 227381376.4199654 y 643407287.3357828
jupiter x 747999018.2260866 y -258178369.07399625
saturn x 1495999754.556615 y 263270229.72443247
uranus x 2991999938.639157 y 173871346.91501996
neptune x 4487999972.728515 y 282533041.4746157
pluto x 5906207984.253026 y -2513656011.5303597
```

26870400

```
solar x 0.0 y 0
mercury x 58181434.786800586 y 1295657571.6170385
venus x 104669577.21294294 y 910007470.7876217
earth x 149575295.4400263 y 799457516.6828669
mars x 227381307.6578518 y 645482740.5500801
jupiter x 747999011.8715601 y -259013897.10431188
saturn x 1495999752.9679847 y 264119170.71731925
uranus x 2991999938.241999 y 174431521.77933308
neptune x 4487999972.552 y 283444161.4665019
pluto x 5906207984.151104 y -2521790938.313651
```

26956800

```
solar x 0.0 y 0
mercury x 58180384.99637972 y 1299823659.7104363
venus x 104669251.85207003 y 912933512.6235043
earth x 149575136.0469372 y 802028084.3934622
mars x 227381238.67391098 y 647558193.7368506
jupiter x 747999005.4965351 y -259849424.96367395
saturn x 1495999751.3742297 y 264968111.54579747
uranus x 2991999937.84356 y 174991696.26670432
neptune x 4487999972.374916 y 284355281.3156338
pluto x 5906207984.048853 y -2529925865.095139
```

27043200

```
solar x 0.0 y 0
mercury x 58179331.8177425 y 1303989747.797046
```

```
venus x 104668925.44434322 y 915859554.445626
earth x 149574976.14121634 y 804598652.0862277
mars x 227381169.46814284 y 649633646.8962706
jupiter x 747998999.1010115 y -260684952.65318006
saturn x 1495999749.77535 y 265817052.21091893
uranus x 2991999937.4438405 y 175551870.37954313
neptune x 4487999972.197263 y 285266401.02292466
pluto x 5906207983.946273 y -2538060791.874835
```

27129600

```
solar x 0.0 y 0
mercury x 58178275.25076625 y 1308155835.8769107
venus x 104668597.98975599 y 918785596.2540747
earth x 149574815.72286263 y 807169219.7612771
mars x 227381100.04054722 y 651709100.0285145
jupiter x 747998992.6849895 y -261520480.17391726
saturn x 1495999748.171346 y 266665992.7137254
uranus x 2991999937.0428395 y 176112044.1202359
neptune x 4487999972.01904 y 286177520.5892792
pluto x 5906207983.843365 y -2546195718.652751
```

27216000

```
solar x 0.0 y 0
mercury x 58177215.2953279 y 1312321923.9500735
venus x 104668269.48830177 y 921711638.0489372
earth x 149574654.79187497 y 809739787.4187232
mars x 227381030.391124 y 653784553.1337551
jupiter x 747998986.2484689 y -262356007.52696225
saturn x 1495999746.562217 y 267514933.05524868
uranus x 2991999936.6405573 y 176672217.4911463
neptune x 4487999971.840248 y 287088640.0155933
pluto x 5906207983.740128 y -2554330645.428898
```

27302400

```
solar x 0.0 y 0
mercury x 58176151.95130398 y 1316488012.0165765
venus x 104667939.939974 y 924637679.8302997
earth x 149574493.34825227 y 812310355.0586776
mars x 227380960.51987305 y 655860006.2121636
jupiter x 747998979.7914498 y -263191534.71338144
saturn x 1495999744.9479635 y 268363873.2365108
uranus x 2991999936.236994 y 177232390.49461555
neptune x 4487999971.660887 y 287999759.3027545
pluto x 5906207983.636561 y -2562465572.2032866
```

27388800

```
solar x 0.0 y 0
mercury x 58175085.21857062 y 1320654100.0764623
venus x 104667609.34476607 y 927563721.5982475
earth x 149574331.3919934 y 814880922.6812507
mars x 227380890.4267942 y 657935459.2639095
jupiter x 747998973.3139322 y -264027061.73423105
saturn x 1495999743.3285854 y 269212813.2585241
uranus x 2991999935.8321495 y 177792563.1329627
neptune x 4487999971.480956 y 288910878.4516419
pluto x 5906207983.532666 y -2570600498.975929
```


27475200

```
solar x 0.0 y 0
mercury x 58174015.097003534 y 1324820188.1297722
venus x 104667277.70267138 y 930489763.3528651
earth x 149574168.92309728 y 817451490.2865521
mars x 227380820.11188734 y 660010912.2891607
jupiter x 747998966.8159161 y -264862588.59055737
saturn x 1495999741.7040827 y 270061753.1222914
uranus x 2991999935.426024 y 178352735.4084849
neptune x 4487999971.300456 y 289821997.4631262
pluto x 5906207983.428443 y -2578735425.746835
```

27561600

```
solar x 0.0 y 0
mercury x 58172941.586478055 y 1328986276.1765478
venus x 104666945.0136833 y 933415805.0942361
earth x 149574005.94156277 y 820022057.8746902
mars x 227380749.57515234 y 662086365.2880838
jupiter x 747998960.2974014 y -265698115.28339675
saturn x 1495999740.0744555 y 270910692.828806
uranus x 2991999935.018617 y 178912907.32345772
neptune x 4487999971.119387 y 290733116.3380699
pluto x 5906207983.323891 y -2586870352.516017
```

27648000

```
solar x 0.0 y 0
mercury x 58171864.68686909 y 1333152364.2168298
venus x 104666611.27779518 y 936341846.8224436
earth x 149573842.44738877 y 822592625.4457724
mars x 227380678.81658906 y 664161818.2608434
jupiter x 747998953.7583883 y -266533641.81377578
saturn x 1495999738.4397035 y 271759632.37905186
uranus x 2991999934.609929 y 179473078.88013536
neptune x 4487999970.937748 y 291644235.07732755
pluto x 5906207983.219009 y -2595005279.283485
```

27734400

```
solar x 0.0 y 0
mercury x 58170784.39805117 y 1337318452.2506588
venus x 104666276.49500033 y 939267888.5375696
earth x 149573678.44057414 y 825163192.9999052
mars x 227380607.83619735 y 666237271.2076027
jupiter x 747998947.1988766 y -267369168.18271142
saturn x 1495999736.7998269 y 272608571.7740038
uranus x 2991999934.1999598 y 180033250.08075094
neptune x 4487999970.75554 y 292555353.6817456
pluto x 5906207983.113799 y -2603140206.0492496
```

27820800

```
solar x 0.0 y 0
mercury x 58169700.71989841 y 1341484540.2780747
venus x 104665940.66529207 y 942193930.2396957
earth x 149573513.92111775 y 827733760.5371941
mars x 227380536.63397706 y 668312724.1285237
jupiter x 747998940.6188664 y -268204694.39121112
saturn x 1495999735.1548257 y 273457511.0146276
```

```
uranus x 2991999933.7887096 y 180593420.9275168
neptune x 4487999970.572762 y 293466472.15216255
pluto x 5906207983.008261 y -2611275132.813322
```

27907200

```
solar x 0.0 y 0
mercury x 58168613.652284525 y 1345650628.2991176
venus x 104665603.78866367 y 945119971.9289023
earth x 149573348.8890185 y 830304328.0577434
mars x 227380465.20992807 y 670388177.0237664
jupiter x 747998934.0183578 y -269040220.4402729
saturn x 1495999733.5047 y 274306450.10187984
uranus x 2991999933.3761783 y 181153591.42262468
neptune x 4487999970.389414 y 294377590.4894092
pluto x 5906207982.902393 y -2619410059.5757127
```

27993600

```
solar x 0.0 y 0
mercury x 58167523.19508283 y 1349816716.3138266
venus x 104665265.86510839 y 948046013.6052692
earth x 149573183.34427527 y 832874895.5616567
mars x 227380393.56405023 y 672463629.8934896
jupiter x 747998927.3973505 y -269875746.3308856
saturn x 1495999731.8494496 y 275155389.0367085
uranus x 2991999932.9623656 y 181713761.56824604
neptune x 4487999970.205497 y 295288708.6943087
pluto x 5906207982.796197 y -2627544986.3364315
```

28080000

```
solar x 0.0 y 0
mercury x 58166429.34816623 y 1353982804.322241
venus x 104664926.89461946 y 950972055.2688757
earth x 149573017.28688687 y 835445463.0490365
mars x 227380321.69634342 y 674539082.7378507
jupiter x 747998920.7558448 y -270711272.0640287
saturn x 1495999730.1890745 y 276004327.8200526
uranus x 2991999932.5472717 y 182273931.3665323
neptune x 4487999970.02101 y 296199826.7676764
pluto x 5906207982.6896715 y -2635679913.095489
```

28166400

```
solar x 0.0 y 0
mercury x 58165332.11140723 y 1358148892.3243995
venus x 104664586.87719013 y 953898096.9198003
earth x 149572850.7168522 y 838016030.5199844
mars x 227380249.60680747 y 676614535.5570054
jupiter x 747998914.0938406 y -271546797.64067274
saturn x 1495999728.5235748 y 276853266.45284265
uranus x 2991999932.130897 y 182834100.81961507
neptune x 4487999969.835955 y 297110944.7103203
pluto x 5906207982.582818 y -2643814839.8528957
```

28252800

```
solar x 0.0 y 0
mercury x 58164231.48467794 y 1362314980.3203402
venus x 104664245.81281357 y 956824138.5581205
```

```
earth x 149572683.63417011 y 840586597.974601
mars x 227380177.29544228 y 678689988.3511081
jupiter x 747998907.4113379 y -272382323.0617794
saturn x 1495999726.8529506 y 277702204.9360005
uranus x 2991999931.713241 y 183394269.92960635
neptune x 4487999969.65033 y 298022062.5230409
pluto x 5906207982.475636 y -2651949766.6086617
```

28339200

```
solar x 0.0 y 0
mercury x 58163127.46785007 y 1366481068.310101
venus x 104663903.70148295 y 959750180.1839132
earth x 149572516.03883946 y 843157165.4129862
mars x 227380104.76224768 y 680765441.1203119
jupiter x 747998900.7083366 y -273217848.3283013
saturn x 1495999725.1772017 y 278551143.2704397
uranus x 2991999931.294304 y 183954438.6985989
neptune x 4487999969.464135 y 298933180.20663136
pluto x 5906207982.368124 y -2660084693.362797
```

28425600

```
solar x 0.0 y 0
mercury x 58162020.06079491 y 1370647156.2937198
venus x 104663560.54319145 y 962676221.7972549
earth x 149572347.9308591 y 845727732.8352386
mars x 227380032.00722352 y 682840893.8647683
jupiter x 747998893.9848368 y -274053373.4411826
saturn x 1495999723.4963284 y 279400081.4570652
uranus x 2991999930.8740854 y 184514607.12866628
neptune x 4487999969.277371 y 299844297.7618777
pluto x 5906207982.260283 y -2668219620.115311
```

28512000

```
solar x 0.0 y 0
mercury x 58160909.26338337 y 1374813244.2712338
venus x 104663216.33793218 y 965602263.398221
earth x 149572179.31022787 y 848298300.2414562
mars x 227379959.03036967 y 684916346.5846275
jupiter x 747998887.2408385 y -274888898.4013586
saturn x 1495999721.8103302 y 280249019.496774
uranus x 2991999930.452586 y 185074775.22186333
neptune x 4487999969.090038 y 300755415.1895587
pluto x 5906207982.152115 y -2676354546.8662148
```

28598400

```
solar x 0.0 y 0
mercury x 58159795.075485945 y 1378979332.2426798
venus x 104662871.08569829 y 968528304.9868865
earth x 149572010.1769446 y 850868867.631736
mars x 227379885.831686 y 686991799.2800384
jupiter x 747998880.4763417 y -275724423.20975626
saturn x 1495999720.1192074 y 281097957.3904548
uranus x 2991999930.0298057 y 185634942.98022613
neptune x 4487999968.902136 y 301666532.49044603
pluto x 5906207982.043617 y -2684489473.615517
```

28684800

```
solar x 0.0 y 0
mercury x 58158677.49697272 y 1383145420.2080948
venus x 104662524.78648284 y 971454346.5633256
earth x 149571840.53100818 y 853439435.0061743
mars x 227379812.41117233 y 689067251.9511484
jupiter x 747998873.6913464 y -276559947.86729395
saturn x 1495999718.42296 y 281946895.1389883
uranus x 2991999929.605744 y 186195110.40577242
neptune x 4487999968.713664 y 302577649.66530454
pluto x 5906207981.934791 y -2692624400.363228
```

28771200

```
solar x 0.0 y 0
mercury x 58157556.52771339 y 1387311508.1675148
venus x 104662177.44027892 y 974380388.1276119
earth x 149571670.37241742 y 856010002.3648663
mars x 227379738.76882857 y 691142704.5981038
jupiter x 747998866.8858526 y -277395472.3748819
saturn x 1495999716.7215881 y 282795832.7432473
uranus x 2991999929.180401 y 186755277.50050175
neptune x 4487999968.524623 y 303488766.714892
pluto x 5906207981.825635 y -2700759327.109357
```

28857600

```
solar x 0.0 y 0
mercury x 58156432.16757724 y 1391477596.1209757
venus x 104661829.04707956 y 977306429.679818
earth x 149571499.70117113 y 858580569.7079064
mars x 227379664.90465453 y 693218157.2210493
jupiter x 747998860.0598602 y -278230996.7334221
saturn x 1495999715.0150917 y 283644770.2040966
uranus x 2991999928.7537766 y 187315444.2663957
neptune x 4487999968.335012 y 304399883.6399595
pluto x 5906207981.716151 y -2708894253.8539133
```

28944000

```
solar x 0.0 y 0
mercury x 58155304.416433156 y 1395643684.0685132
venus x 104661479.60687782 y 980232471.2200165
earth x 149571328.51726818 y 861151137.0353881
mars x 227379590.8186501 y 695293609.8201286
jupiter x 747998853.2133694 y -279066520.9438083
saturn x 1495999713.3034704 y 284493707.52239347
uranus x 2991999928.3258715 y 187875610.70541805
neptune x 4487999968.144833 y 305311000.44125134
pluto x 5906207981.6063385 y -2717029180.5969067
```

29030400

```
solar x 0.0 y 0
mercury x 58154173.27414962 y 1399809772.0101626
venus x 104661129.11966668 y 983158512.7482787
earth x 149571156.82070738 y 863721704.3474044
mars x 227379516.5108151 y 697369062.3954839
jupiter x 747998846.34638 y -279902045.00692636
saturn x 1495999711.5867245 y 285342644.69898736
uranus x 2991999927.896685 y 188435776.81951514
```

```
neptune x 4487999967.954083 y 306222117.1195051  
pluto x 5906207981.496197 y -2725164107.3383465
```

29116800

```
solar x 0.0 y 0  
mercury x 58153038.740594715 y 1403975859.9459589  
venus x 104660777.58543915 y 986084554.2646757  
earth x 149570984.61148754 y 866292271.6440469  
mars x 227379441.98114944 y 699444514.9472561  
jupiter x 747998839.4588921 y -280737568.92365414  
saturn x 1495999709.864854 y 286191581.7347202  
uranus x 2991999927.4662175 y 188995942.6106159  
neptune x 4487999967.762765 y 307133233.6754519  
pluto x 5906207981.385726 y -2733299034.0782423
```

29203200

```
solar x 0.0 y 0  
mercury x 58151900.815636106 y 1408141947.8759367  
venus x 104660425.00418818 y 989010595.7692777  
earth x 149570811.8896075 y 868862838.9254069  
mars x 227379367.2296529 y 701519967.4755851  
jupiter x 747998832.5509057 y -281573092.69486177  
saturn x 1495999708.137859 y 287040518.6304264  
uranus x 2991999927.0344687 y 189556108.08063215  
neptune x 4487999967.570877 y 308044350.10981625  
pluto x 5906207981.274927 y -2741433960.8166027
```

29289600

```
solar x 0.0 y 0  
mercury x 58150759.499141075 y 1412308035.8001306  
venus x 104660071.37590672 y 991936637.2621545  
earth x 149570638.65506604 y 871433406.1915747  
mars x 227379292.25632542 y 703595419.9806094  
jupiter x 747998825.6224208 y -282408616.32141155  
saturn x 1495999706.4057395 y 287889455.386933  
uranus x 2991999926.601439 y 190116273.23145878  
neptune x 4487999967.378419 y 308955466.4233164  
pluto x 5906207981.163799 y -2749568887.553437
```

29376000

```
solar x 0.0 y 0  
mercury x 58149614.79097649 y 1416474123.7185745  
venus x 104659716.70058769 y 994862678.7433751  
earth x 149570464.907862 y 874003973.4426397  
mars x 227379217.0611668 y 705670872.4624662  
jupiter x 747998818.6734374 y -283244139.80415815  
saturn x 1495999704.6684952 y 288738392.00505984  
uranus x 2991999926.167128 y 190676438.06497398  
neptune x 4487999967.185391 y 309866582.6166642  
pluto x 5906207981.052342 y -2757703814.2887545
```

29462400

```
solar x 0.0 y 0  
mercury x 58148466.6910088 y 1420640211.631302  
venus x 104659360.97822401 y 997788720.2130079  
earth x 149570290.64799422 y 876574540.6786907
```

```
mars x 227379141.64417687 y 707746324.9212917
jupiter x 747998811.7039554 y -284079663.14394873
saturn x 1495999702.9261262 y 289587328.4856193
uranus x 2991999925.731536 y 191236602.58303937
neptune x 4487999966.991795 y 310777698.690565
pluto x 5906207980.940557 y -2765838741.022564
```

29548800

```
solar x 0.0 y 0
mercury x 58147315.19910408 y 1424806299.538347
venus x 104659004.20880854 y 1000714761.6711209
earth x 149570115.87546146 y 879145107.8998156
mars x 227379066.00535554 y 709821777.3572206
jupiter x 747998804.713975 y -284915186.34162295
saturn x 1495999701.1786327 y 290436264.8294169
uranus x 2991999925.2946625 y 191796766.7875003
neptune x 4487999966.797628 y 311688814.6457183
pluto x 5906207980.828443 y -2773973667.754874
```

29635200

```
solar x 0.0 y 0
mercury x 58146160.31512798 y 1428972387.4397423
venus x 104658646.39233416 y 1003640803.1177813
earth x 149569940.59026253 y 881715675.1061015
mars x 227378990.1447026 y 711897229.7703868
jupiter x 747998797.703496 y -285750709.3980131
saturn x 1495999699.4260147 y 291285201.0372508
uranus x 2991999924.856508 y 192356930.68018585
neptune x 4487999966.602893 y 312599930.48281723
pluto x 5906207980.716 y -2782108594.485694
```

29721600

```
solar x 0.0 y 0
mercury x 58145002.03894577 y 1433138475.335521
venus x 104658287.52879371 y 1006566844.5530558
earth x 149569764.79239625 y 884286242.297635
mars x 227378914.06221798 y 713972682.1609228
jupiter x 747998790.6725185 y -286586232.3139443
saturn x 1495999697.668272 y 292134137.1099126
uranus x 2991999924.4170723 y 192917094.2629093
neptune x 4487999966.407588 y 313511046.20254904
pluto x 5906207980.603228 y -2790243521.2150316
```

29808000

```
solar x 0.0 y 0
mercury x 58143840.37042229 y 1437304563.2257156
venus x 104657927.61817999 y 1009492885.9770105
earth x 149569588.48186138 y 886856809.4745015
mars x 227378837.7579015 y 716048134.5289598
jupiter x 747998783.6210425 y -287421755.0902342
saturn x 1495999695.9054046 y 292983073.04818654
uranus x 2991999923.9763556 y 193477257.53746802
neptune x 4487999966.211714 y 314422161.8055949
pluto x 5906207980.490127 y -2798378447.9428964
```

29894400

```
solar x 0.0 y 0
mercury x 58142675.30942198 y 1441470651.1103587
venus x 104657566.66048582 y 1012418927.3897109
earth x 149569411.65865675 y 889427376.636786
mars x 227378761.23175296 y 718123586.8746281
jupiter x 747998776.549068 y -288257277.7276936
saturn x 1495999694.1374125 y 293832008.85285044
uranus x 2991999923.5343575 y 194037420.5056439
neptune x 4487999966.01527 y 315333277.2926301
pluto x 5906207980.376698 y -2806513374.6692967
```

29980800

```
solar x 0.0 y 0
mercury x 58141506.855808884 y 1445636738.989482
venus x 104657204.65570396 y 1015344968.791222
earth x 149569234.32278112 y 891997943.7845726
mars x 227378684.48377228 y 720199039.1980568
jupiter x 747998769.456595 y -289092800.22712606
saturn x 1495999692.364296 y 294680944.5246752
uranus x 2991999923.0910783 y 194597583.16920334
neptune x 4487999965.818257 y 316244392.664324
pluto x 5906207980.262939 y -2814648301.394241
```

30067200

```
solar x 0.0 y 0
mercury x 58140335.00944664 y 1449802826.8631172
venus x 104656841.60382718 y 1018271010.1816081
earth x 149569056.47423327 y 894568510.9179449
mars x 227378607.51395926 y 722274491.499374
jupiter x 747998762.3436234 y -289928322.5893283
saturn x 1495999690.5860548 y 295529880.06442505
uranus x 2991999922.646518 y 195157745.52989754
neptune x 4487999965.620675 y 317155507.9213403
pluto x 5906207980.148852 y -2822783228.1177373
```

30153600

```
solar x 0.0 y 0
mercury x 58139159.770198494 y 1453968914.7312963
venus x 104656477.50484821 y 1021197051.5609331
earth x 149568878.113012 y 897139078.0369855
mars x 227378530.3223138 y 724349943.7787067
jupiter x 747998755.2101533 y -290763844.8150901
saturn x 1495999688.802689 y 296378815.4728578
uranus x 2991999922.200677 y 195717907.58946264
neptune x 4487999965.4225235 y 318066623.0643369
pluto x 5906207980.034436 y -2830918154.839794
```

30240000

```
solar x 0.0 y 0
mercury x 58137981.137927264 y 1458135002.5940502
venus x 104656112.35875976 y 1024123092.9292604
earth x 149568699.23911607 y 899709645.1417764
mars x 227378452.90883568 y 726425396.0361804
jupiter x 747998748.0561848 y -291599366.9051945
saturn x 1495999687.0141988 y 297227750.7507245
uranus x 2991999921.7535543 y 196278069.34961987
neptune x 4487999965.223803 y 318977738.0939661
```

```
pluto x 5906207979.919692 y -2839053081.56042
```

30326400

```
solar x 0.0 y 0
mercury x 58136799.11249538 y 1462301090.4514098
venus x 104655746.16555454 y 1027049134.2866526
earth x 149568519.85254428 y 902280212.232399
mars x 227378375.27352482 y 728500848.27192
jupiter x 747998740.8817177 y -292434888.86041784
saturn x 1495999685.2205837 y 298076685.89877003
uranus x 2991999921.3051505 y 196838230.8120758
neptune x 4487999965.024512 y 319888853.0108747
pluto x 5906207979.804619 y -2847188008.279623
```

30412800

```
solar x 0.0 y 0
mercury x 58135613.69376485 y 1466467178.303406
venus x 104655378.9252252 y 1029975175.633172
earth x 149568339.95329538 y 904850779.3089337
mars x 227378297.41638103 y 730576300.486049
jupiter x 747998733.686752 y -293270410.68152964
saturn x 1495999683.421844 y 298925620.9177328
uranus x 2991999920.855466 y 197398391.9785224
neptune x 4487999964.824653 y 320799967.81570375
pluto x 5906207979.689217 y -2855322934.9974113
```

30499200

```
solar x 0.0 y 0
mercury x 58134424.8815973 y 1470633266.150069
venus x 104655010.63776441 y 1032901216.9688803
earth x 149568159.54136813 y 907421346.3714607
mars x 227378219.33740416 y 732651752.6786903
jupiter x 747998726.4712877 y -294105932.36929303
saturn x 1495999681.6179798 y 299774555.8083449
uranus x 2991999920.4045 y 197958552.85063723
neptune x 4487999964.624224 y 321711082.5090891
pluto x 5906207979.573485 y -2863457861.713793
```

30585600

```
solar x 0.0 y 0
mercury x 58133232.675853945 y 1474799353.991429
venus x 104654641.30316478 y 1035827258.2938386
earth x 149567978.6167613 y 909991913.4200591
mars x 227378141.0365941 y 734727204.8499653
jupiter x 747998719.235325 y -294941453.92446464
saturn x 1495999679.808991 y 300623490.5713323
uranus x 2991999919.952253 y 198518713.43008372
neptune x 4487999964.423225 y 322622197.09166104
pluto x 5906207979.457426 y -2871592788.4287753
```

30672000

```
solar x 0.0 y 0
mercury x 58132037.076395586 y 1478965441.827516
venus x 104654270.92141894 y 1038753299.6081077
earth x 149567797.17947367 y 912562480.4548075
mars x 227378062.51395065 y 736802656.9999945
```



```
jupiter x 747998711.9788637 y -295776975.3477946
saturn x 1495999677.9948776 y 301472425.20741475
uranus x 2991999919.4987245 y 199078873.71851116
neptune x 4487999964.221657 y 323533311.5640446
pluto x 5906207979.341038 y -2879727715.1423674
```

30758400

```
solar x 0.0 y 0
mercury x 58130838.083082624 y 1483131529.6583598
venus x 104653899.49251947 y 1041679340.9117476
earth x 149567615.22950396 y 915133047.475784
mars x 227377983.76947364 y 738878109.1288975
jupiter x 747998704.7019039 y -296612496.6400267
saturn x 1495999676.1756394 y 302321359.717306
uranus x 2991999919.043915 y 199639033.71755496
neptune x 4487999964.019519 y 324444425.9268595
pluto x 5906207979.22432 y -2887862641.854576
```

30844800

```
solar x 0.0 y 0
mercury x 58129635.69577506 y 1487297617.4839895
venus x 104653527.01645893 y 1044605382.2048179
earth x 149567432.76685095 y 917703614.4830655
mars x 227377904.80316296 y 740953561.2367928
jupiter x 747998697.4044456 y -297448017.8018984
saturn x 1495999674.3512766 y 303170294.1017138
uranus x 2991999918.5878243 y 200199193.4288368
neptune x 4487999963.816812 y 325355540.18072027
pluto x 5906207979.107274 y -2895997568.5654097
```

30931200

```
solar x 0.0 y 0
mercury x 58128429.91433249 y 1491463705.3044345
venus x 104653153.49322987 y 1047531423.4873778
earth x 149567249.79151338 y 920274181.4767289
mars x 227377825.61501846 y 743029013.323798
jupiter x 747998690.0864888 y -298283538.8341412
saturn x 1495999672.5217893 y 304019228.3613398
uranus x 2991999918.1304526 y 200759352.85396472
neptune x 4487999963.613535 y 326266654.3262363
pluto x 5906207978.9899 y -2904132495.2748756
```

31017600

```
solar x 0.0 y 0
mercury x 58127220.73861408 y 1495629793.1197238
venus x 104652778.92282481 y 1050457464.7594858
earth x 149567066.30349 y 922844748.45685
mars x 227377746.20503995 y 745104465.3900294
jupiter x 747998682.7480335 y -299119059.73748016
saturn x 1495999670.6871774 y 304868162.49688
uranus x 2991999917.6717997 y 201319511.9945334
neptune x 4487999963.409689 y 327177768.3640118
pluto x 5906207978.872196 y -2912267421.982982
```

31104000

```
solar x 0.0 y 0
```

```
mercury x 58126008.16847863 y 1499795880.9298859
venus x 104652403.30523628 y 1053383506.0212003
earth x 149566882.30277956 y 925415315.4235044
mars x 227377666.5732273 y 747179917.4356028
jupiter x 747998675.3890797 y -299954580.5126344
saturn x 149599968.847441 y 305717096.50902444
uranus x 2991999917.2118654 y 201879670.85212412
neptune x 4487999963.205274 y 328088882.2946461
pluto x 5906207978.754164 y -2920402348.6897364
```

31190400

```
solar x 0.0 y 0
mercury x 58124792.20378451 y 1503961968.734949
venus x 104652026.64045674 y 1056309547.2725788
earth x 149566697.78938076 y 927985882.3767664
mars x 227377586.71958032 y 749255369.4606327
jupiter x 747998668.0096273 y -300790101.16031706
saturn x 149599967.0025797 y 306566030.39845747
uranus x 2991999916.7506504 y 202439829.4283051
neptune x 4487999963.000289 y 328999996.11873335
pluto x 5906207978.635802 y -2928537275.395146
```

31276800

```
solar x 0.0 y 0
mercury x 58123572.8443897 y 1508128056.534942
venus x 104651648.92847864 y 1059235588.5136786
earth x 149566512.76329237 y 930556449.3167105
mars x 227377506.6440989 y 751330821.4652327
jupiter x 747998660.6096765 y -301625621.6812354
saturn x 149599965.1525939 y 307414964.1658578
uranus x 2991999916.288154 y 202999987.7246315
neptune x 4487999962.794735 y 329911109.8368629
pluto x 5906207978.517113 y -2936672202.099218
```

31363200

```
solar x 0.0 y 0
mercury x 58122350.09015176 y 1512294144.3298922
venus x 104651270.16929445 y 1062161629.7445562
earth x 149566327.2245131 y 933127016.2434099
mars x 227377426.34678286 y 753406273.4495157
jupiter x 747998653.189227 y -302461142.07609063
saturn x 149599963.2974834 y 308263897.81189847
uranus x 2991999915.8243766 y 203560145.74264568
neptune x 4487999962.588612 y 330822223.44961923
pluto x 5906207978.398094 y -2944807128.80196
```

31449600

```
solar x 0.0 y 0
mercury x 58121123.94092784 y 1516460232.1198277
venus x 104650890.36289656 y 1065087670.965268
earth x 149566141.17304173 y 935697583.1569376
mars x 227377345.82763204 y 755481725.4135933
jupiter x 747998645.748279 y -303296662.3455783
saturn x 1495999661.4372485 y 309112831.337247
uranus x 2991999915.359318 y 204120303.48387724
neptune x 4487999962.381919 y 331733336.9575819
pluto x 5906207978.278747 y -2952942055.50338
```

31536000

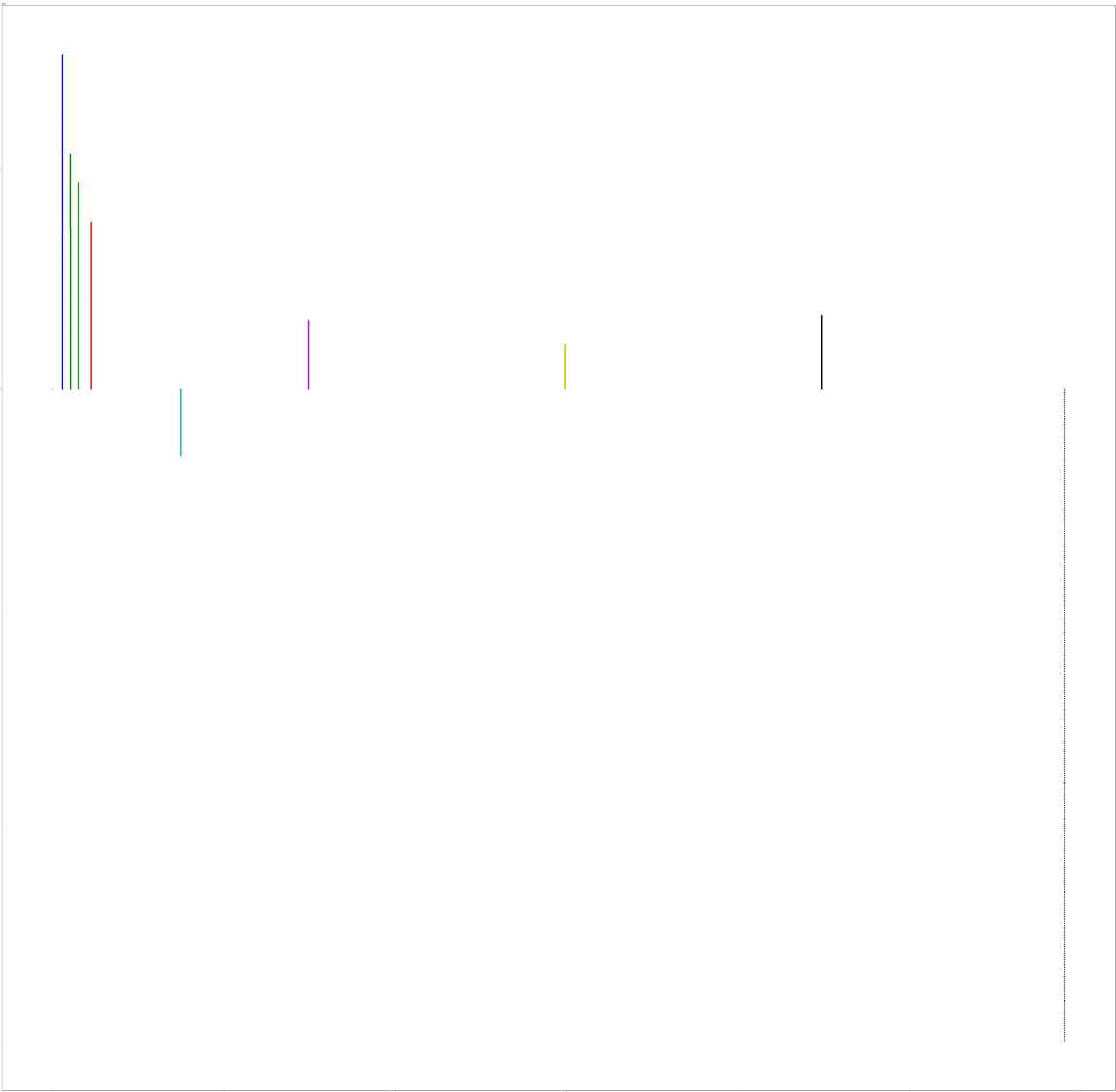
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solar x 0.0 y 0
mercury x 58119894.396574706 y 1520626319.904776
venus x 104650509.5092774 y 1068013712.1758698
earth x 149565954.6088769 y 938268150.0573659
mars x 227377265.0866463 y 757557177.3575765
jupiter x 747998638.2868325 y -304132182.4903882
saturn x 1495999659.571889 y 309961764.74256545
uranus x 2991999914.8929777 y 204680460.94984323
neptune x 4487999962.174657 y 332644450.36132574
pluto x 5906207978.15907 y -2961076982.203484
```

31622400

```
solar x 0.0 y 0
mercury x 58118661.4569487 y 1524792407.6847644
venus x 104650127.60842933 y 1070939753.3764168
earth x 149565767.5320174 y 940838716.9447664
mars x 227377184.12382546 y 759632629.2815752
jupiter x 747998630.8048874 y -304967702.5112045
saturn x 1495999657.7014046 y 310810698.02851033
uranus x 2991999914.425357 y 205240618.14204824
neptune x 4487999961.9668255 y 333555563.66142094
pluto x 5906207978.039065 y -2969211908.9022803
```

Out[3]:

Text(0.5, 0.98, 'position')



In []: