

MATH 340 Project

November 27, 2021

```
[1]: import pandas as pd
import os
# This is a comment
# These two lines install the pulp package on the syzygy server (or on your
  ↪ machine)
import sys
!{sys.executable} -m pip install pulp
import pulp
from pulp import *
import numpy as np
import matplotlib.pyplot as plt
import math
```

Requirement already satisfied: pulp in /opt/conda/lib/python3.9/site-packages (2.5.0)

1 Data Set Up

```
[2]: notebook_path = os.path.abspath("Project.ipynb")
OC_path = os.path.join(os.path.dirname(notebook_path), "new_OC copy.csv")
PV_path = os.path.join(os.path.dirname(notebook_path), "new_PV copy.csv")
TP_path = os.path.join(os.path.dirname(notebook_path), "new_TP copy.csv")
DR_path = os.path.join(os.path.dirname(notebook_path), "Daily_Requirment.csv")
OC_df = pd.read_csv (OC_path)
PV_df = pd.read_csv (PV_path)
TP_df = pd.read_csv (TP_path)
DR_df = pd.read_csv (DR_path)

[3]: OC_df['Price'] = OC_df['Price'] * 0.75
TP_df['Price'] = TP_df['Price'] * 0.75
PV_df['Price'] = PV_df['Price'] * 0.75
```

1.1 Original TP_df,OC_df,PV_df

```
[4]: #Totem Park dataframe
TP_df
```

```
[4]:
```

	ID	Name	Type	Price	Serving size \
0	TP_M_1	Classic_Burger	Main	6.2175	1 Bugarbeef Patty
1	TP_M_2	Cheese_Burger	Main	6.9675	1 Bugarbeef Patty
2	TP_M_3	Classic_Chicken_Burger	Main	7.4925	1 Burger
3	TP_M_4	Classic_Veggie_Burger	Main	6.7425	1 Burgerbeef Patty
4	TP_M_5	Blue_Bacon_Burger	Main	10.4925	1 Burger
5	TP_M_6	Spicy_Grilled_Cheese	Main	5.9925	1 Sandwich
6	TP_M_7	Classic_Poutine	Main	6.2175	320
7	TP_M_8	Mushroom_Pot_Pie	Main	6.7425	1 pie
8	TP_M_9	Steak&Mushroom_Pot_Pie	Main	5.9925	1 pie
9	TP_M_10	Spinach_Salad	Main	6.3675	26
10	TP_M_11	Meatball_Sub	Main	8.2425	1 Sandwich
11	TP_M_12	Street_Corn_Burrito	Main	7.7175	1 Burrito
12	TP_M_13	Chicken_Fajita_Burrito	Main	7.7175	1 Burrito
13	TP_M_14	Carne_Asada_Burrito	Main	8.2425	1 Burrito
14	TP_M_15	Street_Corn_Burrito_Bowl	Main	7.7175	345
15	TP_M_16	Chicken_Fajita_Burrito_Bowl	Main	7.7175	480
16	TP_M_17	Carne_Asada_Burrito_Bowl	Main	8.2425	440
17	TP_M_18	Honey_Garlic_Pork	Main	8.2425	335
18	TP_M_19	Honey_Garlic_Tempeh	Main	7.4925	335
19	TP_S_1	Add_Bacon	Side	1.4925	2 slices
20	TP_S_2	Add_Cheese	Side	0.8925	1 slice
21	TP_S_3	Side_Strips	Side	6.9675	4Pc + 40ml Dip
22	TP_S_4	Side_Fries	Side	3.5175	250
23	TP_S_5	Side_Yam_Fries	Side	3.9675	250
24	TP_S_6	Beef_Samosa	Side	3.7425	1 samosa
25	TP_S_7	Vegeterian_Somosa	Side	3.7425	1 samosa
26	TP_S_8	Steamed_Basmati_Rice	Side	1.8675	150
27	TP_S_9	Stirfry_Veggies	Side	1.8675	150
28	TP_S_10	Add_Poached_Prawns	Side	1.8675	9
29	TP_S_11	Thai_Cucumber_Salad	Side	1.8675	191
30	TP_S_12	Cowboy_Beans	Side	1.8675	150
31	TP_S_13	Glazed_Parsnips_and_Carrots	Side	1.8675	150
32	TP_S_14	Side_Mashed_Potato	Side	1.8675	150

	Calories	Total Fat	Saturated Fat	Trans Fat	Cholesterol	Sodium \
0	580	27.0	8.0	0.5	80	1700
1	640	32.0	11.0	0.5	95	1810
2	670	22.0	7.0	0.0	110	1690
3	580	30.0	3.5	0.0	15	1330
4	810	52.0	22.0	1.0	150	2030
5	880	53.0	33.0	2.0	140	1880

6	880	51.0	16.0	0.0	80	2510
7	610	38.0	10.0	0.5	60	730
8	480	27.0	10.0	0.0	55	720
9	790	71.0	15.0	0.0	5	460
10	840	54.0	27.0	1.5	210	1830
11	740	29.0	9.0	0.0	10	1770
12	790	25.0	4.5	0.0	10	1880
13	790	31.0	6.0	0.0	10	2105
14	470	23.0	8.0	0.0	10	1120
15	520	19.0	3.5	0.0	10	1230
16	520	25.0	5.0	0.0	10	1455
17	430	10.0	1.0	0.0	15	750
18	560	11.0	1.0	0.0	0	640
19	340	32.0	11.0	0.0	70	680
20	60	5.0	3.0	0.0	15	105
21	1160	86.0	4.5	0.0	70	1700
22	540	26.0	2.0	0.0	0	1350
23	480	24.0	3.0	0.0	0	710
24	350	10.0	4.0	0.0	205	1200
25	310	6.0	1.0	0.0	0	1170
26	310	2.5	0.0	0.0	0	190
27	110	4.0	0.0	0.0	0	440
28	80	1.0	0.0	0.0	135	750
29	200	10.0	1.5	0.0	0	620
30	140	3.0	0.0	0.0	0	470
31	170	2.0	0.0	0.0	0	290
32	120	8.0	5.0	0.0	25	115

	Total Carbs	Dietary Fiber	Sugar	Protein
0	59	7	11	26
1	59	7	11	29
2	67	4	23	45
3	59	12	6	25
4	39	5	7	36
5	70	4	1	25
6	79	6	0	24
7	58	12	16	12
8	42	6	9	21
9	16	5	7	24
10	48	8	6	40
11	31	8	99	23
12	117	9	103	41
13	61	10	95	35
14	31	8	54	14
15	117	9	58	32
16	61	10	50	26
17	72	5	16	14

18	91	11	25	24
19	0	0	0	11
20	0	0	0	4
21	61	2	17	32
22	70	6	0	6
23	62	4	19	3
24	58	2	28	10
25	60	4	28	6
26	66	3	0	6
27	16	4	7	4
28	2	0	0	15
29	28	3	19	4
30	25	6	9	5
31	37	10	15	3
32	9	1	1	1

[5]: #Place vanier dataframe

PV_df

[5]:

	ID	Name	Type	Price	Serving size	Calories \
0	PV_M_1	Alumni_Burger	Main	6.2175	1 portion	590
1	PV_M_2	Classic_Grilled_Cheese	Main	5.9925	1 portion	570
2	PV_M_3	Lumberjack_Burger	Main	8.9925	1 portion	840
3	PV_M_4	Cajun_Chicken_Burger	Main	9.7425	1 portion	500
4	PV_M_5	Beyond_Crunch_Burger	Main	8.2425	1 portion	700
5	PV_M_6	Ultimate_Veggie_Burger	Main	7.4925	1 portion	640
6	PV_M_7	Mediterranean_Bowl	Main	5.9925	1 portion	740
7	PV_M_8	Thai_Coconut_Bowl	Main	5.9925	1 portion	690
8	PV_M_9	Avocado_Spinach_Pasta	Main	6.7425	1 portion	1000
9	PV_M_10	Gather_Bowl	Main	6.7425	1 portion	960
10	PV_M_11	Fajita_Veg_Bowl	Main	6.7425	1 portion	740
11	PV_M_12	Kitsilano_Tofu_Poke_Bowl	Main	5.9925	1 portion	680
12	PV_M_13	Acron_Squash_Poke_Bowl	Main	6.7425	1 portion	490
13	PV_M_14	Salmon_&_Ponzu_Poke_Bowl	Main	9.7425	1 portion	660
14	PV_M_15	Havana_Bowl_Chicken	Main	6.7425	1 portion	660
15	PV_M_16	Havana_Bowl_Tofu	Main	5.9925	1 portion	670
16	PV_M_17	Latino_Bowl	Main	5.9925	1 portion	630
17	PV_M_18	Porchetta_Pork	Main	6.7425	1 portion	1360
18	PV_M_19	Cauliflower_Steak	Main	3.7425	1 portion	760
19	PV_S_1	Gather_Side_Salad	Side	4.4925	1 portion	120
20	PV_S_2	Classic_Poutine	Side	6.2175	1 portion	940
21	PV_S_3	Side_Of_Fries	Side	3.5175	1 portion	540
22	PV_S_4	Side_Of_Chicken_Strips	Side	6.9675	1 portion	1280
23	PV_S_5	Side_Of_Yam_Fries	Side	3.9675	1 portion	830
24	PV_S_6	Add_Bacon	Side	1.4925	1 portion	340
25	PV_S_7	Add_Cheese_Slice	Side	0.8925	1 portion	60
26	PV_S_8	Miso_Soup	Side	2.2425	1 portion	70

27	PV_S_9	Cumin_Lime_Chicken_Taco	Side	2.6175	1 portion	240
28	PV_S_10	Cauliflower_Taco	Side	2.2425	1 portion	270
29	PV_S_11	Balck_Bean_Soup	Side	2.9925	1 portion	310
30	PV_S_12	Side_Garlic_Mashed_Potatos	Side	1.8675	1 portion	130
31	PV_S_13	Ginger_Broccoli	Side	1.8675	1 portion	80

	Total Fat	Saturated Fat	Trans Fat	Cholesterol	Sodium	Total Carbs	\
0	32.0	8.0	0.5	85	1010	52	
1	55.0	33.0	1.5	145	380	7	
2	52.0	18.0	1.5	110	1880	58	
3	9.0	1.0	0.0	120	920	56	
4	37.0	11.0	0.0	25	1080	60	
5	28.0	8.0	0.0	15	570	80	
6	49.0	8.0	0.0	30	1470	64	
7	26.0	10.0	0.0	0	410	95	
8	32.0	6.0	0.0	10	370	150	
9	52.0	6.0	0.0	0	440	106	
10	21.0	1.5	0.0	0	980	121	
11	36.0	3.5	0.0	5	630	72	
12	12.0	2.0	0.0	0	400	81	
13	13.0	2.0	0.0	45	1540	96	
14	25.0	6.0	0.0	110	610	74	
15	30.0	6.0	0.0	0	400	77	
16	27.0	4.0	0.0	15	1660	79	
17	137.0	36.0	0.0	120	1300	13	
18	69.0	6.0	0.0	0	280	36	
19	9.0	0.5	0.0	0	45	10	
20	57.0	17.0	0.0	80	2430	80	
21	26.0	2.0	0.0	0	1350	71	
22	96.0	4.5	0.0	75	1860	67	
23	63.0	6.0	0.0	10	650	64	
24	32.0	11.0	0.0	70	680	0	
25	5.0	3.0	0.0	15	105	0	
26	3.0	0.0	0.0	0	570	5	
27	7.0	1.0	0.0	50	380	28	
28	3.0	0.5	0.0	0	230	51	
29	9.0	4.0	0.0	0	880	47	
30	1.5	0.0	0.0	0	290	27	
31	2.0	0.0	0.0	0	1100	10	

	Dietary Fiber	Sugar	Protein
0	7	5	25
1	1	0	13
2	6	12	35
3	4	14	46
4	9	9	35
5	15	14	21

6	11	9	17
7	12	11	17
8	24	7	30
9	17	13	23
10	14	9	19
11	8	6	21
12	9	9	14
13	6	21	28
14	12	7	37
15	14	7	29
16	14	8	22
17	3	4	20
18	11	10	11
19	3	4	1
20	6	0	24
21	6	0	6
22	3	19	37
23	4	19	3
24	0	0	11
25	0	0	4
26	1	0	6
27	2	8	13
28	6	7	10
29	7	4	12
30	4	2	3
31	0	2	6

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[6]: #Ochard Commons dataframe
OC_df
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[6]:
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	ID	Name	Type	Price	Serving Size \
0	OC_M_1	Classic_Beef_Burger	Main	6.2175	320
1	OC_M_2	Classic_Cheese_Burger	Main	6.9675	345
2	OC_M_3	Chickpea_Burger	Main	8.2425	1 Burger
3	OC_M_4	Blackened_Chicken_Burger	Main	8.2425	1 Burger
4	OC_M_5	Classic_Grilled_Cheese_Sandwich	Main	5.9925	1 Sandwich
5	OC_M_6	Crispy_Fish_Sandwich	Main	8.9925	1 Sandwich
6	OC_M_7	Poutine	Main	6.2175	400
7	OC_M_8	Baja_Salad	Main	7.4925	380
8	OC_M_9	Kale_Caesar	Main	6.7425	210
9	OC_M_10	Southwest_Bowl	Main	6.7425	1. bowl
10	OC_M_11	Harvest_Squash_Pasta	Main	8.2425	1 Bowl
11	OC_M_12	King_Oyster_Mushroom	Main	6.7425	1 Bowl
12	OC_M_13	Mezze_Platter	Main	6.9675	1 Bowl
13	OC_M_14	OK_Flatbread	Main	5.9925	1 Flatbread
14	OC_M_17	Vegetable_Burrito	Main	5.9925	1 Burrito
15	OC_M_18	Pulled_Pork_Burrito	Main	6.7425	1 Burrito

16	OC_M_19	Chicken_Burrito	Main	7.4925	1 Burrito
17	OC_S_1	Side_Chicken_Stripts	Side	6.9675	250
18	OC_S_2	French_Fries	Side	3.5175	230
19	OC_S_3	Yam_Fries	Side	3.9675	170
20	OC_S_5	add_Cheese	Side	0.8925	1 Slice
21	OC_S_7	add_Baja_Salad	Side	3.7425	190
22	OC_S_8	Side_Kale_Caesar	Side	3.7425	105
23	OC_S_12	Multigrain_Bagel	Side	1.9425	1 Bagel
24	OC_S_13	Plain_Bagel	Side	1.9425	1 Bagel
25	OC_S_14	Sesame_Seed_Bagel	Side	1.9425	1 Bagel
26	OC_S_15	Plain_Croissant	Side	1.8375	1 Croissant
27	OC_S_16	Cheese_Croissant	Side	2.7675	1 Croissant
28	OC_S_17	Ham&Cheese_Croissant	Side	3.9675	1 Croissant
29	OC_S_23	UBC_Ponderosa_Cake	Side	2.7675	1 cake
30	OC_S_25	UBC_Granola_Bar	Side	2.2425	1 Bar
31	OC_S_26	Banana_Loaf	Side	2.4675	1 Slice
32	OC_S_27	Lemon_Loaf	Side	2.4675	1 Slice
33	OC_S_28	Pumpkin_Loaf	Side	2.4675	1 Slice
34	OC_S_31	Chocolate_Chip_Cookie	Side	2.0925	1 Cookie
35	OC_S_32	Double_Chocolate_Cookie	Side	2.0925	1 Cookie
36	OC_S_33	White_Chocolate_Macadamia_Cookie	Side	2.0925	1 Cookie
37	OC_S_34	Monster_M&M_Cookie	Side	2.0925	1 Cookie

	Calories	Total Fat	Saturated Fat	Trans Fat	Cholesterol	Sodium \
0	570	29.0	8.0	0.5	80	1320
1	630	33.0	11.0	0.5	95	1430
2	600	20.0	2.0	0.0	0	910
3	530	20.0	4.5	0.0	100	1810
4	900	56.0	31.0	1.5	130	1020
5	560	16.0	1.0	16.0	35	1220
6	880	51.0	16.0	0.0	80	2510
7	800	69.0	8.0	0.0	15	460
8	400	24.0	6.0	0.0	35	1010
9	880	59.0	4.0	0.0	15	740
10	840	35.0	15.0	0.0	0	730
11	600	33.0	2.0	0.0	0	480
12	590	29.0	1.5	0.0	0	1210
13	480	27.0	6.0	0.0	60	950
14	540	14.0	5.0	0.0	1405	5
15	710	21.0	7.0	0.0	90	1680
16	700	22.0	6.0	0.0	105	1500
17	1330	95.0	4.5	0.0	75	1810
18	540	26.0	2.0	0.0	0	1350
19	400	16.0	2.0	0.0	0	490
20	60	3.5	3.0	0.0	15	110
21	400	34.0	4.0	0.0	5	230
22	200	12.0	3.0	0.0	20	510

23	320	3.5	0.5	0.0	55	0
24	300	1.5	0.0	0.0	55	0
25	310	3.0	0.5	0.0	55	0
26	180	9.0	5.0	0.0	20	30
27	220	13.0	7.0	0.0	20	40
28	230	13.0	6.0	0.0	20	35
29	670	28.0	17.0	1.0	95	115
30	550	30.0	4.5	0.0	60	0
31	350	14.0	1.5	0.0	50	50
32	570	20.0	1.5	0.0	90	25
33	330	10.0	1.0	0.0	55	35
34	360	17.0	7.0	0.0	50	20
35	370	18.0	8.0	0.0	15	20
36	380	19.0	8.0	0.0	50	20
37	360	16.0	7.0	0.0	50	20

	Total Carbs	Dietary Fiber	Sugar	Protein
0	54	7	7	25
1	54	7	7	28
2	91	14	12	20
3	51	6	6	38
4	67	3	3	25
5	80	7	11	24
6	79	6	0	24
7	34	9	7	17
8	33	5	3	15
9	64	13	16	11
10	113	20	20	24
11	64	11	7	18
12	74	14	17	15
13	38	3	11	11
14	16	4	89	16
15	93	6	5	39
16	92	6	4	35
17	78	3	29	36
18	70	6	0	6
19	62	4	19	3
20	0	0	0	3
21	17	4	4	9
22	17	3	2	7
23	5	4	4	12
24	5	5	2	11
25	5	5	3	11
26	4	2	1	4
27	4	3	1	6
28	4	4	1	9
29	45	9	3	10

30	20	1	9	16
31	30	4	2	5
32	56	3	1	6
33	37	3	2	4
34	31	3	0	5
35	31	1	0	4
36	31	3	0	5
37	32	3	1	4

1.2 DR_df

```
[7]: #Daily nutrition requirement dataframe
DR_df
```

```
[7]:
```

	Nutrition	Daily_Requirement_LB	Daily_Requirement_UB
0	Calorie (kcal)	1250.0	3000.00
1	Total fat (g)	59.0	103.00
2	Saturated fat (g)	0.0	22.00
3	Trans fat (g)	0.0	2.00
4	Cholesterol (mg)	0.0	300.00
5	Sodium (mg)	0.0	2300.00
6	Total carbs (g)	225.0	325.00
7	Dietary fiber (g)	21.0	NaN
8	Sugar (g)	0.0	24.00
9	Protein (g)	27.2	95.18

2 Construct Constraints in DR_df

```
[8]: #construct calorie nutrient value constraints
dinner_ratio = 2.2
cal_to_kg = 0.129598
sugar_cal_to_g = 0.25
protein_cal_to_g = 0.25
fat_cal_to_g = 1/9

Calories_LB = DR_df["Daily_Requirement_LB"][0]/dinner_ratio
Calories_UB = DR_df["Daily_Requirement_UB"][0]/dinner_ratio
Total_Fat_LB = Calories_LB * fat_cal_to_g * 0.2
Total_Fat_UB = Calories_UB * fat_cal_to_g * 0.35
Saturated_Fat_LB = 0
Saturated_Fat_UB = Calories_UB * fat_cal_to_g * 0.1
Trans_Fat_LB = 0
Trans_Fat_UB = Calories_UB * fat_cal_to_g * 0.01
Cholesterol_LB = 0
Cholesterol_UB = DR_df["Daily_Requirement_UB"][4]/dinner_ratio
Sodium_LB = 0
```

```

Sodium_UB = DR_df["Daily_Requirement_UB"][5]/dinner_ratio
Total_Carbs_LB = DR_df["Daily_Requirement_LB"][6]/dinner_ratio
Total_Carbs_UB = DR_df["Daily_Requirement_UB"][6]/dinner_ratio
Dietary_Fiber_LB = DR_df["Daily_Requirement_LB"][7]/dinner_ratio
Sugar_LB = 0
Sugar_UB = Calories_UB*0.1*sugar_cal_to_g
Protein_LB = Calories_LB *0.1 * protein_cal_to_g
Protein_UB = Calories_UB * 0.35 * protein_cal_to_g

Calories_constraint_tuple = (Calories_LB,Calories_UB)
Total_Fat_constraint_tuple = (Total_Fat_LB,Total_Fat_UB)
Saturated_Fat_constraint_tuple = (Saturated_Fat_LB,Saturated_Fat_UB)
Trans_Fat_constraint_tuple = (Trans_Fat_LB,Trans_Fat_UB)
Cholesterol_constraint_tuple = (Cholesterol_LB,Cholesterol_UB)
Sodium_constraint_tuple = (Sodium_LB,Sodium_UB)
Total_Carbs_constraint_tuple = (Total_Carbs_LB,Total_Carbs_UB)
Dietary_Fiber_constraint_tuple = (Dietary_Fiber_LB,)
Sugar_constraint_tuple = (Sugar_LB,Sugar_UB)
Protein_constraint_tuple = (Protein_LB,Protein_UB)

limit_constraint_tuples = [Calories_constraint_tuple,
                           Total_Fat_constraint_tuple,
                           Saturated_Fat_constraint_tuple,
                           Trans_Fat_constraint_tuple,
                           Cholesterol_constraint_tuple,
                           Sodium_constraint_tuple,
                           Total_Carbs_constraint_tuple,
                           Dietary_Fiber_constraint_tuple,
                           Sugar_constraint_tuple,
                           Protein_constraint_tuple]

constrant_df = pd.DataFrame(limit_constraint_tuples, columns =_
    ↳['Constraint_LB', 'Constraint_UB'])

```

```

[9]: #add nutrition value constraints to DR_df
DR_df = pd.concat([DR_df, constrant_df], axis=1)
DR_df

```

```

[9]:
      Nutrition  Daily_Requirement_LB  Daily_Requirement_UB  \
0   Calorie (kcal)                1250.0                3000.00
1    Total fat (g)                   59.0                 103.00
2  Saturated fat (g)                   0.0                  22.00
3    Trans fat (g)                    0.0                   2.00
4  Cholesterol (mg)                   0.0                 300.00
5     Sodium (mg)                    0.0                2300.00
6   Total carbs (g)                225.0                 325.00
7  Dietary fiber (g)                 21.0                   NaN
8     Sugar (g)                    0.0                 24.00

```

9	Protein (g)	27.2	95.18
	Constraint_LB	Constraint_UB	
0	568.181818	1363.636364	
1	12.626263	53.030303	
2	0.000000	15.151515	
3	0.000000	1.515152	
4	0.000000	136.363636	
5	0.000000	1045.454545	
6	102.272727	147.727273	
7	9.545455	NaN	
8	0.000000	34.090909	
9	14.204545	119.318182	

3 Nutrition Value

```
[10]: #Creating a normal distribution function
def normal_dist(x, mean, sd):
    prob_density = 1/(sd * np.sqrt(2 * np.pi)) * np.exp( - (x - mean)**2 / (2 *
    ↪sd**2))
    return prob_density

# a map function map the Gaussian value in range(0,1)
def map_01(x,in_max):
    return x/(in_max-0)
```

3.1 Total carbs nutrition point & plot

```
[11]: Total_Carbs_avg = (DR_df["Constraint_LB"][6] + DR_df["Constraint_UB"][6])/2
Total_Carbs_sigma = DR_df["Constraint_UB"][6] - Total_Carbs_avg
OC_Total_Carbs_points = OC_df["Total Carbs"]
TP_Total_Carbs_points = TP_df["Total Carbs"]
PV_Total_Carbs_points = PV_df["Total Carbs"]

interval = np.linspace(0,250,2000)
Total_Carbs_pdf_line = normal_dist(interval,Total_Carbs_avg,Total_Carbs_sigma)
Total_Carbs_max_line = max(Total_Carbs_pdf_line)
OC_Total_Carbs_pdf_dots =
    ↪normal_dist(OC_Total_Carbs_points,Total_Carbs_avg,Total_Carbs_sigma)
TP_Total_Carbs_pdf_dots =
    ↪normal_dist(TP_Total_Carbs_points,Total_Carbs_avg,Total_Carbs_sigma)
PV_Total_Carbs_pdf_dots =
    ↪normal_dist(PV_Total_Carbs_points,Total_Carbs_avg,Total_Carbs_sigma)
```

```

OC_Total_Carbs_mapped_dots_arr =□
    ↪map_01(OC_Total_Carbs_pdf_dots,Total_Carbs_max_line)
TP_Total_Carbs_mapped_dots_arr =□
    ↪map_01(TP_Total_Carbs_pdf_dots,Total_Carbs_max_line)
PV_Total_Carbs_mapped_dots_arr =□
    ↪map_01(PV_Total_Carbs_pdf_dots,Total_Carbs_max_line)

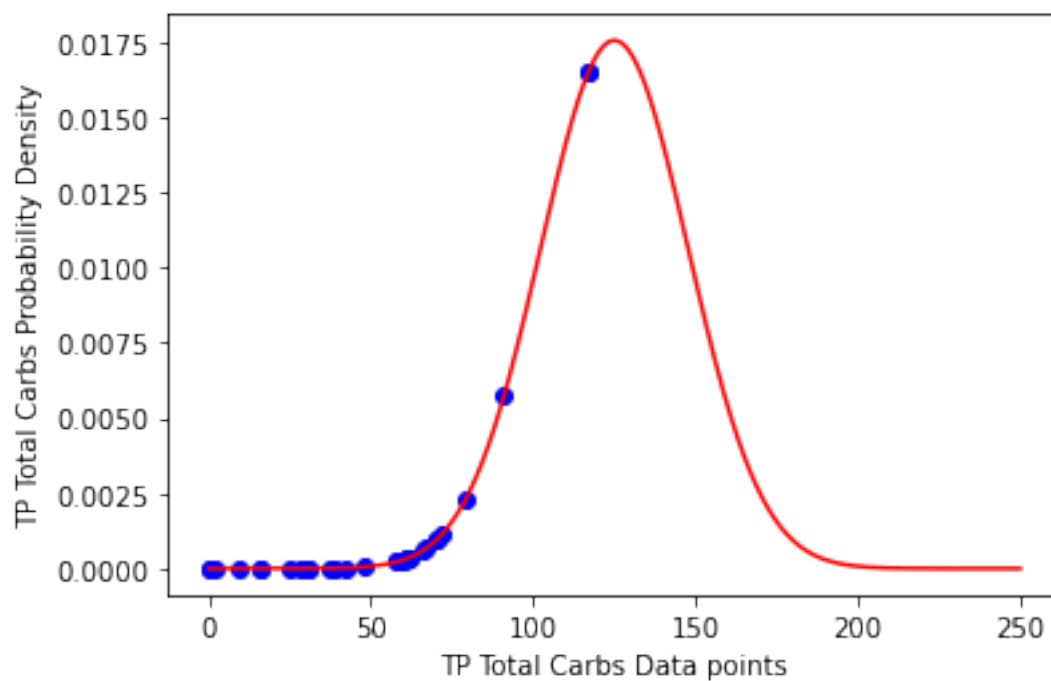
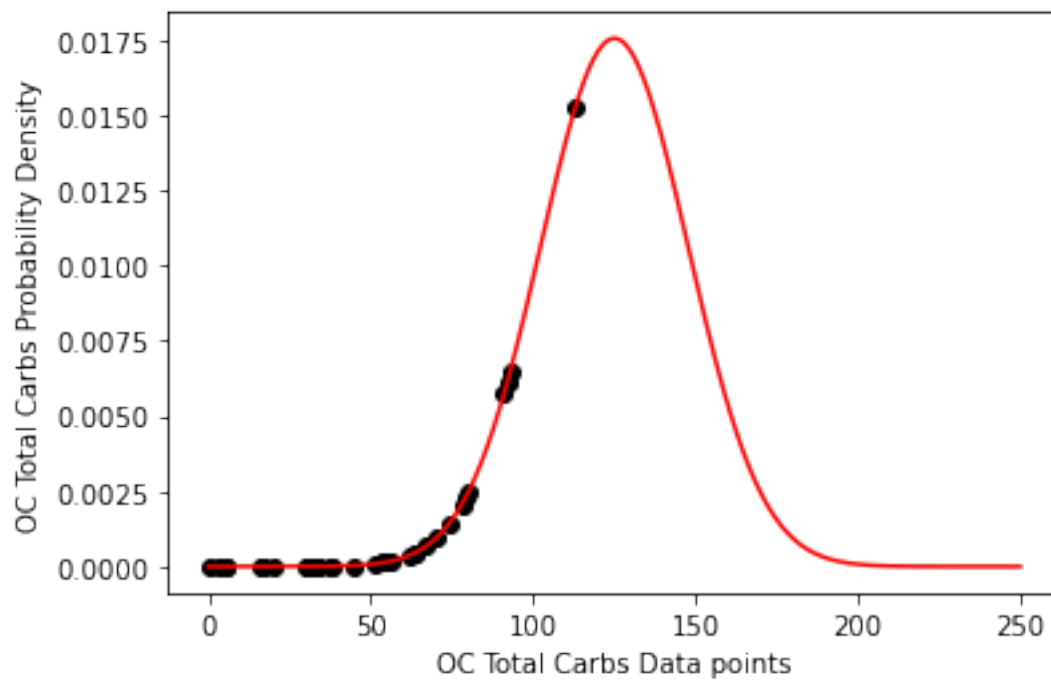
OC_df["Total Carbs Nutrition Point"] = OC_Total_Carbs_mapped_dots_arr
TP_df["Total Carbs Nutrition Point"] = TP_Total_Carbs_mapped_dots_arr
PV_df["Total Carbs Nutrition Point"] = PV_Total_Carbs_mapped_dots_arr

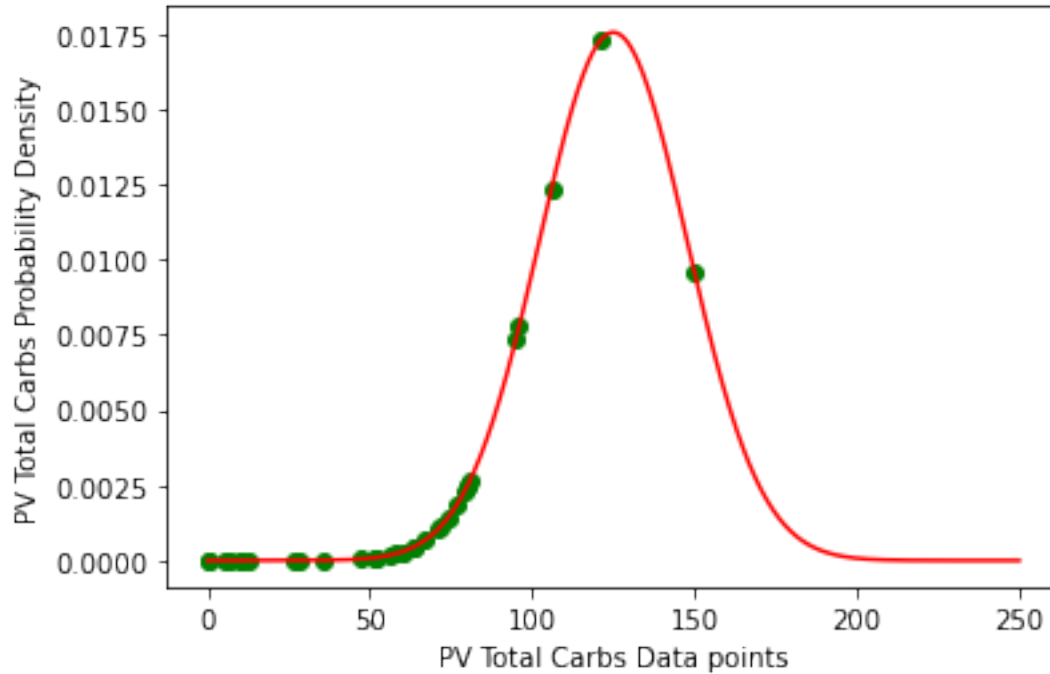
#Plotting the Results
plt.plot(OC_Total_Carbs_points,OC_Total_Carbs_pdf_dots, 'o', color='black');
plt.plot(interval,Total_Carbs_pdf_line, color = 'red')
plt.xlabel('OC Total Carbs Data points')
plt.ylabel('OC Total Carbs Probability Density')
plt.show()

plt.plot(TP_Total_Carbs_points,TP_Total_Carbs_pdf_dots, 'o', color='blue');
plt.plot(interval,Total_Carbs_pdf_line, color = 'red')
plt.xlabel('TP Total Carbs Data points')
plt.ylabel('TP Total Carbs Probability Density')
plt.show()

plt.plot(PV_Total_Carbs_points,PV_Total_Carbs_pdf_dots, 'o', color='green');
plt.plot(interval,Total_Carbs_pdf_line, color = 'red')
plt.xlabel('PV Total Carbs Data points')
plt.ylabel('PV Total Carbs Probability Density')
plt.show()

```





3.2 Total fat nutrient point & plot

```
[12]: Total_Fat_avg = (DR_df["Constraint_LB"][1] + DR_df["Constraint_UB"][1])/2
Total_Fat_sigma = DR_df["Constraint_UB"][1] - Total_Fat_avg
OC_Total_Fat_points = OC_df["Total Fat"]
TP_Total_Fat_points = TP_df["Total Fat"]
PV_Total_Fat_points = PV_df["Total Fat"]

interval = np.linspace(-40,100,2000)
Total_Fat_pdf_line = normal_dist(interval,Total_Fat_avg,Total_Fat_sigma)
Total_Fat_max_line = max(Total_Fat_pdf_line)
OC_Total_Fat_pdf_dots = □
    ↳normal_dist(OC_Total_Fat_points,Total_Fat_avg,Total_Fat_sigma)
TP_Total_Fat_pdf_dots = □
    ↳normal_dist(TP_Total_Fat_points,Total_Fat_avg,Total_Fat_sigma)
PV_Total_Fat_pdf_dots = □
    ↳normal_dist(PV_Total_Fat_points,Total_Fat_avg,Total_Fat_sigma)

OC_Total_Fat_mapped_dots_arr = map_01(OC_Total_Fat_pdf_dots,Total_Fat_max_line)
TP_Total_Fat_mapped_dots_arr = map_01(TP_Total_Fat_pdf_dots,Total_Fat_max_line)
PV_Total_Fat_mapped_dots_arr = map_01(PV_Total_Fat_pdf_dots,Total_Fat_max_line)

OC_df["Total Fat Nutrition Point"] = OC_Total_Fat_mapped_dots_arr
TP_df["Total Fat Nutrition Point"] = TP_Total_Fat_mapped_dots_arr
```

```

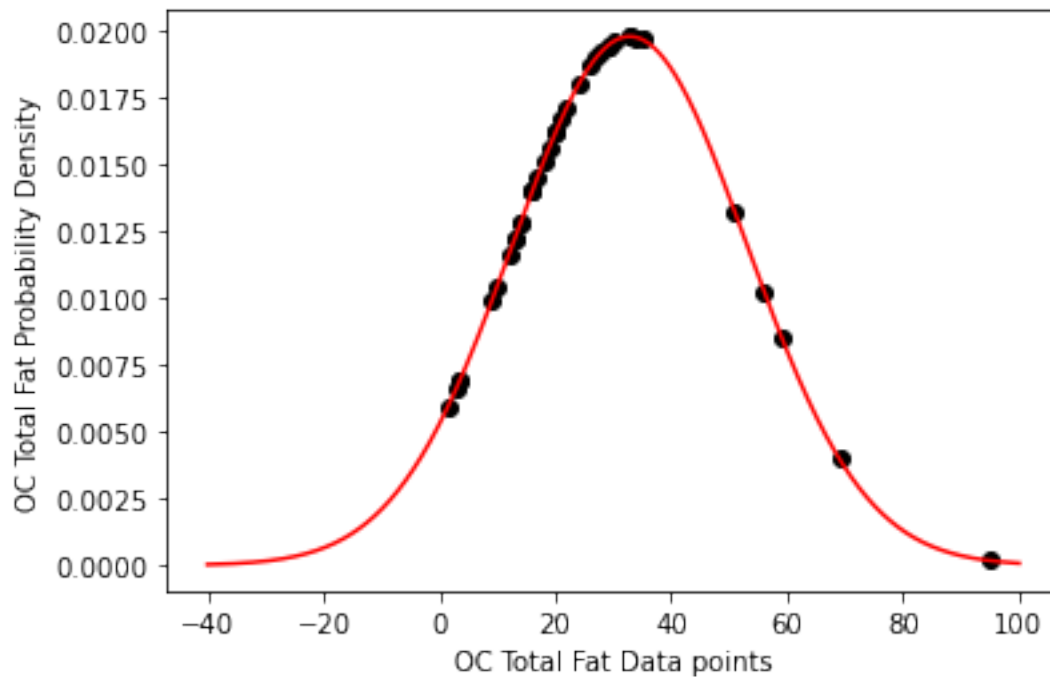
PV_df["Total Fat Nutrition Point"] = PV_Total_Fat_mapped_dots_arr

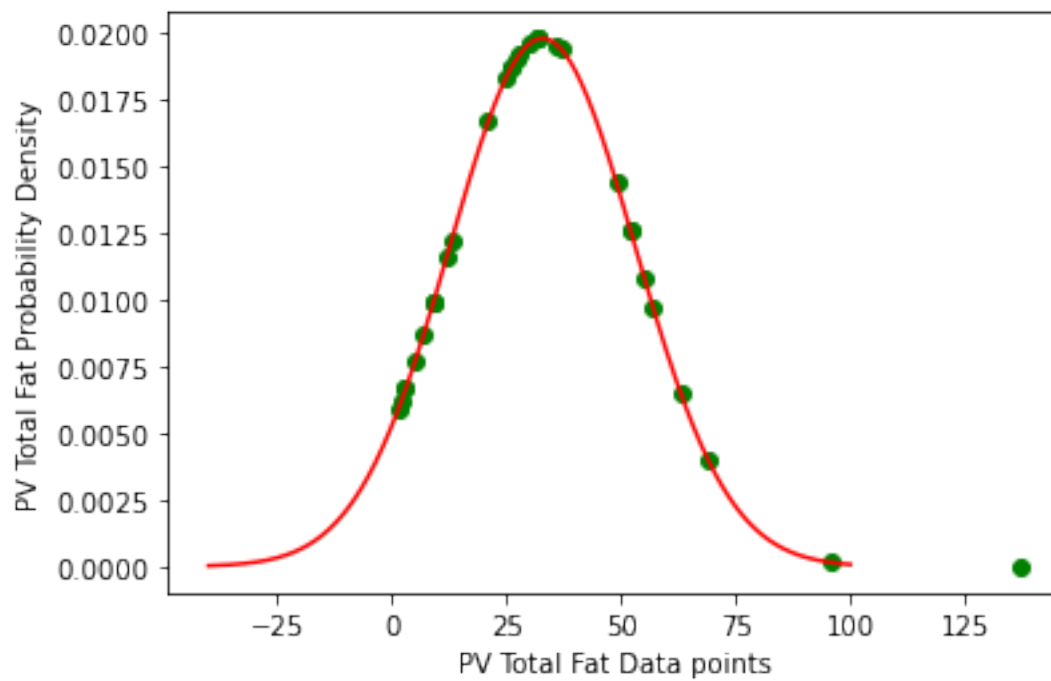
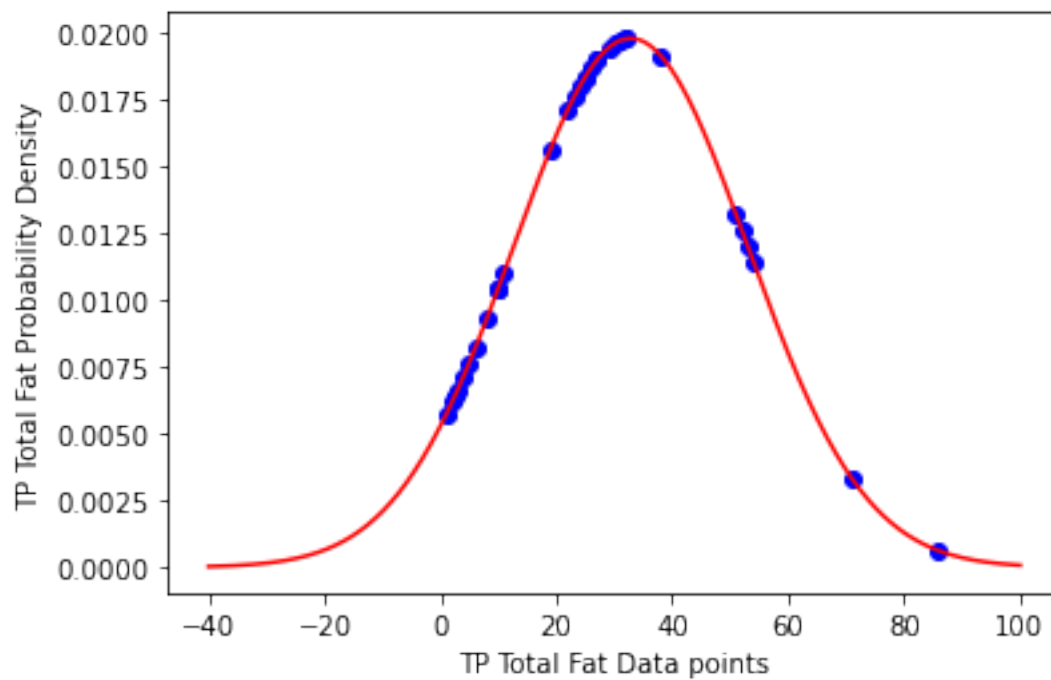
#Plotting the Results
plt.plot(OC_Total_Fat_points,OC_Total_Fat_pdf_dots, 'o', color='black');
plt.plot(interval>Total_Fat_pdf_line, color = 'red')
plt.xlabel('OC Total Fat Data points')
plt.ylabel('OC Total Fat Probability Density')
plt.show()

plt.plot(TP_Total_Fat_points,TP_Total_Fat_pdf_dots, 'o', color='blue');
plt.plot(interval>Total_Fat_pdf_line, color = 'red')
plt.xlabel('TP Total Fat Data points')
plt.ylabel('TP Total Fat Probability Density')
plt.show()

plt.plot(PV_Total_Fat_points,PV_Total_Fat_pdf_dots, 'o', color='green');
plt.plot(interval>Total_Fat_pdf_line, color = 'red')
plt.xlabel('PV Total Fat Data points')
plt.ylabel('PV Total Fat Probability Density')
plt.show()

```





3.3 Protein nutrient point & plot

```
[13]: Protein_avg = (DR_df["Constraint_LB"][9] + DR_df["Constraint_UB"][9])/2
Protein_sigma = DR_df["Constraint_UB"][9] - Protein_avg
OC_Protein_points = OC_df["Protein"]
TP_Protein_points = TP_df["Protein"]
PV_Protein_points = PV_df["Protein"]

interval = np.linspace(-150,300,2000)
Protein_pdf_line = normal_dist(interval,Protein_avg,Protein_sigma)
Protein_max_line = max(Protein_pdf_line)
OC_Protein_pdf_dots = normal_dist(OC_Protein_points,Protein_avg,Protein_sigma)
TP_Protein_pdf_dots = normal_dist(TP_Protein_points,Protein_avg,Protein_sigma)
PV_Protein_pdf_dots = normal_dist(PV_Protein_points,Protein_avg,Protein_sigma)

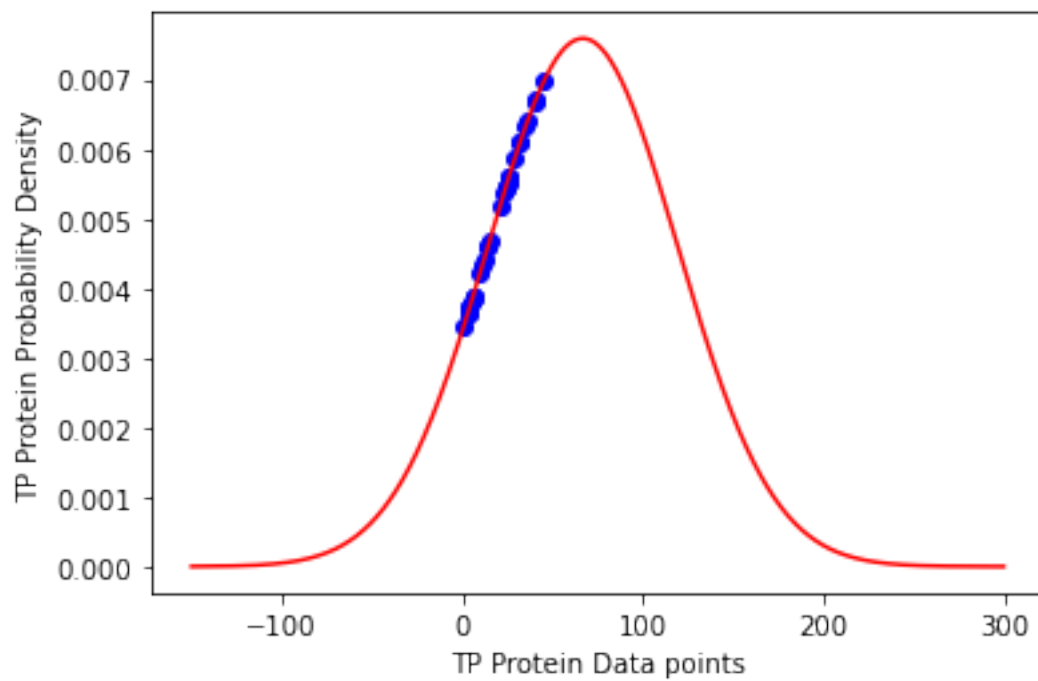
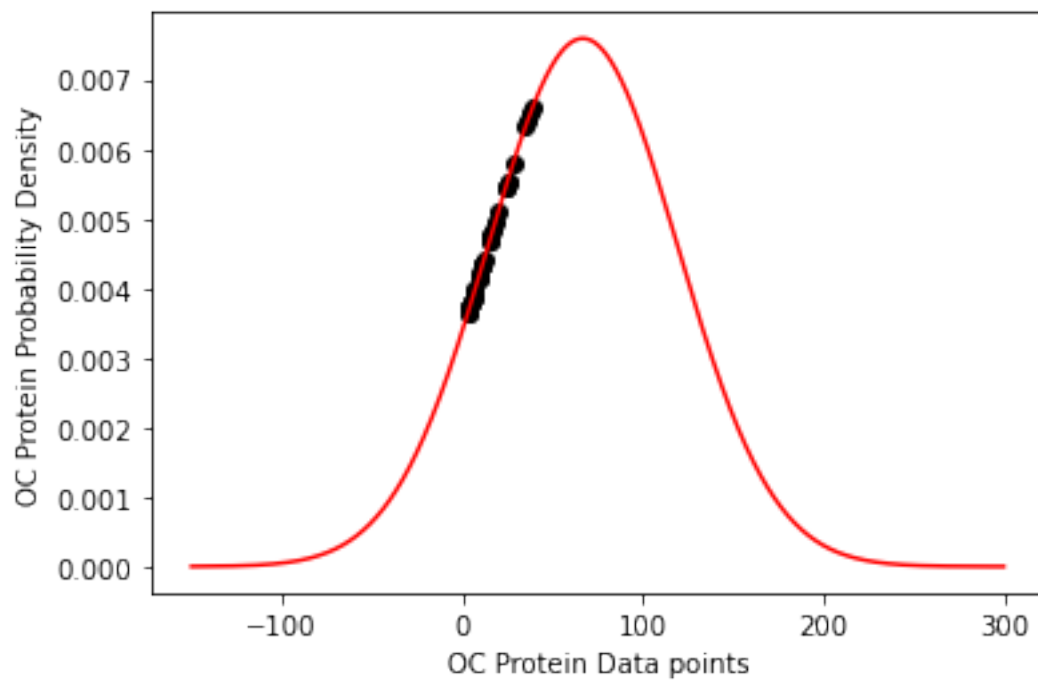
OC_Protein_mapped_dots_arr = map_01(OC_Protein_pdf_dots,Protein_max_line)
TP_Protein_mapped_dots_arr = map_01(TP_Protein_pdf_dots,Protein_max_line)
PV_Protein_mapped_dots_arr = map_01(PV_Protein_pdf_dots,Protein_max_line)

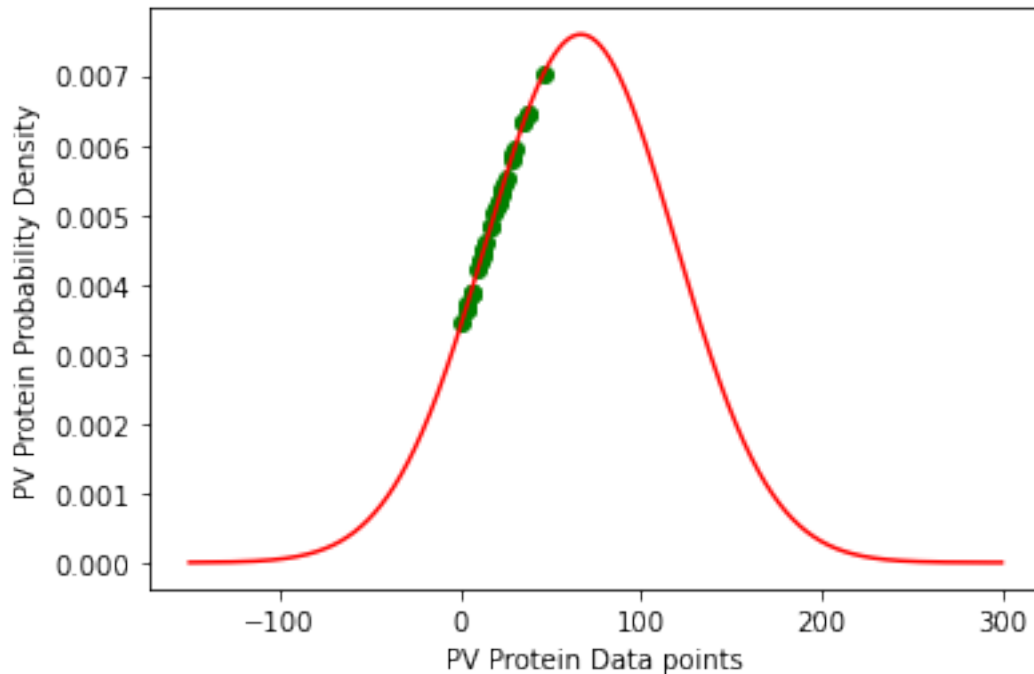
OC_df["Protein Nutrition Point"] = OC_Protein_mapped_dots_arr
TP_df["Protein Nutrition Point"] = TP_Protein_mapped_dots_arr
PV_df["Protein Nutrition Point"] = PV_Protein_mapped_dots_arr

#Plotting the Results
plt.plot(OC_Protein_points,OC_Protein_pdf_dots, 'o', color='black');
plt.plot(interval,Protein_pdf_line, color = 'red')
plt.xlabel('OC Protein Data points')
plt.ylabel('OC Protein Probability Density')
plt.show()

plt.plot(TP_Protein_points,TP_Protein_pdf_dots, 'o', color='blue');
plt.plot(interval,Protein_pdf_line, color = 'red')
plt.xlabel('TP Protein Data points')
plt.ylabel('TP Protein Probability Density')
plt.show()

plt.plot(PV_Protein_points, PV_Protein_pdf_dots, 'o', color='green');
plt.plot(interval,Protein_pdf_line, color = 'red')
plt.xlabel('PV Protein Data points')
plt.ylabel('PV Protein Probability Density')
plt.show()
```





3.4 Nutritiosaturated fat, trans fat, cholesterol, sugar, sodium, dietary fiber

[14]: *#maxinum/mininum of OC,TP, PV restaraunt, use for calculate uniform_*
↪distribution function below

```
OC_So = OC_df["Sodium"]
TP_So = TP_df["Sodium"]
PV_So = PV_df["Sodium"]
sodium_arr = [*OC_So, *TP_So, *PV_So]
max_soduim = max(sodium_arr)

OC_S = OC_df["Sugar"]
TP_S = TP_df["Sugar"]
PV_S = PV_df["Sugar"]
sugar_arr = [*OC_S, *TP_S, *PV_S]
max_sugar = max(sugar_arr)

OC_C = OC_df["Cholesterol"]
TP_C = TP_df["Cholesterol"]
PV_C = PV_df["Cholesterol"]
Cholesterol_arr = [*OC_C, *TP_C, *PV_C]
max_Cholesterol= max(Cholesterol_arr)

OC_TF = OC_df["Trans Fat"]
TP_TF = TP_df["Trans Fat"]
```

```

PV_TF = PV_df["Trans Fat"]
trans_fat_arr = [*OC_TF, *TP_TF, *PV_TF]
max_trans_fat = max(trans_fat_arr)

OC_SF = OC_df["Saturated Fat"]
TP_SF = TP_df["Saturated Fat"]
PV_SF = PV_df["Saturated Fat"]
saturated_fat_arr = [*OC_SF, *TP_SF, *PV_SF]
max_saturated_fat = max(saturated_fat_arr)

OC_So = OC_df["Sodium"]
TP_So = TP_df["Sodium"]
PV_So = PV_df["Sodium"]
sodium_arr = [*OC_So, *TP_So, *PV_So]
max_soduim = max(sodium_arr)

OC_S = OC_df["Sugar"]
TP_S = TP_df["Sugar"]
PV_S = PV_df["Sugar"]
sugar_arr = [*OC_S, *TP_S, *PV_S]
max_sugar = max(sugar_arr)

OC_C = OC_df["Cholesterol"]
TP_C = TP_df["Cholesterol"]
PV_C = PV_df["Cholesterol"]
Cholesterol_arr = [*OC_C, *TP_C, *PV_C]
max_Cholesterol= max(Cholesterol_arr)

OC_TF = OC_df["Trans Fat"]
TP_TF = TP_df["Trans Fat"]
PV_TF = PV_df["Trans Fat"]
trans_fat_arr = [*OC_TF, *TP_TF, *PV_TF]
max_trans_fat = max(trans_fat_arr)

OC_SF = OC_df["Saturated Fat"]
TP_SF = TP_df["Saturated Fat"]
PV_SF = PV_df["Saturated Fat"]
saturated_fat_arr = [*OC_SF, *TP_SF, *PV_SF]
max_saturated_fat = max(saturated_fat_arr)

# construct uniform function for saturated fat, trans fat, cholesterol, sugar,
↳ sodium
def uniform_nutrition_point(max_value, kind, df):
    nutrition_point_arr = (-1/max_value)*df[kind] + 1
    return nutrition_point_arr

# construct fiber nutrition function

```

```

def fiber_nutrition_point(arr):
    fiber_arr = []
    fiber_bound = DR_df["Constraint_LB"][7]
    for i in arr:
        if (i >= fiber_bound):
            fiber_arr.append(1)
        else:
            nutrition_point = (1/fiber_bound)*i
            fiber_arr.append(nutrition_point)
    return fiber_arr

#calculate nutrition point for saturated fat, trans fat, cholesterol, sugar,
↳sodium, dietary fiber
OC_SF_point = uniform_nutrition_point(max_saturated_fat,"Saturated Fat",OC_df)
TP_SF_point = uniform_nutrition_point(max_saturated_fat,"Saturated Fat",TP_df)
PV_SF_point = uniform_nutrition_point(max_saturated_fat,"Saturated Fat",PV_df)

OC_TF_point = uniform_nutrition_point(max_trans_fat,"Trans Fat",OC_df)
TP_TF_point = uniform_nutrition_point(max_trans_fat,"Trans Fat",TP_df)
PV_TF_point = uniform_nutrition_point(max_trans_fat,"Trans Fat",PV_df)

OC_C_point = uniform_nutrition_point(max_Cholesterol,"Cholesterol",OC_df)
TP_C_point = uniform_nutrition_point(max_Cholesterol,"Cholesterol",TP_df)
PV_C_point = uniform_nutrition_point(max_Cholesterol,"Cholesterol",PV_df)

OC_S_point = uniform_nutrition_point(max_sugar,"Sugar",OC_df)
TP_S_point = uniform_nutrition_point(max_sugar,"Sugar",TP_df)
PV_S_point = uniform_nutrition_point(max_sugar,"Sugar",PV_df)

OC_So_point = uniform_nutrition_point(max_soduim,"Sodium",OC_df)
TP_So_point = uniform_nutrition_point(max_soduim,"Sodium",TP_df)
PV_So_point = uniform_nutrition_point(max_soduim,"Sodium",PV_df)

OC_F_point = fiber_nutrition_point(OC_df["Dietary Fiber"])
TP_F_point = fiber_nutrition_point(TP_df["Dietary Fiber"])
PV_F_point = fiber_nutrition_point(PV_df["Dietary Fiber"])

OC_df["Sugar Nutrition Point"] = OC_S_point
TP_df["Sugar Nutrition Point"] = TP_S_point
PV_df["Sugar Nutrition Point"] = PV_S_point

OC_df["Sodium Nutrition Point"] = OC_So_point
TP_df["Sodium Nutrition Point"] = TP_So_point
PV_df["Sodium Nutrition Point"] = PV_So_point

OC_df["Trans Fat Nutrition Point"] = OC_TF_point

```

```

TP_df["Trans Fat Nutrition Point"] = TP_TF_point
PV_df["Trans Fat Nutrition Point"] = PV_TF_point

OC_df["Saturated Fat Nutrition Point"] = OC_SF_point
TP_df["Saturated Fat Nutrition Point"] = TP_SF_point
PV_df["Saturated Fat Nutrition Point"] = PV_SF_point

OC_df["Cholesterol Nutrition Point"] = OC_C_point
TP_df["Cholesterol Nutrition Point"] = TP_C_point
PV_df["Cholesterol Nutrition Point"] = PV_C_point

OC_df["Dietary Fiber Nutrition Point"] = OC_F_point
TP_df["Dietary Fiber Nutrition Point"] = TP_F_point
PV_df["Dietary Fiber Nutrition Point"] = PV_F_point

#calculate nutrition point for saturated fat, trans fat, cholesterol, sugar, sodium, dietary fiber
OC_SF_point = uniform_nutrition_point(max_saturated_fat,"Saturated Fat",OC_df)
TP_SF_point = uniform_nutrition_point(max_saturated_fat,"Saturated Fat",TP_df)
PV_SF_point = uniform_nutrition_point(max_saturated_fat,"Saturated Fat",PV_df)

OC_TF_point = uniform_nutrition_point(max_trans_fat,"Trans Fat",OC_df)
TP_TF_point = uniform_nutrition_point(max_trans_fat,"Trans Fat",TP_df)
PV_TF_point = uniform_nutrition_point(max_trans_fat,"Trans Fat",PV_df)

OC_C_point = uniform_nutrition_point(max_Cholesterol,"Cholesterol",OC_df)
TP_C_point = uniform_nutrition_point(max_Cholesterol,"Cholesterol",TP_df)
PV_C_point = uniform_nutrition_point(max_Cholesterol,"Cholesterol",PV_df)

OC_S_point = uniform_nutrition_point(max_sugar,"Sugar",OC_df)
TP_S_point = uniform_nutrition_point(max_sugar,"Sugar",TP_df)
PV_S_point = uniform_nutrition_point(max_sugar,"Sugar",PV_df)

OC_So_point = uniform_nutrition_point(max_sodium,"Sodium",OC_df)
TP_So_point = uniform_nutrition_point(max_sodium,"Sodium",TP_df)
PV_So_point = uniform_nutrition_point(max_sodium,"Sodium",PV_df)

OC_F_point = fiber_nutrition_point(OC_df["Dietary Fiber"])
TP_F_point = fiber_nutrition_point(TP_df["Dietary Fiber"])
PV_F_point = fiber_nutrition_point(PV_df["Dietary Fiber"])

OC_df["Sugar Nutrition Point"] = OC_S_point
TP_df["Sugar Nutrition Point"] = TP_S_point
PV_df["Sugar Nutrition Point"] = PV_S_point

OC_df["Sodium Nutrition Point"] = OC_So_point
TP_df["Sodium Nutrition Point"] = TP_So_point

```

```

PV_df["Sodium Nutrition Point"] = PV_So_point

OC_df["Trans Fat Nutrition Point"] = OC_TF_point
TP_df["Trans Fat Nutrition Point"] = TP_TF_point
PV_df["Trans Fat Nutrition Point"] = PV_TF_point

OC_df["Saturated Fat Nutrition Point"] = OC_SF_point
TP_df["Saturated Fat Nutrition Point"] = TP_SF_point
PV_df["Saturated Fat Nutrition Point"] = PV_SF_point

OC_df["Cholesterol Nutrition Point"] = OC_C_point
TP_df["Cholesterol Nutrition Point"] = TP_C_point
PV_df["Cholesterol Nutrition Point"] = PV_C_point

OC_df["Dietary Fiber Nutrition Point"] = OC_F_point
TP_df["Dietary Fiber Nutrition Point"] = TP_F_point
PV_df["Dietary Fiber Nutrition Point"] = PV_F_point

```

3.5 Calculate nutrition value and coefficient

```

[15]: def calculate_nutrition_value(df):
        df["Nutrition Value"] = df["Total Fat Nutrition Point"] + df["Saturated Fat_
        ↪Nutrition Point"] + df["Trans Fat Nutrition Point"] + df["Cholesterol_
        ↪Nutrition Point"] + df["Sodium Nutrition Point"] + df["Total Carbs Nutrition_
        ↪Point"] + df["Dietary Fiber Nutrition Point"] + df["Sugar Nutrition Point"] +
        ↪df["Protein Nutrition Point"]

    def coefficient(df):
        df["Coefficient"] = df["Nutrition Value"] / df["Price"]

    calculate_nutrition_value(OC_df)
    calculate_nutrition_value(PV_df)
    calculate_nutrition_value(TP_df)
    coefficient(OC_df)
    coefficient(PV_df)
    coefficient(TP_df)

```

4 Define decision variable name

```

[16]: def type_id(t):
        if (t == "M"):
            return 1
        else:
            return 2

    def res_id(r):

```

```

    if (r == "TP"):
        return 1
    elif (r == "OC"):
        return 2
    else:
        return 3

def index_id(i):
    return i

def create_variable_name(df):
    first_arr = []
    second_arr = []
    third_arr = []
    for i in df["ID"]:
        items_arr = i.split('_')
        r = res_id(items_arr[0])
        t = type_id(items_arr[1])
        ii = index_id(items_arr[2])
        first_day_index = str(t) + "_" + str(r) + "_" + str(ii) + "_" + str(1)
        second_day_index = str(t) + "_" + str(r) + "_" + str(ii) + "_" + str(2)
        third_day_index = str(t) + "_" + str(r) + "_" + str(ii) + "_" + str(3)
        first_day_var_name = "x" + "_" + first_day_index
        second_day_var_name = "x" + "_" + second_day_index
        third_day_var_name = "x" + "_" + third_day_index

        first_arr.append(first_day_var_name)
        second_arr.append(second_day_var_name)
        third_arr.append(third_day_var_name)
    df["1st Day Variable Name"] = first_arr
    df["2nd Day Variable Name"] = second_arr
    df["3rd Day Variable Name"] = third_arr

create_variable_name(OC_df)
create_variable_name(TP_df)
create_variable_name(PV_df)

```

5 LP Problems Set Up

5.1 Create four LP max problem

```

[17]: LP_TP_OC_PV = pulp.LpProblem('Maximum_three_day_meals_each_in_TP_OC_PV',
    ↪LpMaximize)
LP_TP = pulp.LpProblem('Maximum_three_day_meals_in_TP', LpMaximize)
LP_OC = pulp.LpProblem('Maximum_three_day_meals_in_OC', LpMaximize)
LP_PV = pulp.LpProblem('Maximum_three_day_meals_in_PV', LpMaximize)

```


5.2 Define LP decision variable

```
[18]: PV_main_df = PV_df.loc[PV_df['Type'] == 'Main']
PV_main_df = PV_main_df[["1st Day Variable Name", "2nd Day Variable Name", "3rd_
    ↪Day Variable Name"]]
PV_main_1st_vars = LpVariable.dicts("PVM", PV_main_df["1st Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")
PV_main_2nd_vars = LpVariable.dicts("PVM", PV_main_df["2nd Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")
PV_main_3rd_vars = LpVariable.dicts("PVM", PV_main_df["3rd Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")

TP_main_df = TP_df.loc[TP_df['Type'] == 'Main']
TP_main_df = TP_main_df[["1st Day Variable Name", "2nd Day Variable Name", "3rd_
    ↪Day Variable Name"]]
TP_main_1st_vars = LpVariable.dicts("TPM", TP_main_df["1st Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")
TP_main_2nd_vars = LpVariable.dicts("TPM", TP_main_df["2nd Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")
TP_main_3rd_vars = LpVariable.dicts("TPM", TP_main_df["3rd Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")

OC_main_df = OC_df.loc[OC_df['Type'] == 'Main']
OC_main_df = OC_main_df[["1st Day Variable Name", "2nd Day Variable Name", "3rd_
    ↪Day Variable Name"]]
OC_main_1st_vars = LpVariable.dicts("OCM", OC_main_df["1st Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")
OC_main_2nd_vars = LpVariable.dicts("OCM", OC_main_df["2nd Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")
OC_main_3rd_vars = LpVariable.dicts("OCM", OC_main_df["3rd Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")

PV_side_df = PV_df.loc[PV_df['Type'] == 'Side']
PV_side_df = PV_side_df[["1st Day Variable Name", "2nd Day Variable Name", "3rd_
    ↪Day Variable Name"]]
PV_side_1st_vars = LpVariable.dicts("PVS", PV_side_df["1st Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")
PV_side_2nd_vars = LpVariable.dicts("PVS", PV_side_df["2nd Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")
PV_side_3rd_vars = LpVariable.dicts("PVS", PV_side_df["3rd Day Variable Name"],_
    ↪lowBound=0, upBound=1, cat="Integer")

TP_side_df = TP_df.loc[TP_df['Type'] == 'Side']
TP_side_df = TP_side_df[["1st Day Variable Name", "2nd Day Variable Name", "3rd_
    ↪Day Variable Name"]]
```

```

TP_side_1st_vars = LpVariable.dicts("TPS",TP_side_df["1st Day Variable Name"],
    ↳lowBound=0,upBound=1,cat="Integer")
TP_side_2nd_vars = LpVariable.dicts("TPS",TP_side_df["2nd Day Variable Name"],
    ↳lowBound=0,upBound=1,cat="Integer")
TP_side_3rd_vars = LpVariable.dicts("TPS",TP_side_df["3rd Day Variable Name"],
    ↳lowBound=0,upBound=1,cat="Integer")

OC_side_df = OC_df.loc[OC_df['Type'] == 'Side']
OC_side_df = OC_side_df[["1st Day Variable Name", "2nd Day Variable Name", "3rd_
    ↳Day Variable Name"]]
OC_side_1st_vars = LpVariable.dicts("OCS",OC_side_df["1st Day Variable Name"],
    ↳lowBound=0,upBound=1,cat="Integer")
OC_side_2nd_vars = LpVariable.dicts("OCS",OC_side_df["2nd Day Variable Name"],
    ↳lowBound=0,upBound=1,cat="Integer")
OC_side_3rd_vars = LpVariable.dicts("OCS",OC_side_df["3rd Day Variable Name"],
    ↳lowBound=0,upBound=1,cat="Integer")

TP_1st_vars = {**TP_main_1st_vars, **TP_side_1st_vars}
TP_2nd_vars = {**TP_main_2nd_vars, **TP_side_2nd_vars}
TP_3rd_vars = {**TP_main_3rd_vars, **TP_side_3rd_vars}

PV_1st_vars = {**PV_main_1st_vars, **PV_side_1st_vars}
PV_2nd_vars = {**PV_main_2nd_vars, **PV_side_2nd_vars}
PV_3rd_vars = {**PV_main_3rd_vars, **PV_side_3rd_vars}

OC_1st_vars = {**OC_main_1st_vars, **OC_side_1st_vars}
OC_2nd_vars = {**OC_main_2nd_vars, **OC_side_2nd_vars}
OC_3rd_vars = {**OC_main_3rd_vars, **OC_side_3rd_vars}

```

5.3 Nutrition constraint function

```

[19]: def nutrition_constraint(LP, dfs, LB, UB, kind):
    day_arr = ["1st", "2nd", "3rd"]

    for (df, d) in list(zip(dfs, day_arr)):
        dfname = str(df).split('_')[0]

        constraint_UB_explain = f"UB {kind} constraints for {str(dfname)} in_
    ↳{d} day"
        constraint_LB_explain = f"LB {kind} constraints for {str(dfname)} in_
    ↳{d} day"
        constraint_kind_name = str(dfname) + "_" + str(kind) + "_constraint"

        which_day_var_name = f"{d} Day Variable Name"

        if str(df) == str(TP_df):

```

```

        if d == "1st":
            constraint_kind_name_arr = [df.loc[df[which_day_var_name] ==
↳str(i), kind].values[0]*TP_1st_vars[i] for i in df[which_day_var_name]]
        elif d == "2nd":
            constraint_kind_name_arr = [df.loc[df[which_day_var_name] ==
↳str(i), kind].values[0]*TP_2nd_vars[i] for i in df[which_day_var_name]]
        else:
            constraint_kind_name_arr = [df.loc[df[which_day_var_name] ==
↳str(i), kind].values[0]*TP_3rd_vars[i] for i in df[which_day_var_name]]
        if str(df) == str(OC_df):
            if d == "1st":
                constraint_kind_name_arr = [df.loc[df[which_day_var_name] ==
↳str(i), kind].values[0]*OC_1st_vars[i] for i in df[which_day_var_name]]
            elif d == "2nd":
                constraint_kind_name_arr = [df.loc[df[which_day_var_name] ==
↳str(i), kind].values[0]*OC_2nd_vars[i] for i in df[which_day_var_name]]
            else:
                constraint_kind_name_arr = [df.loc[df[which_day_var_name] ==
↳str(i), kind].values[0]*OC_3rd_vars[i] for i in df[which_day_var_name]]
        if str(df) == str(PV_df):
            if d == "1st":
                constraint_kind_name_arr = [df.loc[df[which_day_var_name] ==
↳str(i), kind].values[0]*PV_1st_vars[i] for i in df[which_day_var_name]]
            elif d == "2nd":
                constraint_kind_name_arr = [df.loc[df[which_day_var_name] ==
↳str(i), kind].values[0]*PV_2nd_vars[i] for i in df[which_day_var_name]]
            else:
                constraint_kind_name_arr = [df.loc[df[which_day_var_name] ==
↳str(i), kind].values[0]*PV_3rd_vars[i] for i in df[which_day_var_name]]

        if UB>=0:
            LP += lpSum([constraint_kind_name_arr]) <= UB
            LP += lpSum([constraint_kind_name_arr]) >= LB

```

6 Implement LP problem

6.1 Three days have meals at TP, OC, PV

6.1.1 Objective function

```

[20]: TP_obj = [TP_df.loc[TP_df['1st Day Variable Name'] == i, 'Coefficient'].
↳values[0]*TP_1st_vars[i] for i in TP_df['1st Day Variable Name']]
OC_obj = [OC_df.loc[OC_df['2nd Day Variable Name'] == i, 'Coefficient'].
↳values[0]*OC_2nd_vars[i] for i in OC_df['2nd Day Variable Name']]
PV_obj = [PV_df.loc[PV_df['3rd Day Variable Name'] == i, 'Coefficient'].
↳values[0]*PV_3rd_vars[i] for i in PV_df['3rd Day Variable Name']]

```

```
LP_TP_OC_PV += lpSum([TP_obj,OC_obj,PV_obj]), "Total Cost of three day meals_
↳separate in TP, OC, PV"
```

6.1.2 Constraints

```
[21]: #price constraint
TP_price_constraint = [TP_df.loc[TP_df['1st Day Variable Name'] == i, 'Price'].
↳values[0]*TP_1st_vars[i] for i in TP_df['1st Day Variable Name']]
OC_price_constraint = [OC_df.loc[OC_df['2nd Day Variable Name'] == i, 'Price'].
↳values[0]*OC_2nd_vars[i] for i in OC_df['2nd Day Variable Name']]
PV_price_constraint = [PV_df.loc[PV_df['3rd Day Variable Name'] == i, 'Price'].
↳values[0]*PV_3rd_vars[i] for i in PV_df['3rd Day Variable Name']]
LP_TP_OC_PV +=
↳lpSum([TP_price_constraint,OC_price_constraint,PV_price_constraint]) <= 26.7/
↳dinner_ratio *3, "Price constraints for TP, OC, PV"
```

```
[22]: #other constraints to make sure our assumption is valid
LP_TP_OC_PV += lpSum(TP_main_1st_vars[str(TP_main_df.iat[i,0])] for i in
↳range(len(TP_main_1st_vars))) == 1, "TP one main in first day"
LP_TP_OC_PV += lpSum(TP_side_1st_vars[str(TP_side_df.iat[i,0])] for i in
↳range(len(TP_side_1st_vars))) == 1, "TP one side in first day"

LP_TP_OC_PV += lpSum(OC_main_2nd_vars[str(OC_main_df.iat[i,1])] for i in
↳range(len(OC_main_2nd_vars))) == 1, "OC one main in second day"
LP_TP_OC_PV += lpSum(OC_side_2nd_vars[str(OC_side_df.iat[i,1])] for i in
↳range(len(OC_side_2nd_vars))) == 1, "OC one side in second day"

LP_TP_OC_PV += lpSum(PV_main_3rd_vars[str(PV_main_df.iat[i,2])] for i in
↳range(len(PV_main_3rd_vars))) == 1, "PV one main in third day"
LP_TP_OC_PV += lpSum(PV_side_3rd_vars[str(PV_side_df.iat[i,2])] for i in
↳range(len(PV_side_3rd_vars))) == 1, "PV one side in third day"
```

```
[23]: #nutrition constraint
Calorie_LB = DR_df["Constraint_LB"][0]
Calorie_UB = DR_df["Constraint_UB"][0]
Total_Fat_LB = DR_df["Constraint_LB"][1]
Total_Fat_UB = DR_df["Constraint_UB"][1]
Saturated_Fat_LB = DR_df["Constraint_LB"][2]
Saturated_Fat_UB = DR_df["Constraint_UB"][2]
Trans_Fat_LB = DR_df["Constraint_LB"][3]
Trans_Fat_UB = DR_df["Constraint_UB"][3]
Cholesterol_LB = DR_df["Constraint_LB"][4]
Cholesterol_UB = DR_df["Constraint_UB"][4]
Sodium_LB= DR_df["Constraint_LB"][5]
Sodium_UB= DR_df["Constraint_UB"][5]
```

```

Total_Carbs_LB= DR_df["Constraint_LB"][6]
Total_Carbs_UB= DR_df["Constraint_UB"][6]
Dietary_Fiber_LB = DR_df["Constraint_LB"][7]
Dietary_Fiber_UB = DR_df["Constraint_UB"][7]
Sugar_LB = DR_df["Constraint_LB"][8]
Sugar_UB = DR_df["Constraint_UB"][8]
Protein_LB = DR_df["Constraint_LB"][9]
Protein_UB = DR_df["Constraint_UB"][9]

nutrition_constraint(LP_TP_OC_PV, [TP_df,OC_df,PV_df],Calorie_LB,↵
↵Calorie_UB,"Calories")
nutrition_constraint(LP_TP_OC_PV, [TP_df,OC_df,PV_df],Total_Fat_LB,↵
↵Total_Fat_UB,"Total Fat")
nutrition_constraint(LP_TP_OC_PV, [TP_df,OC_df,PV_df],Saturated_Fat_LB,↵
↵Saturated_Fat_UB,"Saturated Fat")
nutrition_constraint(LP_TP_OC_PV, [TP_df,OC_df,PV_df],Trans_Fat_LB,↵
↵Trans_Fat_UB,"Trans Fat")
nutrition_constraint(LP_TP_OC_PV, [TP_df,OC_df,PV_df],Cholesterol_LB,↵
↵Cholesterol_UB,"Cholesterol")
nutrition_constraint(LP_TP_OC_PV, [TP_df,OC_df,PV_df],Sodium_LB,↵
↵Sodium_UB,"Sodium")
nutrition_constraint(LP_TP_OC_PV, [TP_df,OC_df,PV_df],Total_Carbs_LB,↵
↵Total_Carbs_UB,"Total Carbs")
nutrition_constraint(LP_TP_OC_PV, [TP_df,OC_df,PV_df],Dietary_Fiber_LB,↵
↵Dietary_Fiber_UB,"Dietary Fiber")
nutrition_constraint(LP_TP_OC_PV, [TP_df,OC_df,PV_df],Sugar_LB,↵
↵Sugar_UB,"Sugar")
nutrition_constraint(LP_TP_OC_PV, [TP_df,OC_df,PV_df],Protein_LB,↵
↵Protein_UB,"Protein")

```

6.1.3 Solve LP_TP_OC_PV

[24]: LP_TP_OC_PV.solve()

```

GLPSOL: GLPK LP/MIP Solver, v4.65
Parameter(s) specified in the command line:
--cpxlp /tmp/d72b3e3bf1324b2780a43f997477d753-pulp.lp -o
/tmp/d72b3e3bf1324b2780a43f997477d753-pulp.sol
Reading problem data from '/tmp/d72b3e3bf1324b2780a43f997477d753-pulp.lp'...
64 rows, 103 columns, 1850 non-zeros
103 integer variables, all of which are binary
729 lines were read
GLPK Integer Optimizer, v4.65
64 rows, 103 columns, 1850 non-zeros
103 integer variables, all of which are binary
Preprocessing...

```

```

79 constraint coefficient(s) were reduced
46 rows, 55 columns, 765 non-zeros
55 integer variables, all of which are binary
Scaling...
  A: min|aij| = 5.000e-01  max|aij| = 1.010e+03  ratio = 2.020e+03
  GM: min|aij| = 2.357e-01  max|aij| = 4.243e+00  ratio = 1.800e+01
  EQ: min|aij| = 5.556e-02  max|aij| = 1.000e+00  ratio = 1.800e+01
  2N: min|aij| = 2.930e-02  max|aij| = 1.578e+00  ratio = 5.387e+01
Constructing initial basis...
Size of triangular part is 46
Solving LP relaxation...
GLPK Simplex Optimizer, v4.65
46 rows, 55 columns, 765 non-zeros
    0: obj = 1.042791122e+01  inf = 2.740e+00 (5)
    7: obj = 1.133285582e+01  inf = 0.000e+00 (0)
*   17: obj = 2.158445019e+01  inf = 3.180e-16 (0)
OPTIMAL LP SOLUTION FOUND
Integer optimization begins...
Long-step dual simplex will be used
+   17: mip = not found yet <= +inf (1; 0)
+   95: >>>> 1.296255992e+01 <= 1.296255992e+01 0.0% (41; 11)
+   95: mip = 1.296255992e+01 <= tree is empty 0.0% (0; 103)
INTEGER OPTIMAL SOLUTION FOUND
Time used: 0.0 secs
Memory used: 0.3 Mb (322060 bytes)
Writing MIP solution to '/tmp/d72b3e3bf1324b2780a43f997477d753-pulp.sol'...

```

[24]: 1

```

[25]: result_1st_arr = []
      result_2nd_arr = []
      result_3rd_arr = []
      for a in LP_TP_OC_PV.variables():
          if a.varValue == 1:
              items = a.name.split('_')
              new_items = items[1] + "_" + items[2] + "_" + items[3] + "_" + items[4]
              ↪+ "_" + items[5]
              if(items[5]=='1'):
                  item1 = TP_df.loc[TP_df["1st Day Variable Name"] ==_
              ↪new_items,"Name"].values[0]
                  price1 = TP_df.loc[TP_df["1st Day Variable Name"] ==_
              ↪new_items,"Price"].values[0]
                  result_1st_arr.append(item1)
                  result_1st_arr.append(price1)
              elif(items[5]=='2'):
                  item2 = OC_df.loc[OC_df["2nd Day Variable Name"] ==_
              ↪new_items,"Name"].values[0]

```

```

        price2 = OC_df.loc[OC_df["2nd Day Variable Name"] ==
↪new_items, "Price"].values[0]
        result_2nd_arr.append(item2)
        result_2nd_arr.append(price2)
        elif(items[5]=='3'):
            item3 = PV_df.loc[PV_df['3rd Day Variable Name']== new_items,
↪"Name"].values[0]
            price3 = PV_df.loc[PV_df["3rd Day Variable Name"] ==
↪new_items, "Price"].values[0]
            result_3rd_arr.append(item3)
            result_3rd_arr.append(price3)
price_in_total = result_1st_arr[1] + result_1st_arr[3] + result_2nd_arr[1] +
↪result_2nd_arr[3] + result_3rd_arr[1] + result_3rd_arr[3]
print("First day meal at TP are: " + result_1st_arr[0] + "(" +
↪str(round(result_1st_arr[1],4)) + "$" + " and " + result_1st_arr[2] +
↪ "(" + str(round(result_1st_arr[3],4)) + "$)")
print("Second day meal at OC are: " + result_2nd_arr[0]+ "(" +
↪str(round(result_2nd_arr[1],4)) + "$" + " and " + result_2nd_arr[2] + "(" +
↪str(round(result_2nd_arr[3],4)) + "$)")
print("Third day meal at PV are: " + result_3rd_arr[0]+ "(" +
↪str(round(result_3rd_arr[1],4)) + "$" + " and " + result_3rd_arr[2] + "(" +
↪str(round(result_2nd_arr[3],4)) + "$)")
print(f"Price in Total: {round(price_in_total,4)}$")
print("Objective function z = %s"%(value(LP_TP_OC_PV.objective)))

```

First day meal at TP are: Mushroom_Pot_Pie(6.7425\$) and
 Steamed_Basmati_Rice(1.8675\$)
 Second day meal at OC are: Harvest_Squash_Pasta(8.2425\$) and
 Plain_Bagel(1.9425\$)
 Third day meal at PV are: Havana_Bowl_Tofu(5.9925\$) and
 Side_Garlic_Mashed_Potatos(1.9425\$)
 Price in Total: 26.655\$
 Objective function z = 12.96255992384855

6.2 Three consecutive day meals in TP

6.2.1 Objective function

[26]:

```

TP_obj1 = [TP_df.loc[TP_df['1st Day Variable Name'] == i, 'Coefficient'].
↪values[0]*TP_1st_vars[i] for i in TP_df['1st Day Variable Name']]
TP_obj2 = [TP_df.loc[TP_df['2nd Day Variable Name'] == i, 'Coefficient'].
↪values[0]*TP_2nd_vars[i] for i in TP_df['2nd Day Variable Name']]
TP_obj3 = [TP_df.loc[TP_df['3rd Day Variable Name'] == i, 'Coefficient'].
↪values[0]*TP_3rd_vars[i] for i in TP_df['3rd Day Variable Name']]
LP_TP += lpSum([TP_obj1,TP_obj2,TP_obj3]), "Total Cost of three day meals in TP"

```

6.2.2 Constraints

```
[27]: #price constraints
TP_price_constraint1 = [TP_df.loc[TP_df['1st Day Variable Name'] == i, 'Price'].
    ↪values[0]*TP_1st_vars[i] for i in TP_df['1st Day Variable Name']]
TP_price_constraint2 = [TP_df.loc[TP_df['2nd Day Variable Name'] == i, 'Price'].
    ↪values[0]*TP_2nd_vars[i] for i in TP_df['2nd Day Variable Name']]
TP_price_constraint3 = [TP_df.loc[TP_df['3rd Day Variable Name'] == i, 'Price'].
    ↪values[0]*TP_3rd_vars[i] for i in TP_df['3rd Day Variable Name']]
LP_TP +=
    ↪lpSum([TP_price_constraint1,TP_price_constraint2,TP_price_constraint3]) <=
    ↪26.7/dinner_ratio *3, "Price constraints for TP"

#other constraints for assumptions
for i in range(len(TP_main_1st_vars)):
    LP_TP += lpSum([TP_main_1st_vars[str(TP_main_df.
    ↪iat[i,0])],TP_main_2nd_vars[str(TP_main_df.
    ↪iat[i,1])],TP_main_3rd_vars[str(TP_main_df.iat[i,2])]]) <= 1

LP_TP += lpSum(TP_main_1st_vars[str(TP_main_df.iat[i,0])] for i in
    ↪range(len(TP_main_1st_vars))) == 1, "TP one main in first day"
LP_TP += lpSum(TP_side_1st_vars[str(TP_side_df.iat[i,0])] for i in
    ↪range(len(TP_side_1st_vars))) == 1, "TP one side in first day"

LP_TP += lpSum(TP_main_2nd_vars[str(TP_main_df.iat[i,1])] for i in
    ↪range(len(TP_main_2nd_vars))) == 1, "TP one main in second day"
LP_TP += lpSum(TP_side_2nd_vars[str(TP_side_df.iat[i,1])] for i in
    ↪range(len(TP_side_2nd_vars))) == 1, "TP one side in second day"

LP_TP += lpSum(TP_main_3rd_vars[str(TP_main_df.iat[i,2])] for i in
    ↪range(len(TP_main_3rd_vars))) == 1, "TP one main in third day"
LP_TP += lpSum(TP_side_3rd_vars[str(TP_side_df.iat[i,2])] for i in
    ↪range(len(TP_side_3rd_vars))) == 1, "TP one side in third day"

#nutrition constraints
nutrition_constraint(LP_TP,[TP_df,TP_df,TP_df],Calorie_LB,
    ↪Calorie_UB,"Calories")
nutrition_constraint(LP_TP,[TP_df,TP_df,TP_df],Total_Fat_LB,
    ↪Total_Fat_UB,"Total Fat")
nutrition_constraint(LP_TP,[TP_df,TP_df,TP_df],Saturated_Fat_LB,
    ↪Saturated_Fat_UB,"Saturated Fat")
nutrition_constraint(LP_TP,[TP_df,TP_df,TP_df],Trans_Fat_LB,
    ↪Trans_Fat_UB,"Trans Fat")
nutrition_constraint(LP_TP,[TP_df,TP_df,TP_df],Cholesterol_LB,
    ↪Cholesterol_UB,"Cholesterol")
nutrition_constraint(LP_TP,[TP_df,TP_df,TP_df],Sodium_LB, Sodium_UB,"Sodium")
```



```

nutrition_constraint(LP_TP,[TP_df,TP_df,TP_df],Total_Carbs_LB,␣
↳Total_Carbs_UB,"Total Carbs")
nutrition_constraint(LP_TP,[TP_df,TP_df,TP_df],Dietary_Fiber_LB,␣
↳Dietary_Fiber_UB,"Dietary Fiber")
nutrition_constraint(LP_TP,[TP_df,TP_df,TP_df],Sugar_LB, Sugar_UB,"Sugar")
nutrition_constraint(LP_TP,[TP_df,TP_df,TP_df],Protein_LB, Protein_UB,"Protein")

```

6.2.3 Solve LP_TP

[28]: LP_TP.solve()

```

GLPSOL: GLPK LP/MIP Solver, v4.65
Parameter(s) specified in the command line:
  --cpxlp /tmp/fb577f3ef5b948968583be113433e7e0-pulp.lp -o
/tmp/fb577f3ef5b948968583be113433e7e0-pulp.sol
Reading problem data from '/tmp/fb577f3ef5b948968583be113433e7e0-pulp.lp'...
83 rows, 99 columns, 1833 non-zeros
99 integer variables, all of which are binary
720 lines were read
GLPK Integer Optimizer, v4.65
83 rows, 99 columns, 1833 non-zeros
99 integer variables, all of which are binary
Preprocessing...
51 constraint coefficient(s) were reduced
50 rows, 42 columns, 573 non-zeros
42 integer variables, all of which are binary
Scaling...
  A: min|aij| = 8.925e-01  max|aij| = 7.500e+02  ratio = 8.403e+02
  GM: min|aij| = 2.357e-01  max|aij| = 4.243e+00  ratio = 1.800e+01
  EQ: min|aij| = 5.556e-02  max|aij| = 1.000e+00  ratio = 1.800e+01
  2N: min|aij| = 2.930e-02  max|aij| = 1.250e+00  ratio = 4.267e+01
Constructing initial basis...
Size of triangular part is 50
Solving LP relaxation...
GLPK Simplex Optimizer, v4.65
50 rows, 42 columns, 573 non-zeros
   0: obj = 1.297761609e+01 inf = 6.411e+00 (7)
  14: obj = 1.253024832e+01 inf = 3.331e-16 (0)
* 26: obj = 1.779653573e+01 inf = 4.441e-16 (0)
OPTIMAL LP SOLUTION FOUND
Integer optimization begins...
Long-step dual simplex will be used
+ 26: mip =      not found yet <=          +inf          (1; 0)
+ 119: mip =      not found yet <=      tree is empty      (0; 37)
PROBLEM HAS NO INTEGER FEASIBLE SOLUTION
Time used: 0.0 secs
Memory used: 0.3 Mb (314076 bytes)

```

Writing MIP solution to '/tmp/fb577f3ef5b948968583be113433e7e0-pulp.sol'...

[28]: -1

6.3 Three consecutive day meals in OC

6.3.1 Objective function

```
[29]: OC_obj1 = [OC_df.loc[OC_df['1st Day Variable Name'] == i, 'Coefficient'].
        ↪values[0]*OC_1st_vars[i] for i in OC_df['1st Day Variable Name']]
OC_obj2 = [OC_df.loc[OC_df['2nd Day Variable Name'] == i, 'Coefficient'].
        ↪values[0]*OC_2nd_vars[i] for i in OC_df['2nd Day Variable Name']]
OC_obj3 = [OC_df.loc[OC_df['3rd Day Variable Name'] == i, 'Coefficient'].
        ↪values[0]*OC_3rd_vars[i] for i in OC_df['3rd Day Variable Name']]
LP_OC += lpSum([OC_obj1,OC_obj2,OC_obj3]), "Total Cost of three day meals in OC"
```

6.3.2 Constraints

```
[30]: #price constraints
OC_price_constraint1 = [OC_df.loc[OC_df['1st Day Variable Name'] == i, 'Price'].
        ↪values[0]*OC_1st_vars[i] for i in OC_df['1st Day Variable Name']]
OC_price_constraint2 = [OC_df.loc[OC_df['2nd Day Variable Name'] == i, 'Price'].
        ↪values[0]*OC_2nd_vars[i] for i in OC_df['2nd Day Variable Name']]
OC_price_constraint3 = [OC_df.loc[OC_df['3rd Day Variable Name'] == i, 'Price'].
        ↪values[0]*OC_3rd_vars[i] for i in OC_df['3rd Day Variable Name']]
LP_OC +=
        ↪lpSum([OC_price_constraint1,OC_price_constraint2,OC_price_constraint3]) <=
        ↪26.7/dinner_ratio *3, "Price constraints for OC"

#other constrains for valid assumptions
for i in range(len(OC_main_1st_vars)):
    LP_OC += lpSum([OC_main_1st_vars[str(OC_main_df.
        ↪iat[i,0])],OC_main_2nd_vars[str(OC_main_df.
        ↪iat[i,1])],OC_main_3rd_vars[str(OC_main_df.iat[i,2])]]) <= 1

LP_OC += lpSum(OC_main_1st_vars[str(OC_main_df.iat[i,0])] for i in
        ↪range(len(OC_main_1st_vars))) == 1, "OC one main in first day"
LP_OC += lpSum(OC_side_1st_vars[str(OC_side_df.iat[i,0])] for i in
        ↪range(len(OC_side_1st_vars))) == 1, "OC one side in first day"

LP_OC += lpSum(OC_main_2nd_vars[str(OC_main_df.iat[i,1])] for i in
        ↪range(len(OC_main_2nd_vars))) == 1, "OC one main in second day"
LP_OC += lpSum(OC_side_2nd_vars[str(OC_side_df.iat[i,1])] for i in
        ↪range(len(OC_side_2nd_vars))) == 1, "OC one side in second day"
```

```

LP_OC += lpSum(OC_main_3rd_vars[str(OC_main_df.iat[i,2])] for i in
    range(len(OC_main_3rd_vars))) == 1, "OC one main in third day"
LP_OC += lpSum(OC_side_3rd_vars[str(OC_side_df.iat[i,2])] for i in
    range(len(OC_side_3rd_vars))) == 1, "OC one side in third day"

#nutrition constraints
nutrition_constraint(LP_OC,[OC_df,OC_df,OC_df],Calorie_LB,
    Calorie_UB,"Calories")
nutrition_constraint(LP_OC,[OC_df,OC_df,OC_df],Total_Fat_LB,
    Total_Fat_UB,"Total Fat")
nutrition_constraint(LP_OC,[OC_df,OC_df,OC_df],Saturated_Fat_LB,
    Saturated_Fat_UB,"Saturated Fat")
nutrition_constraint(LP_OC,[OC_df,OC_df,OC_df],Trans_Fat_LB,
    Trans_Fat_UB,"Trans Fat")
nutrition_constraint(LP_OC,[OC_df,OC_df,OC_df],Cholesterol_LB,
    Cholesterol_UB,"Cholesterol")
nutrition_constraint(LP_OC,[OC_df,OC_df,OC_df],Sodium_LB, Sodium_UB,"Sodium")
nutrition_constraint(LP_OC,[OC_df,OC_df,OC_df],Total_Carbs_LB,
    Total_Carbs_UB,"Total Carbs")
nutrition_constraint(LP_OC,[OC_df,OC_df,OC_df],Dietary_Fiber_LB,
    Dietary_Fiber_UB,"Dietary Fiber")
nutrition_constraint(LP_OC,[OC_df,OC_df,OC_df],Sugar_LB, Sugar_UB,"Sugar")
nutrition_constraint(LP_OC,[OC_df,OC_df,OC_df],Protein_LB, Protein_UB,"Protein")

```

6.3.3 Solve

```
[31]: LP_OC.solve()
```

```

GLPSOL: GLPK LP/MIP Solver, v4.65
Parameter(s) specified in the command line:
--cpxlp /tmp/c3c661293c324f0b80aa40c8b26c892d-pulp.lp -o
/tmp/c3c661293c324f0b80aa40c8b26c892d-pulp.sol
Reading problem data from '/tmp/c3c661293c324f0b80aa40c8b26c892d-pulp.lp'...
81 rows, 114 columns, 2136 non-zeros
114 integer variables, all of which are binary
836 lines were read
GLPK Integer Optimizer, v4.65
81 rows, 114 columns, 2136 non-zeros
114 integer variables, all of which are binary
Preprocessing...
84 constraint coefficient(s) were reduced
51 rows, 69 columns, 1002 non-zeros
69 integer variables, all of which are binary
Scaling...
A: min|aij| = 5.000e-01 max|aij| = 1.010e+03 ratio = 2.020e+03
GM: min|aij| = 2.414e-01 max|aij| = 4.143e+00 ratio = 1.716e+01

```

```

EQ: min|aij| = 5.883e-02 max|aij| = 1.000e+00 ratio = 1.700e+01
2N: min|aij| = 3.906e-02 max|aij| = 1.578e+00 ratio = 4.040e+01
Constructing initial basis...
Size of triangular part is 51
Solving LP relaxation...
GLPK Simplex Optimizer, v4.65
51 rows, 69 columns, 1002 non-zeros
    0: obj = 7.753401182e+00 inf = 9.810e+00 (10)
   14: obj = 1.039607222e+01 inf = 0.000e+00 (0)
*   24: obj = 1.873349059e+01 inf = 6.661e-16 (0)
OPTIMAL LP SOLUTION FOUND
Integer optimization begins...
Long-step dual simplex will be used
+   24: mip = not found yet <= +inf (1; 0)
+  110: >>>> 1.065308049e+01 <= 1.671332668e+01 56.9% (24; 1)
+  183: >>>> 1.173854762e+01 <= 1.220213443e+01 3.9% (37; 13)
+  219: >>>> 1.184515711e+01 <= 1.219400214e+01 2.9% (22; 69)
+  300: mip = 1.184515711e+01 <= tree is empty 0.0% (0; 133)
INTEGER OPTIMAL SOLUTION FOUND
Time used: 0.0 secs
Memory used: 0.4 Mb (386376 bytes)
Writing MIP solution to '/tmp/c3c661293c324f0b80aa40c8b26c892d-pulp.sol'...

```

[31]: 1

```

[32]: result_1st_arr = []
result_2nd_arr = []
result_3rd_arr = []
for a in LP_OC.variables():
    if a.varValue == 1:
        items = a.name.split('_')
        new_items = items[1] + "_" + items[2] + "_" + items[3] + "_" + items[4]
        ↪+ "_" + items[5]
        if(items[5]=='1'):
            item1 = OC_df.loc[OC_df["1st Day Variable Name"] ==_
            ↪new_items,"Name"].values[0]
            price1 = OC_df.loc[OC_df["1st Day Variable Name"] ==_
            ↪new_items,"Price"].values[0]
            result_1st_arr.append(item1)
            result_1st_arr.append(price1)
        elif(items[5]=='2'):
            item2 = OC_df.loc[OC_df["2nd Day Variable Name"] ==_
            ↪new_items,"Name"].values[0]
            price2 = OC_df.loc[OC_df["2nd Day Variable Name"] ==_
            ↪new_items,"Price"].values[0]
            result_2nd_arr.append(item2)
            result_2nd_arr.append(price2)

```

```

        elif(items[5]=='3'):
            item3 = OC_df.loc[OC_df['3rd Day Variable Name']== new_items,
↪ "Name"].values[0]
            price3 = OC_df.loc[OC_df["3rd Day Variable Name"] ==
↪ new_items,"Price"].values[0]
            result_3rd_arr.append(item3)
            result_3rd_arr.append(price3)

price_in_total = result_1st_arr[1] + result_1st_arr[3] + result_2nd_arr[1] +
↪ result_2nd_arr[3] + result_3rd_arr[1] + result_3rd_arr[3]
print("First day meal at OC are: " + result_1st_arr[0] + "(" +
↪ str(round(result_1st_arr[1],4)) + "$" + " and " + result_1st_arr[2] +
↪ "(" + str(round(result_1st_arr[3],4)) + "$)")
print("Second day meal at OC are: " + result_2nd_arr[0]+ "(" +
↪ str(round(result_2nd_arr[1],4)) + "$" + " and " + result_2nd_arr[2] + "(" +
↪ str(round(result_2nd_arr[3],4)) + "$)")
print("Third day meal at OC are: " + result_3rd_arr[0]+ "(" +
↪ str(round(result_3rd_arr[1],4)) + "$" + " and " + result_3rd_arr[2] + "(" +
↪ str(round(result_3rd_arr[3],4)) + "$)")
print(f"Price in Total: {round(price_in_total,4)}$")
print("Objective function z = %s"%(value(LP_OC.objective)))

```

First day meal at OC are: King_Oyster_Mushroom(6.7425\$) and Lemon_Loaf(2.4675\$)
 Second day meal at OC are: Chickpea_Burger(8.2425\$) and
 White_Chocolate_Macadamia_Cookie(2.0925\$)
 Third day meal at OC are: Harvest_Squash_Pasta(8.2425\$) and Plain_Bagel(1.9425\$)
 Price in Total: 29.73\$
 Objective function z = 11.845157114775418

6.4 Three consecutive day meals in PV

6.4.1 Objective function

```

[33]: PV_obj1 = [PV_df.loc[PV_df['1st Day Variable Name'] == i, 'Coefficient'].
↪ values[0]*PV_1st_vars[i] for i in PV_df['1st Day Variable Name']]
PV_obj2 = [PV_df.loc[PV_df['2nd Day Variable Name'] == i, 'Coefficient'].
↪ values[0]*PV_2nd_vars[i] for i in PV_df['2nd Day Variable Name']]
PV_obj3 = [PV_df.loc[PV_df['3rd Day Variable Name'] == i, 'Coefficient'].
↪ values[0]*PV_3rd_vars[i] for i in PV_df['3rd Day Variable Name']]
LP_PV += lpSum([PV_obj1,PV_obj2,PV_obj3]), "Total Cost of three day meals in PV"

```

6.4.2 Constraints

```

[34]: #price constraints
PV_price_constraint1 = [PV_df.loc[PV_df['1st Day Variable Name'] == i, 'Price'].
↪ values[0]*PV_1st_vars[i] for i in PV_df['1st Day Variable Name']]

```

```

PV_price_constraint2 = [PV_df.loc[PV_df['2nd Day Variable Name'] == i, 'Price'].
    ↪values[0]*PV_2nd_vars[i] for i in PV_df['2nd Day Variable Name']]
PV_price_constraint3 = [PV_df.loc[PV_df['3rd Day Variable Name'] == i, 'Price'].
    ↪values[0]*PV_3rd_vars[i] for i in PV_df['3rd Day Variable Name']]
LP_PV +=
    ↪lpSum([PV_price_constraint1,PV_price_constraint2,PV_price_constraint3]) <=
    ↪32.04, "Price constraints for PV"

#other constraints for assumptions
for i in range(len(PV_main_1st_vars)):
    LP_PV += lpSum([PV_main_1st_vars[str(PV_main_df.
    ↪iat[i,0])],PV_main_2nd_vars[str(PV_main_df.
    ↪iat[i,1])],PV_main_3rd_vars[str(PV_main_df.iat[i,2])]]) <= 1

LP_PV += lpSum(PV_main_1st_vars[str(PV_main_df.iat[i,0])] for i in
    ↪range(len(PV_main_1st_vars))) == 1, "PV one main in first day"
LP_PV += lpSum(PV_side_1st_vars[str(PV_side_df.iat[i,0])] for i in
    ↪range(len(PV_side_1st_vars))) == 1, "PV one side in first day"

LP_PV += lpSum(PV_main_2nd_vars[str(PV_main_df.iat[i,1])] for i in
    ↪range(len(PV_main_2nd_vars))) == 1, "PV one main in second day"
LP_PV += lpSum(PV_side_2nd_vars[str(PV_side_df.iat[i,1])] for i in
    ↪range(len(PV_side_2nd_vars))) == 1, "PV one side in second day"

LP_PV += lpSum(PV_main_3rd_vars[str(PV_main_df.iat[i,2])] for i in
    ↪range(len(PV_main_3rd_vars))) == 1, "PV one main in third day"
LP_PV += lpSum(PV_side_3rd_vars[str(PV_side_df.iat[i,2])] for i in
    ↪range(len(PV_side_3rd_vars))) == 1, "PV one side in third day"

#nutrition constraints
nutrition_constraint(LP_PV, [PV_df,PV_df,PV_df],Calorie_LB,
    ↪Calorie_UB,"Calories")
nutrition_constraint(LP_PV, [PV_df,PV_df,PV_df],Total_Fat_LB,
    ↪Total_Fat_UB,"Total Fat")
nutrition_constraint(LP_PV, [PV_df,PV_df,PV_df],Saturated_Fat_LB,
    ↪Saturated_Fat_UB,"Saturated Fat")
nutrition_constraint(LP_PV, [PV_df,PV_df,PV_df],Trans_Fat_LB,
    ↪Trans_Fat_UB,"Trans Fat")
nutrition_constraint(LP_PV, [PV_df,PV_df,PV_df],Cholesterol_LB,
    ↪Cholesterol_UB,"Cholesterol")
nutrition_constraint(LP_PV, [PV_df,PV_df,PV_df],Sodium_LB, Sodium_UB,"Sodium")
nutrition_constraint(LP_PV, [PV_df,PV_df,PV_df],Total_Carbs_LB,
    ↪Total_Carbs_UB,"Total Carbs")
nutrition_constraint(LP_PV, [PV_df,PV_df,PV_df],Dietary_Fiber_LB,
    ↪Dietary_Fiber_UB,"Dietary Fiber")
nutrition_constraint(LP_PV, [PV_df,PV_df,PV_df],Sugar_LB, Sugar_UB,"Sugar")

```

```
nutrition_constraint(LP_PV,[PV_df,PV_df,PV_df],Protein_LB, Protein_UB,"Protein")
```

6.4.3 Solve

```
[35]: LP_PV.solve()
```

```
GLPSOL: GLPK LP/MIP Solver, v4.65
Parameter(s) specified in the command line:
  --cpxlp /tmp/7d842b3ea2164c07b09bc0cea1bee911-pulp.lp -o
/tmp/7d842b3ea2164c07b09bc0cea1bee911-pulp.sol
Reading problem data from '/tmp/7d842b3ea2164c07b09bc0cea1bee911-pulp.lp'...
83 rows, 96 columns, 1746 non-zeros
96 integer variables, all of which are binary
682 lines were read
GLPK Integer Optimizer, v4.65
83 rows, 96 columns, 1746 non-zeros
96 integer variables, all of which are binary
Preprocessing...
102 constraint coefficient(s) were reduced
56 rows, 54 columns, 777 non-zeros
54 integer variables, all of which are binary
Scaling...
  A: min|aij| = 5.000e-01  max|aij| = 1.010e+03  ratio = 2.020e+03
  GM: min|aij| = 2.931e-01  max|aij| = 3.412e+00  ratio = 1.164e+01
  EQ: min|aij| = 8.665e-02  max|aij| = 1.000e+00  ratio = 1.154e+01
  2N: min|aij| = 6.250e-02  max|aij| = 1.125e+00  ratio = 1.800e+01
Constructing initial basis...
Size of triangular part is 56
Solving LP relaxation...
GLPK Simplex Optimizer, v4.65
56 rows, 54 columns, 777 non-zeros
   0: obj = 1.055271637e+01 inf = 4.000e+00 (1)
   5: obj = 1.033160716e+01 inf = 0.000e+00 (0)
* 20: obj = 2.233624880e+01 inf = 5.523e-16 (0)
OPTIMAL LP SOLUTION FOUND
Integer optimization begins...
Long-step dual simplex will be used
+ 20: mip = not found yet <= +inf (1; 0)
+ 91: >>>> 1.301488791e+01 <= 2.233624880e+01 71.6% (16; 1)
Solution found by heuristic: 13.268478337
+ 221: mip = 1.326847834e+01 <= tree is empty 0.0% (0; 55)
INTEGER OPTIMAL SOLUTION FOUND
Time used: 0.0 secs
Memory used: 0.3 Mb (330212 bytes)
Writing MIP solution to '/tmp/7d842b3ea2164c07b09bc0cea1bee911-pulp.sol'...
```

```
[35]: 1
```

```

[36]: result_1st_arr = []
result_2nd_arr = []
result_3rd_arr = []
for a in LP_PV.variables():
    if a.varValue == 1:
        items = a.name.split('_')
        new_items = items[1] + "_" + items[2] + "_" + items[3] + "_" + items[4]
        ↪+ "_" + items[5]
        if(items[5]=='1'):
            item1 = PV_df.loc[PV_df["1st Day Variable Name"] ==_
            ↪new_items,"Name"].values[0]
            price1 = PV_df.loc[PV_df["1st Day Variable Name"] ==_
            ↪new_items,"Price"].values[0]
            result_1st_arr.append(item1)
            result_1st_arr.append(price1)
        elif(items[5]=='2'):
            item2 = PV_df.loc[PV_df["2nd Day Variable Name"] ==_
            ↪new_items,"Name"].values[0]
            price2 = PV_df.loc[PV_df["2nd Day Variable Name"] ==_
            ↪new_items,"Price"].values[0]
            result_2nd_arr.append(item2)
            result_2nd_arr.append(price2)
        elif(items[5]=='3'):
            item3 = PV_df.loc[PV_df['3rd Day Variable Name']== new_items,_
            ↪"Name"].values[0]
            price3 = PV_df.loc[PV_df["3rd Day Variable Name"] ==_
            ↪new_items,"Price"].values[0]
            result_3rd_arr.append(item3)
            result_3rd_arr.append(price3)
price_in_total = result_1st_arr[1] + result_1st_arr[3] + result_2nd_arr[1] +_
            ↪result_2nd_arr[3] + result_3rd_arr[1] + result_3rd_arr[3]
print("First day meal at PV are: " + result_1st_arr[0] + "(" +_
            ↪str(round(result_1st_arr[1],4)) + "$" + " and " + result_1st_arr[2] +_
            ↪"(" + str(round(result_1st_arr[3],4)) + "$)")
print("Second day meal at PV are: " + result_2nd_arr[0]+ "(" +_
            ↪str(round(result_2nd_arr[1],4)) + "$" + " and " + result_2nd_arr[2] + "(" +_
            ↪str(round(result_2nd_arr[3],4)) + "$)")
print("Third day meal at PV are: " + result_3rd_arr[0]+ "(" +_
            ↪str(round(result_3rd_arr[1],4)) + "$" + " and " + result_3rd_arr[2] + "(" +_
            ↪str(round(result_2nd_arr[3],4)) + "$)")
print(f"Price in Total: {round(price_in_total,4)}$")
print("Objective function z = %s"%(value(LP_PV.objective)))

```

First day meal at PV are: Acron_Squash_Poke_Bowl(6.7425\$) and Side_Garlic_Mashed_Potatos(1.8675\$)

Second day meal at PV are: Thai_Coconut_Bowl(5.9925\$) and Side_Garlic_Mashed_Potatos(1.8675\$)

Third day meal at PV are: Havana_Bowl_Tofu(5.9925\$) and
Side_Garlic_Mashed_Potatos(1.8675\$)
Price in Total: 24.33\$
Objective function $z = 13.268478336974901$

7 View Complete LP Problem

[37]: LP_TP_OC_PV

[37]: Maximum_three_day_meals_each_in_TP_OC_PV:

```

MAXIMIZE
0.9576552521161849*OCM_x_1_2_10_2 + 0.9318365982191371*OCM_x_1_2_11_2 +
1.0919893187223886*OCM_x_1_2_12_2 + 1.0031959664229202*OCM_x_1_2_13_2 +
1.026136301176557*OCM_x_1_2_14_2 + 0.7824868296691835*OCM_x_1_2_17_2 +
0.9989754873696746*OCM_x_1_2_18_2 + 0.9073749846446427*OCM_x_1_2_19_2 +
1.0531811790535024*OCM_x_1_2_1_2 + 0.9272587953447773*OCM_x_1_2_2_2 +
0.8835354938275384*OCM_x_1_2_3_2 + 0.7687427955627508*OCM_x_1_2_4_2 +
0.8539338769759574*OCM_x_1_2_5_2 + 0.6287106357949971*OCM_x_1_2_6_2 +
0.9073796233883028*OCM_x_1_2_7_2 + 0.8407239742915169*OCM_x_1_2_8_2 +
0.9530046974534184*OCM_x_1_2_9_2 + 3.221053840560431*OCS_x_2_2_12_2 +
3.2614204679070706*OCS_x_2_2_13_2 + 3.2676710286005153*OCS_x_2_2_14_2 +
3.278190865031152*OCS_x_2_2_15_2 + 2.244009108777738*OCS_x_2_2_16_2 +
1.6077890441826286*OCS_x_2_2_17_2 + 0.7323212530181816*OCS_x_2_2_1_2 +
2.456212718238581*OCS_x_2_2_23_2 + 2.8839209576708935*OCS_x_2_2_25_2 +
2.6146571848571596*OCS_x_2_2_26_2 + 2.6459384303504963*OCS_x_2_2_27_2 +
2.5259703123813826*OCS_x_2_2_28_2 + 1.8609019155472921*OCS_x_2_2_2_2 +
3.0172120923521093*OCS_x_2_2_31_2 + 2.9238273155609016*OCS_x_2_2_32_2 +
3.0304368057487867*OCS_x_2_2_33_2 + 2.993461813695805*OCS_x_2_2_34_2 +
1.560471298302596*OCS_x_2_2_3_2 + 6.375179687580844*OCS_x_2_2_5_2 +
1.795297349398081*OCS_x_2_2_7_2 + 1.631462363073269*OCS_x_2_2_8_2 +
1.1244180788747875*PVM_x_1_3_10_3 + 1.1819573476289296*PVM_x_1_3_11_3 +
1.1958705220887178*PVM_x_1_3_12_3 + 1.0361092196342743*PVM_x_1_3_13_3 +
0.6719256510655073*PVM_x_1_3_14_3 + 1.08331109981086*PVM_x_1_3_15_3 +
1.247603901732763*PVM_x_1_3_16_3 + 1.155309858603848*PVM_x_1_3_17_3 +
0.6444575768766132*PVM_x_1_3_18_3 + 1.7090331545828272*PVM_x_1_3_19_3 +
1.0780256611894112*PVM_x_1_3_1_3 + 0.8310317906577283*PVM_x_1_3_2_3 +
0.6199079798545878*PVM_x_1_3_3_3 + 0.6401932633788961*PVM_x_1_3_4_3 +
0.8408366238714162*PVM_x_1_3_5_3 + 0.9611298664862781*PVM_x_1_3_6_3 +
1.0805640431858325*PVM_x_1_3_7_3 + 1.2438497910652744*PVM_x_1_3_8_3 +
1.177468521590635*PVM_x_1_3_9_3 + 2.8336200807475973*PVS_x_2_3_10_3 +
2.1104202524620934*PVS_x_2_3_11_3 + 3.246971808180863*PVS_x_2_3_12_3 +
2.8739225610710375*PVS_x_2_3_13_3 + 1.3799729615646021*PVS_x_2_3_1_3 +
0.8812421910373504*PVS_x_2_3_2_3 + 1.8625942311808574*PVS_x_2_3_3_3 +
0.7331642915389588*PVS_x_2_3_4_3 + 1.420541497364228*PVS_x_2_3_5_3 +
3.9815477976143487*PVS_x_2_3_6_3 + 6.433106441628679*PVS_x_2_3_7_3 +
2.5536061353554533*PVS_x_2_3_8_3 + 2.273722333145784*PVS_x_2_3_9_3 +
0.901194811397947*TPM_x_1_1_10_1 + 0.6692889135715295*TPM_x_1_1_11_1 +

```

0.7261526474414177*TPM_x_1_1_12_1 + 0.8832062268286088*TPM_x_1_1_13_1 +
 0.7174062845441498*TPM_x_1_1_14_1 + 0.7944314486689009*TPM_x_1_1_15_1 +
 0.9484924424042286*TPM_x_1_1_16_1 + 0.7856569092329795*TPM_x_1_1_17_1 +
 0.7557688936953282*TPM_x_1_1_18_1 + 0.9445644514963183*TPM_x_1_1_19_1 +
 1.0218065660788294*TPM_x_1_1_1_1 + 0.9023922881310513*TPM_x_1_1_2_1 +
 0.810447253431802*TPM_x_1_1_3_1 + 1.04386364886159*TPM_x_1_1_4_1 +
 0.5096502445583078*TPM_x_1_1_5_1 + 0.8192312721544819*TPM_x_1_1_6_1 +
 0.9073796233883028*TPM_x_1_1_7_1 + 1.003177639029572*TPM_x_1_1_8_1 +
 1.09844443502014*TPM_x_1_1_9_1 + 2.9504076238427457*TPS_x_2_1_10_1 +
 3.137632171991596*TPS_x_2_1_11_1 + 3.315422666931677*TPS_x_2_1_12_1 +
 3.496965440302525*TPS_x_2_1_13_1 + 3.1162437936300837*TPS_x_2_1_14_1 +
 3.9815477976143487*TPS_x_2_1_1_1 + 6.433106441628679*TPS_x_2_1_2_1 +
 0.7242461469257859*TPS_x_2_1_3_1 + 1.8609019155472921*TPS_x_2_1_4_1 +
 1.582313952158506*TPS_x_2_1_5_1 + 1.416635916089331*TPS_x_2_1_6_1 +
 1.495432345769248*TPS_x_2_1_7_1 + 3.2715495087791453*TPS_x_2_1_8_1 +
 3.2274275960172214*TPS_x_2_1_9_1 + 0.0

SUBJECT TO

Price_constraints_for_TP,_OC,_PV: 6.7425 OCM_x_1_2_10_2
 + 8.2425 OCM_x_1_2_11_2 + 6.7425 OCM_x_1_2_12_2 + 6.9675 OCM_x_1_2_13_2
 + 5.9925 OCM_x_1_2_14_2 + 5.9925 OCM_x_1_2_17_2 + 6.7425 OCM_x_1_2_18_2
 + 7.4925 OCM_x_1_2_19_2 + 6.2175 OCM_x_1_2_1_2 + 6.9675 OCM_x_1_2_2_2
 + 8.2425 OCM_x_1_2_3_2 + 8.2425 OCM_x_1_2_4_2 + 5.9925 OCM_x_1_2_5_2
 + 8.9925 OCM_x_1_2_6_2 + 6.2175 OCM_x_1_2_7_2 + 7.4925 OCM_x_1_2_8_2
 + 6.7425 OCM_x_1_2_9_2 + 1.9425 OCS_x_2_2_12_2 + 1.9425 OCS_x_2_2_13_2
 + 1.9425 OCS_x_2_2_14_2 + 1.8375 OCS_x_2_2_15_2 + 2.7675 OCS_x_2_2_16_2
 + 3.9675 OCS_x_2_2_17_2 + 6.9675 OCS_x_2_2_1_2 + 2.7675 OCS_x_2_2_23_2
 + 2.2425 OCS_x_2_2_25_2 + 2.4675 OCS_x_2_2_26_2 + 2.4675 OCS_x_2_2_27_2
 + 2.4675 OCS_x_2_2_28_2 + 3.5175 OCS_x_2_2_2_2 + 2.0925 OCS_x_2_2_31_2
 + 2.0925 OCS_x_2_2_32_2 + 2.0925 OCS_x_2_2_33_2 + 2.0925 OCS_x_2_2_34_2
 + 3.9675 OCS_x_2_2_3_2 + 0.8925 OCS_x_2_2_5_2 + 3.7425 OCS_x_2_2_7_2
 + 3.7425 OCS_x_2_2_8_2 + 6.7425 PVM_x_1_3_10_3 + 6.7425 PVM_x_1_3_11_3
 + 5.9925 PVM_x_1_3_12_3 + 6.7425 PVM_x_1_3_13_3 + 9.7425 PVM_x_1_3_14_3
 + 6.7425 PVM_x_1_3_15_3 + 5.9925 PVM_x_1_3_16_3 + 5.9925 PVM_x_1_3_17_3
 + 6.7425 PVM_x_1_3_18_3 + 3.7425 PVM_x_1_3_19_3 + 6.2175 PVM_x_1_3_1_3
 + 5.9925 PVM_x_1_3_2_3 + 8.9925 PVM_x_1_3_3_3 + 9.7425 PVM_x_1_3_4_3
 + 8.2425 PVM_x_1_3_5_3 + 7.4925 PVM_x_1_3_6_3 + 5.9925 PVM_x_1_3_7_3
 + 5.9925 PVM_x_1_3_8_3 + 6.7425 PVM_x_1_3_9_3 + 2.2425 PVS_x_2_3_10_3
 + 2.9925 PVS_x_2_3_11_3 + 1.8675 PVS_x_2_3_12_3 + 1.8675 PVS_x_2_3_13_3
 + 4.4925 PVS_x_2_3_1_3 + 6.2175 PVS_x_2_3_2_3 + 3.5175 PVS_x_2_3_3_3
 + 6.9675 PVS_x_2_3_4_3 + 3.9675 PVS_x_2_3_5_3 + 1.4925 PVS_x_2_3_6_3
 + 0.8925 PVS_x_2_3_7_3 + 2.2425 PVS_x_2_3_8_3 + 2.6175 PVS_x_2_3_9_3
 + 6.3675 TPM_x_1_1_10_1 + 8.2425 TPM_x_1_1_11_1 + 7.7175 TPM_x_1_1_12_1
 + 7.7175 TPM_x_1_1_13_1 + 8.2425 TPM_x_1_1_14_1 + 7.7175 TPM_x_1_1_15_1
 + 7.7175 TPM_x_1_1_16_1 + 8.2425 TPM_x_1_1_17_1 + 8.2425 TPM_x_1_1_18_1
 + 7.4925 TPM_x_1_1_19_1 + 6.2175 TPM_x_1_1_1_1 + 6.9675 TPM_x_1_1_2_1
 + 7.4925 TPM_x_1_1_3_1 + 6.7425 TPM_x_1_1_4_1 + 10.4925 TPM_x_1_1_5_1
 + 5.9925 TPM_x_1_1_6_1 + 6.2175 TPM_x_1_1_7_1 + 6.7425 TPM_x_1_1_8_1

$$\begin{aligned}
& + 5.9925 \text{ TPM_x_1_1_9_1} + 1.8675 \text{ TPS_x_2_1_10_1} + 1.8675 \text{ TPS_x_2_1_11_1} \\
& + 1.8675 \text{ TPS_x_2_1_12_1} + 1.8675 \text{ TPS_x_2_1_13_1} + 1.8675 \text{ TPS_x_2_1_14_1} \\
& + 1.4925 \text{ TPS_x_2_1_1_1} + 0.8925 \text{ TPS_x_2_1_2_1} + 6.9675 \text{ TPS_x_2_1_3_1} \\
& + 3.5175 \text{ TPS_x_2_1_4_1} + 3.9675 \text{ TPS_x_2_1_5_1} + 3.7425 \text{ TPS_x_2_1_6_1} \\
& + 3.7425 \text{ TPS_x_2_1_7_1} + 1.8675 \text{ TPS_x_2_1_8_1} + 1.8675 \text{ TPS_x_2_1_9_1} \\
& \leq 36.4090909091
\end{aligned}$$

$$\begin{aligned}
\text{TP_one_main_in_first_day: } & \text{TPM_x_1_1_10_1} + \text{TPM_x_1_1_11_1} + \text{TPM_x_1_1_12_1} \\
& + \text{TPM_x_1_1_13_1} + \text{TPM_x_1_1_14_1} + \text{TPM_x_1_1_15_1} + \text{TPM_x_1_1_16_1} \\
& + \text{TPM_x_1_1_17_1} + \text{TPM_x_1_1_18_1} + \text{TPM_x_1_1_19_1} + \text{TPM_x_1_1_1_1} \\
& + \text{TPM_x_1_1_2_1} + \text{TPM_x_1_1_3_1} + \text{TPM_x_1_1_4_1} + \text{TPM_x_1_1_5_1} \\
& + \text{TPM_x_1_1_6_1} + \text{TPM_x_1_1_7_1} + \text{TPM_x_1_1_8_1} + \text{TPM_x_1_1_9_1} = 1
\end{aligned}$$

$$\begin{aligned}
\text{TP_one_side_in_first_day: } & \text{TPS_x_2_1_10_1} + \text{TPS_x_2_1_11_1} + \text{TPS_x_2_1_12_1} \\
& + \text{TPS_x_2_1_13_1} + \text{TPS_x_2_1_14_1} + \text{TPS_x_2_1_1_1} + \text{TPS_x_2_1_2_1} \\
& + \text{TPS_x_2_1_3_1} + \text{TPS_x_2_1_4_1} + \text{TPS_x_2_1_5_1} + \text{TPS_x_2_1_6_1} \\
& + \text{TPS_x_2_1_7_1} + \text{TPS_x_2_1_8_1} + \text{TPS_x_2_1_9_1} = 1
\end{aligned}$$

$$\begin{aligned}
\text{OC_one_main_in_second_day: } & \text{OCM_x_1_2_10_2} + \text{OCM_x_1_2_11_2} + \text{OCM_x_1_2_12_2} \\
& + \text{OCM_x_1_2_13_2} + \text{OCM_x_1_2_14_2} + \text{OCM_x_1_2_17_2} + \text{OCM_x_1_2_18_2} \\
& + \text{OCM_x_1_2_19_2} + \text{OCM_x_1_2_1_2} + \text{OCM_x_1_2_2_2} + \text{OCM_x_1_2_3_2} \\
& + \text{OCM_x_1_2_4_2} + \text{OCM_x_1_2_5_2} + \text{OCM_x_1_2_6_2} + \text{OCM_x_1_2_7_2} \\
& + \text{OCM_x_1_2_8_2} + \text{OCM_x_1_2_9_2} = 1
\end{aligned}$$

$$\begin{aligned}
\text{OC_one_side_in_second_day: } & \text{OCS_x_2_2_12_2} + \text{OCS_x_2_2_13_2} + \text{OCS_x_2_2_14_2} \\
& + \text{OCS_x_2_2_15_2} + \text{OCS_x_2_2_16_2} + \text{OCS_x_2_2_17_2} + \text{OCS_x_2_2_1_2} \\
& + \text{OCS_x_2_2_23_2} + \text{OCS_x_2_2_25_2} + \text{OCS_x_2_2_26_2} + \text{OCS_x_2_2_27_2} \\
& + \text{OCS_x_2_2_28_2} + \text{OCS_x_2_2_2_2} + \text{OCS_x_2_2_31_2} + \text{OCS_x_2_2_32_2} \\
& + \text{OCS_x_2_2_33_2} + \text{OCS_x_2_2_34_2} + \text{OCS_x_2_2_3_2} + \text{OCS_x_2_2_5_2} \\
& + \text{OCS_x_2_2_7_2} + \text{OCS_x_2_2_8_2} = 1
\end{aligned}$$

$$\begin{aligned}
\text{PV_one_main_in_third_day: } & \text{PVM_x_1_3_10_3} + \text{PVM_x_1_3_11_3} + \text{PVM_x_1_3_12_3} \\
& + \text{PVM_x_1_3_13_3} + \text{PVM_x_1_3_14_3} + \text{PVM_x_1_3_15_3} + \text{PVM_x_1_3_16_3} \\
& + \text{PVM_x_1_3_17_3} + \text{PVM_x_1_3_18_3} + \text{PVM_x_1_3_19_3} + \text{PVM_x_1_3_1_3} \\
& + \text{PVM_x_1_3_2_3} + \text{PVM_x_1_3_3_3} + \text{PVM_x_1_3_4_3} + \text{PVM_x_1_3_5_3} \\
& + \text{PVM_x_1_3_6_3} + \text{PVM_x_1_3_7_3} + \text{PVM_x_1_3_8_3} + \text{PVM_x_1_3_9_3} = 1
\end{aligned}$$

$$\begin{aligned}
\text{PV_one_side_in_third_day: } & \text{PVS_x_2_3_10_3} + \text{PVS_x_2_3_11_3} + \text{PVS_x_2_3_12_3} \\
& + \text{PVS_x_2_3_13_3} + \text{PVS_x_2_3_1_3} + \text{PVS_x_2_3_2_3} + \text{PVS_x_2_3_3_3} \\
& + \text{PVS_x_2_3_4_3} + \text{PVS_x_2_3_5_3} + \text{PVS_x_2_3_6_3} + \text{PVS_x_2_3_7_3} \\
& + \text{PVS_x_2_3_8_3} + \text{PVS_x_2_3_9_3} = 1
\end{aligned}$$

$$\begin{aligned}
_C1: & 790 \text{ TPM_x_1_1_10_1} + 840 \text{ TPM_x_1_1_11_1} + 740 \text{ TPM_x_1_1_12_1} \\
& + 790 \text{ TPM_x_1_1_13_1} + 790 \text{ TPM_x_1_1_14_1} + 470 \text{ TPM_x_1_1_15_1} \\
& + 520 \text{ TPM_x_1_1_16_1} + 520 \text{ TPM_x_1_1_17_1} + 430 \text{ TPM_x_1_1_18_1} \\
& + 560 \text{ TPM_x_1_1_19_1} + 580 \text{ TPM_x_1_1_1_1} + 640 \text{ TPM_x_1_1_2_1} \\
& + 670 \text{ TPM_x_1_1_3_1} + 580 \text{ TPM_x_1_1_4_1} + 810 \text{ TPM_x_1_1_5_1}
\end{aligned}$$

+ 880 TPM_x_1_1_6_1 + 880 TPM_x_1_1_7_1 + 610 TPM_x_1_1_8_1
+ 480 TPM_x_1_1_9_1 + 80 TPS_x_2_1_10_1 + 200 TPS_x_2_1_11_1
+ 140 TPS_x_2_1_12_1 + 170 TPS_x_2_1_13_1 + 120 TPS_x_2_1_14_1
+ 340 TPS_x_2_1_1_1 + 60 TPS_x_2_1_2_1 + 1160 TPS_x_2_1_3_1
+ 540 TPS_x_2_1_4_1 + 480 TPS_x_2_1_5_1 + 350 TPS_x_2_1_6_1
+ 310 TPS_x_2_1_7_1 + 310 TPS_x_2_1_8_1 + 110 TPS_x_2_1_9_1 <= 1363.63636364

_C2: 790 TPM_x_1_1_10_1 + 840 TPM_x_1_1_11_1 + 740 TPM_x_1_1_12_1
+ 790 TPM_x_1_1_13_1 + 790 TPM_x_1_1_14_1 + 470 TPM_x_1_1_15_1
+ 520 TPM_x_1_1_16_1 + 520 TPM_x_1_1_17_1 + 430 TPM_x_1_1_18_1
+ 560 TPM_x_1_1_19_1 + 580 TPM_x_1_1_1_1 + 640 TPM_x_1_1_2_1
+ 670 TPM_x_1_1_3_1 + 580 TPM_x_1_1_4_1 + 810 TPM_x_1_1_5_1
+ 880 TPM_x_1_1_6_1 + 880 TPM_x_1_1_7_1 + 610 TPM_x_1_1_8_1
+ 480 TPM_x_1_1_9_1 + 80 TPS_x_2_1_10_1 + 200 TPS_x_2_1_11_1
+ 140 TPS_x_2_1_12_1 + 170 TPS_x_2_1_13_1 + 120 TPS_x_2_1_14_1
+ 340 TPS_x_2_1_1_1 + 60 TPS_x_2_1_2_1 + 1160 TPS_x_2_1_3_1
+ 540 TPS_x_2_1_4_1 + 480 TPS_x_2_1_5_1 + 350 TPS_x_2_1_6_1
+ 310 TPS_x_2_1_7_1 + 310 TPS_x_2_1_8_1 + 110 TPS_x_2_1_9_1 >= 568.181818182

_C3: 880 OCM_x_1_2_10_2 + 840 OCM_x_1_2_11_2 + 600 OCM_x_1_2_12_2
+ 590 OCM_x_1_2_13_2 + 480 OCM_x_1_2_14_2 + 540 OCM_x_1_2_17_2
+ 710 OCM_x_1_2_18_2 + 700 OCM_x_1_2_19_2 + 570 OCM_x_1_2_1_2
+ 630 OCM_x_1_2_2_2 + 600 OCM_x_1_2_3_2 + 530 OCM_x_1_2_4_2
+ 900 OCM_x_1_2_5_2 + 560 OCM_x_1_2_6_2 + 880 OCM_x_1_2_7_2
+ 800 OCM_x_1_2_8_2 + 400 OCM_x_1_2_9_2 + 320 OCS_x_2_2_12_2
+ 300 OCS_x_2_2_13_2 + 310 OCS_x_2_2_14_2 + 180 OCS_x_2_2_15_2
+ 220 OCS_x_2_2_16_2 + 230 OCS_x_2_2_17_2 + 1330 OCS_x_2_2_1_2
+ 670 OCS_x_2_2_23_2 + 550 OCS_x_2_2_25_2 + 350 OCS_x_2_2_26_2
+ 570 OCS_x_2_2_27_2 + 330 OCS_x_2_2_28_2 + 540 OCS_x_2_2_2_2
+ 360 OCS_x_2_2_31_2 + 370 OCS_x_2_2_32_2 + 380 OCS_x_2_2_33_2
+ 360 OCS_x_2_2_34_2 + 400 OCS_x_2_2_3_2 + 60 OCS_x_2_2_5_2
+ 400 OCS_x_2_2_7_2 + 200 OCS_x_2_2_8_2 <= 1363.63636364

_C4: 880 OCM_x_1_2_10_2 + 840 OCM_x_1_2_11_2 + 600 OCM_x_1_2_12_2
+ 590 OCM_x_1_2_13_2 + 480 OCM_x_1_2_14_2 + 540 OCM_x_1_2_17_2
+ 710 OCM_x_1_2_18_2 + 700 OCM_x_1_2_19_2 + 570 OCM_x_1_2_1_2
+ 630 OCM_x_1_2_2_2 + 600 OCM_x_1_2_3_2 + 530 OCM_x_1_2_4_2
+ 900 OCM_x_1_2_5_2 + 560 OCM_x_1_2_6_2 + 880 OCM_x_1_2_7_2
+ 800 OCM_x_1_2_8_2 + 400 OCM_x_1_2_9_2 + 320 OCS_x_2_2_12_2
+ 300 OCS_x_2_2_13_2 + 310 OCS_x_2_2_14_2 + 180 OCS_x_2_2_15_2
+ 220 OCS_x_2_2_16_2 + 230 OCS_x_2_2_17_2 + 1330 OCS_x_2_2_1_2
+ 670 OCS_x_2_2_23_2 + 550 OCS_x_2_2_25_2 + 350 OCS_x_2_2_26_2
+ 570 OCS_x_2_2_27_2 + 330 OCS_x_2_2_28_2 + 540 OCS_x_2_2_2_2
+ 360 OCS_x_2_2_31_2 + 370 OCS_x_2_2_32_2 + 380 OCS_x_2_2_33_2
+ 360 OCS_x_2_2_34_2 + 400 OCS_x_2_2_3_2 + 60 OCS_x_2_2_5_2
+ 400 OCS_x_2_2_7_2 + 200 OCS_x_2_2_8_2 >= 568.181818182

_C5: 960 PVM_x_1_3_10_3 + 740 PVM_x_1_3_11_3 + 680 PVM_x_1_3_12_3
+ 490 PVM_x_1_3_13_3 + 660 PVM_x_1_3_14_3 + 660 PVM_x_1_3_15_3
+ 670 PVM_x_1_3_16_3 + 630 PVM_x_1_3_17_3 + 1360 PVM_x_1_3_18_3
+ 760 PVM_x_1_3_19_3 + 590 PVM_x_1_3_1_3 + 570 PVM_x_1_3_2_3
+ 840 PVM_x_1_3_3_3 + 500 PVM_x_1_3_4_3 + 700 PVM_x_1_3_5_3
+ 640 PVM_x_1_3_6_3 + 740 PVM_x_1_3_7_3 + 690 PVM_x_1_3_8_3
+ 1000 PVM_x_1_3_9_3 + 270 PVS_x_2_3_10_3 + 310 PVS_x_2_3_11_3
+ 130 PVS_x_2_3_12_3 + 80 PVS_x_2_3_13_3 + 120 PVS_x_2_3_1_3
+ 940 PVS_x_2_3_2_3 + 540 PVS_x_2_3_3_3 + 1280 PVS_x_2_3_4_3
+ 830 PVS_x_2_3_5_3 + 340 PVS_x_2_3_6_3 + 60 PVS_x_2_3_7_3 + 70 PVS_x_2_3_8_3
+ 240 PVS_x_2_3_9_3 <= 1363.63636364

_C6: 960 PVM_x_1_3_10_3 + 740 PVM_x_1_3_11_3 + 680 PVM_x_1_3_12_3
+ 490 PVM_x_1_3_13_3 + 660 PVM_x_1_3_14_3 + 660 PVM_x_1_3_15_3
+ 670 PVM_x_1_3_16_3 + 630 PVM_x_1_3_17_3 + 1360 PVM_x_1_3_18_3
+ 760 PVM_x_1_3_19_3 + 590 PVM_x_1_3_1_3 + 570 PVM_x_1_3_2_3
+ 840 PVM_x_1_3_3_3 + 500 PVM_x_1_3_4_3 + 700 PVM_x_1_3_5_3
+ 640 PVM_x_1_3_6_3 + 740 PVM_x_1_3_7_3 + 690 PVM_x_1_3_8_3
+ 1000 PVM_x_1_3_9_3 + 270 PVS_x_2_3_10_3 + 310 PVS_x_2_3_11_3
+ 130 PVS_x_2_3_12_3 + 80 PVS_x_2_3_13_3 + 120 PVS_x_2_3_1_3
+ 940 PVS_x_2_3_2_3 + 540 PVS_x_2_3_3_3 + 1280 PVS_x_2_3_4_3
+ 830 PVS_x_2_3_5_3 + 340 PVS_x_2_3_6_3 + 60 PVS_x_2_3_7_3 + 70 PVS_x_2_3_8_3
+ 240 PVS_x_2_3_9_3 >= 568.181818182

_C7: 71 TPM_x_1_1_10_1 + 54 TPM_x_1_1_11_1 + 29 TPM_x_1_1_12_1
+ 25 TPM_x_1_1_13_1 + 31 TPM_x_1_1_14_1 + 23 TPM_x_1_1_15_1
+ 19 TPM_x_1_1_16_1 + 25 TPM_x_1_1_17_1 + 10 TPM_x_1_1_18_1
+ 11 TPM_x_1_1_19_1 + 27 TPM_x_1_1_1_1 + 32 TPM_x_1_1_2_1 + 22 TPM_x_1_1_3_1
+ 30 TPM_x_1_1_4_1 + 52 TPM_x_1_1_5_1 + 53 TPM_x_1_1_6_1 + 51 TPM_x_1_1_7_1
+ 38 TPM_x_1_1_8_1 + 27 TPM_x_1_1_9_1 + TPS_x_2_1_10_1 + 10 TPS_x_2_1_11_1
+ 3 TPS_x_2_1_12_1 + 2 TPS_x_2_1_13_1 + 8 TPS_x_2_1_14_1 + 32 TPS_x_2_1_1_1
+ 5 TPS_x_2_1_2_1 + 86 TPS_x_2_1_3_1 + 26 TPS_x_2_1_4_1 + 24 TPS_x_2_1_5_1
+ 10 TPS_x_2_1_6_1 + 6 TPS_x_2_1_7_1 + 2.5 TPS_x_2_1_8_1 + 4 TPS_x_2_1_9_1
<= 53.0303030303

_C8: 71 TPM_x_1_1_10_1 + 54 TPM_x_1_1_11_1 + 29 TPM_x_1_1_12_1
+ 25 TPM_x_1_1_13_1 + 31 TPM_x_1_1_14_1 + 23 TPM_x_1_1_15_1
+ 19 TPM_x_1_1_16_1 + 25 TPM_x_1_1_17_1 + 10 TPM_x_1_1_18_1
+ 11 TPM_x_1_1_19_1 + 27 TPM_x_1_1_1_1 + 32 TPM_x_1_1_2_1 + 22 TPM_x_1_1_3_1
+ 30 TPM_x_1_1_4_1 + 52 TPM_x_1_1_5_1 + 53 TPM_x_1_1_6_1 + 51 TPM_x_1_1_7_1
+ 38 TPM_x_1_1_8_1 + 27 TPM_x_1_1_9_1 + TPS_x_2_1_10_1 + 10 TPS_x_2_1_11_1
+ 3 TPS_x_2_1_12_1 + 2 TPS_x_2_1_13_1 + 8 TPS_x_2_1_14_1 + 32 TPS_x_2_1_1_1
+ 5 TPS_x_2_1_2_1 + 86 TPS_x_2_1_3_1 + 26 TPS_x_2_1_4_1 + 24 TPS_x_2_1_5_1
+ 10 TPS_x_2_1_6_1 + 6 TPS_x_2_1_7_1 + 2.5 TPS_x_2_1_8_1 + 4 TPS_x_2_1_9_1
>= 12.6262626263

_C9: 59 OCM_x_1_2_10_2 + 35 OCM_x_1_2_11_2 + 33 OCM_x_1_2_12_2

+ 29 OCM_x_1_2_13_2 + 27 OCM_x_1_2_14_2 + 14 OCM_x_1_2_17_2
 + 21 OCM_x_1_2_18_2 + 22 OCM_x_1_2_19_2 + 29 OCM_x_1_2_1_2 + 33 OCM_x_1_2_2_2
 + 20 OCM_x_1_2_3_2 + 20 OCM_x_1_2_4_2 + 56 OCM_x_1_2_5_2 + 16 OCM_x_1_2_6_2
 + 51 OCM_x_1_2_7_2 + 69 OCM_x_1_2_8_2 + 24 OCM_x_1_2_9_2 + 3.5 OCS_x_2_2_12_2
 + 1.5 OCS_x_2_2_13_2 + 3 OCS_x_2_2_14_2 + 9 OCS_x_2_2_15_2
 + 13 OCS_x_2_2_16_2 + 13 OCS_x_2_2_17_2 + 95 OCS_x_2_2_1_2
 + 28 OCS_x_2_2_23_2 + 30 OCS_x_2_2_25_2 + 14 OCS_x_2_2_26_2
 + 20 OCS_x_2_2_27_2 + 10 OCS_x_2_2_28_2 + 26 OCS_x_2_2_2_2
 + 17 OCS_x_2_2_31_2 + 18 OCS_x_2_2_32_2 + 19 OCS_x_2_2_33_2
 + 16 OCS_x_2_2_34_2 + 16 OCS_x_2_2_3_2 + 3.5 OCS_x_2_2_5_2 + 34 OCS_x_2_2_7_2
 + 12 OCS_x_2_2_8_2 <= 53.0303030303

_C10: 59 OCM_x_1_2_10_2 + 35 OCM_x_1_2_11_2 + 33 OCM_x_1_2_12_2
 + 29 OCM_x_1_2_13_2 + 27 OCM_x_1_2_14_2 + 14 OCM_x_1_2_17_2
 + 21 OCM_x_1_2_18_2 + 22 OCM_x_1_2_19_2 + 29 OCM_x_1_2_1_2 + 33 OCM_x_1_2_2_2
 + 20 OCM_x_1_2_3_2 + 20 OCM_x_1_2_4_2 + 56 OCM_x_1_2_5_2 + 16 OCM_x_1_2_6_2
 + 51 OCM_x_1_2_7_2 + 69 OCM_x_1_2_8_2 + 24 OCM_x_1_2_9_2 + 3.5 OCS_x_2_2_12_2
 + 1.5 OCS_x_2_2_13_2 + 3 OCS_x_2_2_14_2 + 9 OCS_x_2_2_15_2
 + 13 OCS_x_2_2_16_2 + 13 OCS_x_2_2_17_2 + 95 OCS_x_2_2_1_2
 + 28 OCS_x_2_2_23_2 + 30 OCS_x_2_2_25_2 + 14 OCS_x_2_2_26_2
 + 20 OCS_x_2_2_27_2 + 10 OCS_x_2_2_28_2 + 26 OCS_x_2_2_2_2
 + 17 OCS_x_2_2_31_2 + 18 OCS_x_2_2_32_2 + 19 OCS_x_2_2_33_2
 + 16 OCS_x_2_2_34_2 + 16 OCS_x_2_2_3_2 + 3.5 OCS_x_2_2_5_2 + 34 OCS_x_2_2_7_2
 + 12 OCS_x_2_2_8_2 >= 12.6262626263

_C11: 52 PVM_x_1_3_10_3 + 21 PVM_x_1_3_11_3 + 36 PVM_x_1_3_12_3
 + 12 PVM_x_1_3_13_3 + 13 PVM_x_1_3_14_3 + 25 PVM_x_1_3_15_3
 + 30 PVM_x_1_3_16_3 + 27 PVM_x_1_3_17_3 + 137 PVM_x_1_3_18_3
 + 69 PVM_x_1_3_19_3 + 32 PVM_x_1_3_1_3 + 55 PVM_x_1_3_2_3 + 52 PVM_x_1_3_3_3
 + 9 PVM_x_1_3_4_3 + 37 PVM_x_1_3_5_3 + 28 PVM_x_1_3_6_3 + 49 PVM_x_1_3_7_3
 + 26 PVM_x_1_3_8_3 + 32 PVM_x_1_3_9_3 + 3 PVS_x_2_3_10_3 + 9 PVS_x_2_3_11_3
 + 1.5 PVS_x_2_3_12_3 + 2 PVS_x_2_3_13_3 + 9 PVS_x_2_3_1_3 + 57 PVS_x_2_3_2_3
 + 26 PVS_x_2_3_3_3 + 96 PVS_x_2_3_4_3 + 63 PVS_x_2_3_5_3 + 32 PVS_x_2_3_6_3
 + 5 PVS_x_2_3_7_3 + 3 PVS_x_2_3_8_3 + 7 PVS_x_2_3_9_3 <= 53.0303030303

_C12: 52 PVM_x_1_3_10_3 + 21 PVM_x_1_3_11_3 + 36 PVM_x_1_3_12_3
 + 12 PVM_x_1_3_13_3 + 13 PVM_x_1_3_14_3 + 25 PVM_x_1_3_15_3
 + 30 PVM_x_1_3_16_3 + 27 PVM_x_1_3_17_3 + 137 PVM_x_1_3_18_3
 + 69 PVM_x_1_3_19_3 + 32 PVM_x_1_3_1_3 + 55 PVM_x_1_3_2_3 + 52 PVM_x_1_3_3_3
 + 9 PVM_x_1_3_4_3 + 37 PVM_x_1_3_5_3 + 28 PVM_x_1_3_6_3 + 49 PVM_x_1_3_7_3
 + 26 PVM_x_1_3_8_3 + 32 PVM_x_1_3_9_3 + 3 PVS_x_2_3_10_3 + 9 PVS_x_2_3_11_3
 + 1.5 PVS_x_2_3_12_3 + 2 PVS_x_2_3_13_3 + 9 PVS_x_2_3_1_3 + 57 PVS_x_2_3_2_3
 + 26 PVS_x_2_3_3_3 + 96 PVS_x_2_3_4_3 + 63 PVS_x_2_3_5_3 + 32 PVS_x_2_3_6_3
 + 5 PVS_x_2_3_7_3 + 3 PVS_x_2_3_8_3 + 7 PVS_x_2_3_9_3 >= 12.6262626263

_C13: 15 TPM_x_1_1_10_1 + 27 TPM_x_1_1_11_1 + 9 TPM_x_1_1_12_1
 + 4.5 TPM_x_1_1_13_1 + 6 TPM_x_1_1_14_1 + 8 TPM_x_1_1_15_1

+ 3.5 TPM_x_1_1_16_1 + 5 TPM_x_1_1_17_1 + TPM_x_1_1_18_1 + TPM_x_1_1_19_1
+ 8 TPM_x_1_1_1_1 + 11 TPM_x_1_1_2_1 + 7 TPM_x_1_1_3_1 + 3.5 TPM_x_1_1_4_1
+ 22 TPM_x_1_1_5_1 + 33 TPM_x_1_1_6_1 + 16 TPM_x_1_1_7_1 + 10 TPM_x_1_1_8_1
+ 10 TPM_x_1_1_9_1 + 1.5 TPS_x_2_1_11_1 + 5 TPS_x_2_1_14_1 + 11 TPS_x_2_1_1_1
+ 3 TPS_x_2_1_2_1 + 4.5 TPS_x_2_1_3_1 + 2 TPS_x_2_1_4_1 + 3 TPS_x_2_1_5_1
+ 4 TPS_x_2_1_6_1 + TPS_x_2_1_7_1 <= 15.1515151515

_C14: 15 TPM_x_1_1_10_1 + 27 TPM_x_1_1_11_1 + 9 TPM_x_1_1_12_1
+ 4.5 TPM_x_1_1_13_1 + 6 TPM_x_1_1_14_1 + 8 TPM_x_1_1_15_1
+ 3.5 TPM_x_1_1_16_1 + 5 TPM_x_1_1_17_1 + TPM_x_1_1_18_1 + TPM_x_1_1_19_1
+ 8 TPM_x_1_1_1_1 + 11 TPM_x_1_1_2_1 + 7 TPM_x_1_1_3_1 + 3.5 TPM_x_1_1_4_1
+ 22 TPM_x_1_1_5_1 + 33 TPM_x_1_1_6_1 + 16 TPM_x_1_1_7_1 + 10 TPM_x_1_1_8_1
+ 10 TPM_x_1_1_9_1 + 1.5 TPS_x_2_1_11_1 + 5 TPS_x_2_1_14_1 + 11 TPS_x_2_1_1_1
+ 3 TPS_x_2_1_2_1 + 4.5 TPS_x_2_1_3_1 + 2 TPS_x_2_1_4_1 + 3 TPS_x_2_1_5_1
+ 4 TPS_x_2_1_6_1 + TPS_x_2_1_7_1 >= 0

_C15: 4 OCM_x_1_2_10_2 + 15 OCM_x_1_2_11_2 + 2 OCM_x_1_2_12_2
+ 1.5 OCM_x_1_2_13_2 + 6 OCM_x_1_2_14_2 + 5 OCM_x_1_2_17_2 + 7 OCM_x_1_2_18_2
+ 6 OCM_x_1_2_19_2 + 8 OCM_x_1_2_1_2 + 11 OCM_x_1_2_2_2 + 2 OCM_x_1_2_3_2
+ 4.5 OCM_x_1_2_4_2 + 31 OCM_x_1_2_5_2 + OCM_x_1_2_6_2 + 16 OCM_x_1_2_7_2
+ 8 OCM_x_1_2_8_2 + 6 OCM_x_1_2_9_2 + 0.5 OCS_x_2_2_12_2 + 0.5 OCS_x_2_2_14_2
+ 5 OCS_x_2_2_15_2 + 7 OCS_x_2_2_16_2 + 6 OCS_x_2_2_17_2 + 4.5 OCS_x_2_2_1_2
+ 17 OCS_x_2_2_23_2 + 4.5 OCS_x_2_2_25_2 + 1.5 OCS_x_2_2_26_2
+ 1.5 OCS_x_2_2_27_2 + OCS_x_2_2_28_2 + 2 OCS_x_2_2_2_2 + 7 OCS_x_2_2_31_2
+ 8 OCS_x_2_2_32_2 + 8 OCS_x_2_2_33_2 + 7 OCS_x_2_2_34_2 + 2 OCS_x_2_2_3_2
+ 3 OCS_x_2_2_5_2 + 4 OCS_x_2_2_7_2 + 3 OCS_x_2_2_8_2 <= 15.1515151515

_C16: 4 OCM_x_1_2_10_2 + 15 OCM_x_1_2_11_2 + 2 OCM_x_1_2_12_2
+ 1.5 OCM_x_1_2_13_2 + 6 OCM_x_1_2_14_2 + 5 OCM_x_1_2_17_2 + 7 OCM_x_1_2_18_2
+ 6 OCM_x_1_2_19_2 + 8 OCM_x_1_2_1_2 + 11 OCM_x_1_2_2_2 + 2 OCM_x_1_2_3_2
+ 4.5 OCM_x_1_2_4_2 + 31 OCM_x_1_2_5_2 + OCM_x_1_2_6_2 + 16 OCM_x_1_2_7_2
+ 8 OCM_x_1_2_8_2 + 6 OCM_x_1_2_9_2 + 0.5 OCS_x_2_2_12_2 + 0.5 OCS_x_2_2_14_2
+ 5 OCS_x_2_2_15_2 + 7 OCS_x_2_2_16_2 + 6 OCS_x_2_2_17_2 + 4.5 OCS_x_2_2_1_2
+ 17 OCS_x_2_2_23_2 + 4.5 OCS_x_2_2_25_2 + 1.5 OCS_x_2_2_26_2
+ 1.5 OCS_x_2_2_27_2 + OCS_x_2_2_28_2 + 2 OCS_x_2_2_2_2 + 7 OCS_x_2_2_31_2
+ 8 OCS_x_2_2_32_2 + 8 OCS_x_2_2_33_2 + 7 OCS_x_2_2_34_2 + 2 OCS_x_2_2_3_2
+ 3 OCS_x_2_2_5_2 + 4 OCS_x_2_2_7_2 + 3 OCS_x_2_2_8_2 >= 0

_C17: 6 PVM_x_1_3_10_3 + 1.5 PVM_x_1_3_11_3 + 3.5 PVM_x_1_3_12_3
+ 2 PVM_x_1_3_13_3 + 2 PVM_x_1_3_14_3 + 6 PVM_x_1_3_15_3 + 6 PVM_x_1_3_16_3
+ 4 PVM_x_1_3_17_3 + 36 PVM_x_1_3_18_3 + 6 PVM_x_1_3_19_3 + 8 PVM_x_1_3_1_3
+ 33 PVM_x_1_3_2_3 + 18 PVM_x_1_3_3_3 + PVM_x_1_3_4_3 + 11 PVM_x_1_3_5_3
+ 8 PVM_x_1_3_6_3 + 8 PVM_x_1_3_7_3 + 10 PVM_x_1_3_8_3 + 6 PVM_x_1_3_9_3
+ 0.5 PVS_x_2_3_10_3 + 4 PVS_x_2_3_11_3 + 0.5 PVS_x_2_3_1_3
+ 17 PVS_x_2_3_2_3 + 2 PVS_x_2_3_3_3 + 4.5 PVS_x_2_3_4_3 + 6 PVS_x_2_3_5_3
+ 11 PVS_x_2_3_6_3 + 3 PVS_x_2_3_7_3 + PVS_x_2_3_9_3 <= 15.1515151515

_C18: 6 PVM_x_1_3_10_3 + 1.5 PVM_x_1_3_11_3 + 3.5 PVM_x_1_3_12_3
 + 2 PVM_x_1_3_13_3 + 2 PVM_x_1_3_14_3 + 6 PVM_x_1_3_15_3 + 6 PVM_x_1_3_16_3
 + 4 PVM_x_1_3_17_3 + 36 PVM_x_1_3_18_3 + 6 PVM_x_1_3_19_3 + 8 PVM_x_1_3_1_3
 + 33 PVM_x_1_3_2_3 + 18 PVM_x_1_3_3_3 + PVM_x_1_3_4_3 + 11 PVM_x_1_3_5_3
 + 8 PVM_x_1_3_6_3 + 8 PVM_x_1_3_7_3 + 10 PVM_x_1_3_8_3 + 6 PVM_x_1_3_9_3
 + 0.5 PVS_x_2_3_10_3 + 4 PVS_x_2_3_11_3 + 0.5 PVS_x_2_3_1_3
 + 17 PVS_x_2_3_2_3 + 2 PVS_x_2_3_3_3 + 4.5 PVS_x_2_3_4_3 + 6 PVS_x_2_3_5_3
 + 11 PVS_x_2_3_6_3 + 3 PVS_x_2_3_7_3 + PVS_x_2_3_9_3 >= 0

_C19: 1.5 TPM_x_1_1_11_1 + 0.5 TPM_x_1_1_1_1 + 0.5 TPM_x_1_1_2_1
 + TPM_x_1_1_5_1 + 2 TPM_x_1_1_6_1 + 0.5 TPM_x_1_1_8_1 <= 1.51515151515

_C20: 1.5 TPM_x_1_1_11_1 + 0.5 TPM_x_1_1_1_1 + 0.5 TPM_x_1_1_2_1
 + TPM_x_1_1_5_1 + 2 TPM_x_1_1_6_1 + 0.5 TPM_x_1_1_8_1 >= 0

_C21: 0.5 OCM_x_1_2_1_2 + 0.5 OCM_x_1_2_2_2 + 1.5 OCM_x_1_2_5_2
 + 16 OCM_x_1_2_6_2 + OCS_x_2_2_23_2 <= 1.51515151515

_C22: 0.5 OCM_x_1_2_1_2 + 0.5 OCM_x_1_2_2_2 + 1.5 OCM_x_1_2_5_2
 + 16 OCM_x_1_2_6_2 + OCS_x_2_2_23_2 >= 0

_C23: 0.5 PVM_x_1_3_1_3 + 1.5 PVM_x_1_3_2_3 + 1.5 PVM_x_1_3_3_3
 <= 1.51515151515

_C24: 0.5 PVM_x_1_3_1_3 + 1.5 PVM_x_1_3_2_3 + 1.5 PVM_x_1_3_3_3 >= 0

_C25: 5 TPM_x_1_1_10_1 + 210 TPM_x_1_1_11_1 + 10 TPM_x_1_1_12_1
 + 10 TPM_x_1_1_13_1 + 10 TPM_x_1_1_14_1 + 10 TPM_x_1_1_15_1
 + 10 TPM_x_1_1_16_1 + 10 TPM_x_1_1_17_1 + 15 TPM_x_1_1_18_1
 + 80 TPM_x_1_1_1_1 + 95 TPM_x_1_1_2_1 + 110 TPM_x_1_1_3_1 + 15 TPM_x_1_1_4_1
 + 150 TPM_x_1_1_5_1 + 140 TPM_x_1_1_6_1 + 80 TPM_x_1_1_7_1 + 60 TPM_x_1_1_8_1
 + 55 TPM_x_1_1_9_1 + 135 TPS_x_2_1_10_1 + 25 TPS_x_2_1_14_1
 + 70 TPS_x_2_1_1_1 + 15 TPS_x_2_1_2_1 + 70 TPS_x_2_1_3_1 + 205 TPS_x_2_1_6_1
 <= 136.363636364

_C26: 5 TPM_x_1_1_10_1 + 210 TPM_x_1_1_11_1 + 10 TPM_x_1_1_12_1
 + 10 TPM_x_1_1_13_1 + 10 TPM_x_1_1_14_1 + 10 TPM_x_1_1_15_1
 + 10 TPM_x_1_1_16_1 + 10 TPM_x_1_1_17_1 + 15 TPM_x_1_1_18_1
 + 80 TPM_x_1_1_1_1 + 95 TPM_x_1_1_2_1 + 110 TPM_x_1_1_3_1 + 15 TPM_x_1_1_4_1
 + 150 TPM_x_1_1_5_1 + 140 TPM_x_1_1_6_1 + 80 TPM_x_1_1_7_1 + 60 TPM_x_1_1_8_1
 + 55 TPM_x_1_1_9_1 + 135 TPS_x_2_1_10_1 + 25 TPS_x_2_1_14_1
 + 70 TPS_x_2_1_1_1 + 15 TPS_x_2_1_2_1 + 70 TPS_x_2_1_3_1 + 205 TPS_x_2_1_6_1
 >= 0

_C27: 15 OCM_x_1_2_10_2 + 60 OCM_x_1_2_14_2 + 1405 OCM_x_1_2_17_2
 + 90 OCM_x_1_2_18_2 + 105 OCM_x_1_2_19_2 + 80 OCM_x_1_2_1_2
 + 95 OCM_x_1_2_2_2 + 100 OCM_x_1_2_4_2 + 130 OCM_x_1_2_5_2 + 35 OCM_x_1_2_6_2

+ 80 OCM_x_1_2_7_2 + 15 OCM_x_1_2_8_2 + 35 OCM_x_1_2_9_2 + 55 OCS_x_2_2_12_2
+ 55 OCS_x_2_2_13_2 + 55 OCS_x_2_2_14_2 + 20 OCS_x_2_2_15_2
+ 20 OCS_x_2_2_16_2 + 20 OCS_x_2_2_17_2 + 75 OCS_x_2_2_1_2
+ 95 OCS_x_2_2_23_2 + 60 OCS_x_2_2_25_2 + 50 OCS_x_2_2_26_2
+ 90 OCS_x_2_2_27_2 + 55 OCS_x_2_2_28_2 + 50 OCS_x_2_2_31_2
+ 15 OCS_x_2_2_32_2 + 50 OCS_x_2_2_33_2 + 50 OCS_x_2_2_34_2
+ 15 OCS_x_2_2_5_2 + 5 OCS_x_2_2_7_2 + 20 OCS_x_2_2_8_2 <= 136.363636364

_C28: 15 OCM_x_1_2_10_2 + 60 OCM_x_1_2_14_2 + 1405 OCM_x_1_2_17_2
+ 90 OCM_x_1_2_18_2 + 105 OCM_x_1_2_19_2 + 80 OCM_x_1_2_1_2
+ 95 OCM_x_1_2_2_2 + 100 OCM_x_1_2_4_2 + 130 OCM_x_1_2_5_2 + 35 OCM_x_1_2_6_2
+ 80 OCM_x_1_2_7_2 + 15 OCM_x_1_2_8_2 + 35 OCM_x_1_2_9_2 + 55 OCS_x_2_2_12_2
+ 55 OCS_x_2_2_13_2 + 55 OCS_x_2_2_14_2 + 20 OCS_x_2_2_15_2
+ 20 OCS_x_2_2_16_2 + 20 OCS_x_2_2_17_2 + 75 OCS_x_2_2_1_2
+ 95 OCS_x_2_2_23_2 + 60 OCS_x_2_2_25_2 + 50 OCS_x_2_2_26_2
+ 90 OCS_x_2_2_27_2 + 55 OCS_x_2_2_28_2 + 50 OCS_x_2_2_31_2
+ 15 OCS_x_2_2_32_2 + 50 OCS_x_2_2_33_2 + 50 OCS_x_2_2_34_2
+ 15 OCS_x_2_2_5_2 + 5 OCS_x_2_2_7_2 + 20 OCS_x_2_2_8_2 >= 0

_C29: 5 PVM_x_1_3_12_3 + 45 PVM_x_1_3_14_3 + 110 PVM_x_1_3_15_3
+ 15 PVM_x_1_3_17_3 + 120 PVM_x_1_3_18_3 + 85 PVM_x_1_3_1_3
+ 145 PVM_x_1_3_2_3 + 110 PVM_x_1_3_3_3 + 120 PVM_x_1_3_4_3
+ 25 PVM_x_1_3_5_3 + 15 PVM_x_1_3_6_3 + 30 PVM_x_1_3_7_3 + 10 PVM_x_1_3_9_3
+ 80 PVS_x_2_3_2_3 + 75 PVS_x_2_3_4_3 + 10 PVS_x_2_3_5_3 + 70 PVS_x_2_3_6_3
+ 15 PVS_x_2_3_7_3 + 50 PVS_x_2_3_9_3 <= 136.363636364

_C30: 5 PVM_x_1_3_12_3 + 45 PVM_x_1_3_14_3 + 110 PVM_x_1_3_15_3
+ 15 PVM_x_1_3_17_3 + 120 PVM_x_1_3_18_3 + 85 PVM_x_1_3_1_3
+ 145 PVM_x_1_3_2_3 + 110 PVM_x_1_3_3_3 + 120 PVM_x_1_3_4_3
+ 25 PVM_x_1_3_5_3 + 15 PVM_x_1_3_6_3 + 30 PVM_x_1_3_7_3 + 10 PVM_x_1_3_9_3
+ 80 PVS_x_2_3_2_3 + 75 PVS_x_2_3_4_3 + 10 PVS_x_2_3_5_3 + 70 PVS_x_2_3_6_3
+ 15 PVS_x_2_3_7_3 + 50 PVS_x_2_3_9_3 >= 0

_C31: 460 TPM_x_1_1_10_1 + 1830 TPM_x_1_1_11_1 + 1770 TPM_x_1_1_12_1
+ 1880 TPM_x_1_1_13_1 + 2105 TPM_x_1_1_14_1 + 1120 TPM_x_1_1_15_1
+ 1230 TPM_x_1_1_16_1 + 1455 TPM_x_1_1_17_1 + 750 TPM_x_1_1_18_1
+ 640 TPM_x_1_1_19_1 + 1700 TPM_x_1_1_1_1 + 1810 TPM_x_1_1_2_1
+ 1690 TPM_x_1_1_3_1 + 1330 TPM_x_1_1_4_1 + 2030 TPM_x_1_1_5_1
+ 1880 TPM_x_1_1_6_1 + 2510 TPM_x_1_1_7_1 + 730 TPM_x_1_1_8_1
+ 720 TPM_x_1_1_9_1 + 750 TPS_x_2_1_10_1 + 620 TPS_x_2_1_11_1
+ 470 TPS_x_2_1_12_1 + 290 TPS_x_2_1_13_1 + 115 TPS_x_2_1_14_1
+ 680 TPS_x_2_1_1_1 + 105 TPS_x_2_1_2_1 + 1700 TPS_x_2_1_3_1
+ 1350 TPS_x_2_1_4_1 + 710 TPS_x_2_1_5_1 + 1200 TPS_x_2_1_6_1
+ 1170 TPS_x_2_1_7_1 + 190 TPS_x_2_1_8_1 + 440 TPS_x_2_1_9_1 <= 1045.45454545

_C32: 460 TPM_x_1_1_10_1 + 1830 TPM_x_1_1_11_1 + 1770 TPM_x_1_1_12_1
+ 1880 TPM_x_1_1_13_1 + 2105 TPM_x_1_1_14_1 + 1120 TPM_x_1_1_15_1

+ 1230 TPM_x_1_1_16_1 + 1455 TPM_x_1_1_17_1 + 750 TPM_x_1_1_18_1
+ 640 TPM_x_1_1_19_1 + 1700 TPM_x_1_1_1_1 + 1810 TPM_x_1_1_2_1
+ 1690 TPM_x_1_1_3_1 + 1330 TPM_x_1_1_4_1 + 2030 TPM_x_1_1_5_1
+ 1880 TPM_x_1_1_6_1 + 2510 TPM_x_1_1_7_1 + 730 TPM_x_1_1_8_1
+ 720 TPM_x_1_1_9_1 + 750 TPS_x_2_1_10_1 + 620 TPS_x_2_1_11_1
+ 470 TPS_x_2_1_12_1 + 290 TPS_x_2_1_13_1 + 115 TPS_x_2_1_14_1
+ 680 TPS_x_2_1_1_1 + 105 TPS_x_2_1_2_1 + 1700 TPS_x_2_1_3_1
+ 1350 TPS_x_2_1_4_1 + 710 TPS_x_2_1_5_1 + 1200 TPS_x_2_1_6_1
+ 1170 TPS_x_2_1_7_1 + 190 TPS_x_2_1_8_1 + 440 TPS_x_2_1_9_1 >= 0

_C33: 740 OCM_x_1_2_10_2 + 730 OCM_x_1_2_11_2 + 480 OCM_x_1_2_12_2
+ 1210 OCM_x_1_2_13_2 + 950 OCM_x_1_2_14_2 + 5 OCM_x_1_2_17_2
+ 1680 OCM_x_1_2_18_2 + 1500 OCM_x_1_2_19_2 + 1320 OCM_x_1_2_1_2
+ 1430 OCM_x_1_2_2_2 + 910 OCM_x_1_2_3_2 + 1810 OCM_x_1_2_4_2
+ 1020 OCM_x_1_2_5_2 + 1220 OCM_x_1_2_6_2 + 2510 OCM_x_1_2_7_2
+ 460 OCM_x_1_2_8_2 + 1010 OCM_x_1_2_9_2 + 30 OCS_x_2_2_15_2
+ 40 OCS_x_2_2_16_2 + 35 OCS_x_2_2_17_2 + 1810 OCS_x_2_2_1_2
+ 115 OCS_x_2_2_23_2 + 50 OCS_x_2_2_26_2 + 25 OCS_x_2_2_27_2
+ 35 OCS_x_2_2_28_2 + 1350 OCS_x_2_2_2_2 + 20 OCS_x_2_2_31_2
+ 20 OCS_x_2_2_32_2 + 20 OCS_x_2_2_33_2 + 20 OCS_x_2_2_34_2
+ 490 OCS_x_2_2_3_2 + 110 OCS_x_2_2_5_2 + 230 OCS_x_2_2_7_2
+ 510 OCS_x_2_2_8_2 <= 1045.45454545

_C34: 740 OCM_x_1_2_10_2 + 730 OCM_x_1_2_11_2 + 480 OCM_x_1_2_12_2
+ 1210 OCM_x_1_2_13_2 + 950 OCM_x_1_2_14_2 + 5 OCM_x_1_2_17_2
+ 1680 OCM_x_1_2_18_2 + 1500 OCM_x_1_2_19_2 + 1320 OCM_x_1_2_1_2
+ 1430 OCM_x_1_2_2_2 + 910 OCM_x_1_2_3_2 + 1810 OCM_x_1_2_4_2
+ 1020 OCM_x_1_2_5_2 + 1220 OCM_x_1_2_6_2 + 2510 OCM_x_1_2_7_2
+ 460 OCM_x_1_2_8_2 + 1010 OCM_x_1_2_9_2 + 30 OCS_x_2_2_15_2
+ 40 OCS_x_2_2_16_2 + 35 OCS_x_2_2_17_2 + 1810 OCS_x_2_2_1_2
+ 115 OCS_x_2_2_23_2 + 50 OCS_x_2_2_26_2 + 25 OCS_x_2_2_27_2
+ 35 OCS_x_2_2_28_2 + 1350 OCS_x_2_2_2_2 + 20 OCS_x_2_2_31_2
+ 20 OCS_x_2_2_32_2 + 20 OCS_x_2_2_33_2 + 20 OCS_x_2_2_34_2
+ 490 OCS_x_2_2_3_2 + 110 OCS_x_2_2_5_2 + 230 OCS_x_2_2_7_2
+ 510 OCS_x_2_2_8_2 >= 0

_C35: 440 PVM_x_1_3_10_3 + 980 PVM_x_1_3_11_3 + 630 PVM_x_1_3_12_3
+ 400 PVM_x_1_3_13_3 + 1540 PVM_x_1_3_14_3 + 610 PVM_x_1_3_15_3
+ 400 PVM_x_1_3_16_3 + 1660 PVM_x_1_3_17_3 + 1300 PVM_x_1_3_18_3
+ 280 PVM_x_1_3_19_3 + 1010 PVM_x_1_3_1_3 + 380 PVM_x_1_3_2_3
+ 1880 PVM_x_1_3_3_3 + 920 PVM_x_1_3_4_3 + 1080 PVM_x_1_3_5_3
+ 570 PVM_x_1_3_6_3 + 1470 PVM_x_1_3_7_3 + 410 PVM_x_1_3_8_3
+ 370 PVM_x_1_3_9_3 + 230 PVS_x_2_3_10_3 + 880 PVS_x_2_3_11_3
+ 290 PVS_x_2_3_12_3 + 1100 PVS_x_2_3_13_3 + 45 PVS_x_2_3_1_3
+ 2430 PVS_x_2_3_2_3 + 1350 PVS_x_2_3_3_3 + 1860 PVS_x_2_3_4_3
+ 650 PVS_x_2_3_5_3 + 680 PVS_x_2_3_6_3 + 105 PVS_x_2_3_7_3
+ 570 PVS_x_2_3_8_3 + 380 PVS_x_2_3_9_3 <= 1045.45454545

_C36: 440 PVM_x_1_3_10_3 + 980 PVM_x_1_3_11_3 + 630 PVM_x_1_3_12_3
+ 400 PVM_x_1_3_13_3 + 1540 PVM_x_1_3_14_3 + 610 PVM_x_1_3_15_3
+ 400 PVM_x_1_3_16_3 + 1660 PVM_x_1_3_17_3 + 1300 PVM_x_1_3_18_3
+ 280 PVM_x_1_3_19_3 + 1010 PVM_x_1_3_1_3 + 380 PVM_x_1_3_2_3
+ 1880 PVM_x_1_3_3_3 + 920 PVM_x_1_3_4_3 + 1080 PVM_x_1_3_5_3
+ 570 PVM_x_1_3_6_3 + 1470 PVM_x_1_3_7_3 + 410 PVM_x_1_3_8_3
+ 370 PVM_x_1_3_9_3 + 230 PVS_x_2_3_10_3 + 880 PVS_x_2_3_11_3
+ 290 PVS_x_2_3_12_3 + 1100 PVS_x_2_3_13_3 + 45 PVS_x_2_3_1_3
+ 2430 PVS_x_2_3_2_3 + 1350 PVS_x_2_3_3_3 + 1860 PVS_x_2_3_4_3
+ 650 PVS_x_2_3_5_3 + 680 PVS_x_2_3_6_3 + 105 PVS_x_2_3_7_3
+ 570 PVS_x_2_3_8_3 + 380 PVS_x_2_3_9_3 >= 0

_C37: 16 TPM_x_1_1_10_1 + 48 TPM_x_1_1_11_1 + 31 TPM_x_1_1_12_1
+ 117 TPM_x_1_1_13_1 + 61 TPM_x_1_1_14_1 + 31 TPM_x_1_1_15_1
+ 117 TPM_x_1_1_16_1 + 61 TPM_x_1_1_17_1 + 72 TPM_x_1_1_18_1
+ 91 TPM_x_1_1_19_1 + 59 TPM_x_1_1_1_1 + 59 TPM_x_1_1_2_1 + 67 TPM_x_1_1_3_1
+ 59 TPM_x_1_1_4_1 + 39 TPM_x_1_1_5_1 + 70 TPM_x_1_1_6_1 + 79 TPM_x_1_1_7_1
+ 58 TPM_x_1_1_8_1 + 42 TPM_x_1_1_9_1 + 2 TPS_x_2_1_10_1 + 28 TPS_x_2_1_11_1
+ 25 TPS_x_2_1_12_1 + 37 TPS_x_2_1_13_1 + 9 TPS_x_2_1_14_1 + 61 TPS_x_2_1_3_1
+ 70 TPS_x_2_1_4_1 + 62 TPS_x_2_1_5_1 + 58 TPS_x_2_1_6_1 + 60 TPS_x_2_1_7_1
+ 66 TPS_x_2_1_8_1 + 16 TPS_x_2_1_9_1 <= 147.727272727

_C38: 16 TPM_x_1_1_10_1 + 48 TPM_x_1_1_11_1 + 31 TPM_x_1_1_12_1
+ 117 TPM_x_1_1_13_1 + 61 TPM_x_1_1_14_1 + 31 TPM_x_1_1_15_1
+ 117 TPM_x_1_1_16_1 + 61 TPM_x_1_1_17_1 + 72 TPM_x_1_1_18_1
+ 91 TPM_x_1_1_19_1 + 59 TPM_x_1_1_1_1 + 59 TPM_x_1_1_2_1 + 67 TPM_x_1_1_3_1
+ 59 TPM_x_1_1_4_1 + 39 TPM_x_1_1_5_1 + 70 TPM_x_1_1_6_1 + 79 TPM_x_1_1_7_1
+ 58 TPM_x_1_1_8_1 + 42 TPM_x_1_1_9_1 + 2 TPS_x_2_1_10_1 + 28 TPS_x_2_1_11_1
+ 25 TPS_x_2_1_12_1 + 37 TPS_x_2_1_13_1 + 9 TPS_x_2_1_14_1 + 61 TPS_x_2_1_3_1
+ 70 TPS_x_2_1_4_1 + 62 TPS_x_2_1_5_1 + 58 TPS_x_2_1_6_1 + 60 TPS_x_2_1_7_1
+ 66 TPS_x_2_1_8_1 + 16 TPS_x_2_1_9_1 >= 102.272727273

_C39: 64 OCM_x_1_2_10_2 + 113 OCM_x_1_2_11_2 + 64 OCM_x_1_2_12_2
+ 74 OCM_x_1_2_13_2 + 38 OCM_x_1_2_14_2 + 16 OCM_x_1_2_17_2
+ 93 OCM_x_1_2_18_2 + 92 OCM_x_1_2_19_2 + 54 OCM_x_1_2_1_2 + 54 OCM_x_1_2_2_2
+ 91 OCM_x_1_2_3_2 + 51 OCM_x_1_2_4_2 + 67 OCM_x_1_2_5_2 + 80 OCM_x_1_2_6_2
+ 79 OCM_x_1_2_7_2 + 34 OCM_x_1_2_8_2 + 33 OCM_x_1_2_9_2 + 5 OCS_x_2_2_12_2
+ 5 OCS_x_2_2_13_2 + 5 OCS_x_2_2_14_2 + 4 OCS_x_2_2_15_2 + 4 OCS_x_2_2_16_2
+ 4 OCS_x_2_2_17_2 + 78 OCS_x_2_2_1_2 + 45 OCS_x_2_2_23_2 + 20 OCS_x_2_2_25_2
+ 30 OCS_x_2_2_26_2 + 56 OCS_x_2_2_27_2 + 37 OCS_x_2_2_28_2
+ 70 OCS_x_2_2_2_2 + 31 OCS_x_2_2_31_2 + 31 OCS_x_2_2_32_2
+ 31 OCS_x_2_2_33_2 + 32 OCS_x_2_2_34_2 + 62 OCS_x_2_2_3_2 + 17 OCS_x_2_2_7_2
+ 17 OCS_x_2_2_8_2 <= 147.727272727

_C40: 64 OCM_x_1_2_10_2 + 113 OCM_x_1_2_11_2 + 64 OCM_x_1_2_12_2
+ 74 OCM_x_1_2_13_2 + 38 OCM_x_1_2_14_2 + 16 OCM_x_1_2_17_2

+ 93 OCM_x_1_2_18_2 + 92 OCM_x_1_2_19_2 + 54 OCM_x_1_2_1_2 + 54 OCM_x_1_2_2_2
+ 91 OCM_x_1_2_3_2 + 51 OCM_x_1_2_4_2 + 67 OCM_x_1_2_5_2 + 80 OCM_x_1_2_6_2
+ 79 OCM_x_1_2_7_2 + 34 OCM_x_1_2_8_2 + 33 OCM_x_1_2_9_2 + 5 OCS_x_2_2_12_2
+ 5 OCS_x_2_2_13_2 + 5 OCS_x_2_2_14_2 + 4 OCS_x_2_2_15_2 + 4 OCS_x_2_2_16_2
+ 4 OCS_x_2_2_17_2 + 78 OCS_x_2_2_1_2 + 45 OCS_x_2_2_23_2 + 20 OCS_x_2_2_25_2
+ 30 OCS_x_2_2_26_2 + 56 OCS_x_2_2_27_2 + 37 OCS_x_2_2_28_2
+ 70 OCS_x_2_2_2_2 + 31 OCS_x_2_2_31_2 + 31 OCS_x_2_2_32_2
+ 31 OCS_x_2_2_33_2 + 32 OCS_x_2_2_34_2 + 62 OCS_x_2_2_3_2 + 17 OCS_x_2_2_7_2
+ 17 OCS_x_2_2_8_2 >= 102.272727273

_C41: 106 PVM_x_1_3_10_3 + 121 PVM_x_1_3_11_3 + 72 PVM_x_1_3_12_3
+ 81 PVM_x_1_3_13_3 + 96 PVM_x_1_3_14_3 + 74 PVM_x_1_3_15_3
+ 77 PVM_x_1_3_16_3 + 79 PVM_x_1_3_17_3 + 13 PVM_x_1_3_18_3
+ 36 PVM_x_1_3_19_3 + 52 PVM_x_1_3_1_3 + 7 PVM_x_1_3_2_3 + 58 PVM_x_1_3_3_3
+ 56 PVM_x_1_3_4_3 + 60 PVM_x_1_3_5_3 + 80 PVM_x_1_3_6_3 + 64 PVM_x_1_3_7_3
+ 95 PVM_x_1_3_8_3 + 150 PVM_x_1_3_9_3 + 51 PVS_x_2_3_10_3
+ 47 PVS_x_2_3_11_3 + 27 PVS_x_2_3_12_3 + 10 PVS_x_2_3_13_3
+ 10 PVS_x_2_3_1_3 + 80 PVS_x_2_3_2_3 + 71 PVS_x_2_3_3_3 + 67 PVS_x_2_3_4_3
+ 64 PVS_x_2_3_5_3 + 5 PVS_x_2_3_8_3 + 28 PVS_x_2_3_9_3 <= 147.727272727

_C42: 106 PVM_x_1_3_10_3 + 121 PVM_x_1_3_11_3 + 72 PVM_x_1_3_12_3
+ 81 PVM_x_1_3_13_3 + 96 PVM_x_1_3_14_3 + 74 PVM_x_1_3_15_3
+ 77 PVM_x_1_3_16_3 + 79 PVM_x_1_3_17_3 + 13 PVM_x_1_3_18_3
+ 36 PVM_x_1_3_19_3 + 52 PVM_x_1_3_1_3 + 7 PVM_x_1_3_2_3 + 58 PVM_x_1_3_3_3
+ 56 PVM_x_1_3_4_3 + 60 PVM_x_1_3_5_3 + 80 PVM_x_1_3_6_3 + 64 PVM_x_1_3_7_3
+ 95 PVM_x_1_3_8_3 + 150 PVM_x_1_3_9_3 + 51 PVS_x_2_3_10_3
+ 47 PVS_x_2_3_11_3 + 27 PVS_x_2_3_12_3 + 10 PVS_x_2_3_13_3
+ 10 PVS_x_2_3_1_3 + 80 PVS_x_2_3_2_3 + 71 PVS_x_2_3_3_3 + 67 PVS_x_2_3_4_3
+ 64 PVS_x_2_3_5_3 + 5 PVS_x_2_3_8_3 + 28 PVS_x_2_3_9_3 >= 102.272727273

_C43: 5 TPM_x_1_1_10_1 + 8 TPM_x_1_1_11_1 + 8 TPM_x_1_1_12_1
+ 9 TPM_x_1_1_13_1 + 10 TPM_x_1_1_14_1 + 8 TPM_x_1_1_15_1 + 9 TPM_x_1_1_16_1
+ 10 TPM_x_1_1_17_1 + 5 TPM_x_1_1_18_1 + 11 TPM_x_1_1_19_1 + 7 TPM_x_1_1_1_1
+ 7 TPM_x_1_1_2_1 + 4 TPM_x_1_1_3_1 + 12 TPM_x_1_1_4_1 + 5 TPM_x_1_1_5_1
+ 4 TPM_x_1_1_6_1 + 6 TPM_x_1_1_7_1 + 12 TPM_x_1_1_8_1 + 6 TPM_x_1_1_9_1
+ 3 TPS_x_2_1_11_1 + 6 TPS_x_2_1_12_1 + 10 TPS_x_2_1_13_1 + TPS_x_2_1_14_1
+ 2 TPS_x_2_1_3_1 + 6 TPS_x_2_1_4_1 + 4 TPS_x_2_1_5_1 + 2 TPS_x_2_1_6_1
+ 4 TPS_x_2_1_7_1 + 3 TPS_x_2_1_8_1 + 4 TPS_x_2_1_9_1 >= 9.54545454545

_C44: 13 OCM_x_1_2_10_2 + 20 OCM_x_1_2_11_2 + 11 OCM_x_1_2_12_2
+ 14 OCM_x_1_2_13_2 + 3 OCM_x_1_2_14_2 + 4 OCM_x_1_2_17_2 + 6 OCM_x_1_2_18_2
+ 6 OCM_x_1_2_19_2 + 7 OCM_x_1_2_1_2 + 7 OCM_x_1_2_2_2 + 14 OCM_x_1_2_3_2
+ 6 OCM_x_1_2_4_2 + 3 OCM_x_1_2_5_2 + 7 OCM_x_1_2_6_2 + 6 OCM_x_1_2_7_2
+ 9 OCM_x_1_2_8_2 + 5 OCM_x_1_2_9_2 + 4 OCS_x_2_2_12_2 + 5 OCS_x_2_2_13_2
+ 5 OCS_x_2_2_14_2 + 2 OCS_x_2_2_15_2 + 3 OCS_x_2_2_16_2 + 4 OCS_x_2_2_17_2
+ 3 OCS_x_2_2_1_2 + 9 OCS_x_2_2_23_2 + OCS_x_2_2_25_2 + 4 OCS_x_2_2_26_2
+ 3 OCS_x_2_2_27_2 + 3 OCS_x_2_2_28_2 + 6 OCS_x_2_2_2_2 + 3 OCS_x_2_2_31_2

+ OCS_x_2_2_32_2 + 3 OCS_x_2_2_33_2 + 3 OCS_x_2_2_34_2 + 4 OCS_x_2_2_3_2
+ 4 OCS_x_2_2_7_2 + 3 OCS_x_2_2_8_2 >= 9.54545454545

_C45: 17 PVM_x_1_3_10_3 + 14 PVM_x_1_3_11_3 + 8 PVM_x_1_3_12_3
+ 9 PVM_x_1_3_13_3 + 6 PVM_x_1_3_14_3 + 12 PVM_x_1_3_15_3 + 14 PVM_x_1_3_16_3
+ 14 PVM_x_1_3_17_3 + 3 PVM_x_1_3_18_3 + 11 PVM_x_1_3_19_3 + 7 PVM_x_1_3_1_3
+ PVM_x_1_3_2_3 + 6 PVM_x_1_3_3_3 + 4 PVM_x_1_3_4_3 + 9 PVM_x_1_3_5_3
+ 15 PVM_x_1_3_6_3 + 11 PVM_x_1_3_7_3 + 12 PVM_x_1_3_8_3 + 24 PVM_x_1_3_9_3
+ 6 PVS_x_2_3_10_3 + 7 PVS_x_2_3_11_3 + 4 PVS_x_2_3_12_3 + 3 PVS_x_2_3_1_3
+ 6 PVS_x_2_3_2_3 + 6 PVS_x_2_3_3_3 + 3 PVS_x_2_3_4_3 + 4 PVS_x_2_3_5_3
+ PVS_x_2_3_8_3 + 2 PVS_x_2_3_9_3 >= 9.54545454545

_C46: 7 TPM_x_1_1_10_1 + 6 TPM_x_1_1_11_1 + 99 TPM_x_1_1_12_1
+ 103 TPM_x_1_1_13_1 + 95 TPM_x_1_1_14_1 + 54 TPM_x_1_1_15_1
+ 58 TPM_x_1_1_16_1 + 50 TPM_x_1_1_17_1 + 16 TPM_x_1_1_18_1
+ 25 TPM_x_1_1_19_1 + 11 TPM_x_1_1_1_1 + 11 TPM_x_1_1_2_1 + 23 TPM_x_1_1_3_1
+ 6 TPM_x_1_1_4_1 + 7 TPM_x_1_1_5_1 + TPM_x_1_1_6_1 + 16 TPM_x_1_1_8_1
+ 9 TPM_x_1_1_9_1 + 19 TPS_x_2_1_11_1 + 9 TPS_x_2_1_12_1 + 15 TPS_x_2_1_13_1
+ TPS_x_2_1_14_1 + 17 TPS_x_2_1_3_1 + 19 TPS_x_2_1_5_1 + 28 TPS_x_2_1_6_1
+ 28 TPS_x_2_1_7_1 + 7 TPS_x_2_1_9_1 <= 34.0909090909

_C47: 7 TPM_x_1_1_10_1 + 6 TPM_x_1_1_11_1 + 99 TPM_x_1_1_12_1
+ 103 TPM_x_1_1_13_1 + 95 TPM_x_1_1_14_1 + 54 TPM_x_1_1_15_1
+ 58 TPM_x_1_1_16_1 + 50 TPM_x_1_1_17_1 + 16 TPM_x_1_1_18_1
+ 25 TPM_x_1_1_19_1 + 11 TPM_x_1_1_1_1 + 11 TPM_x_1_1_2_1 + 23 TPM_x_1_1_3_1
+ 6 TPM_x_1_1_4_1 + 7 TPM_x_1_1_5_1 + TPM_x_1_1_6_1 + 16 TPM_x_1_1_8_1
+ 9 TPM_x_1_1_9_1 + 19 TPS_x_2_1_11_1 + 9 TPS_x_2_1_12_1 + 15 TPS_x_2_1_13_1
+ TPS_x_2_1_14_1 + 17 TPS_x_2_1_3_1 + 19 TPS_x_2_1_5_1 + 28 TPS_x_2_1_6_1
+ 28 TPS_x_2_1_7_1 + 7 TPS_x_2_1_9_1 >= 0

_C48: 16 OCM_x_1_2_10_2 + 20 OCM_x_1_2_11_2 + 7 OCM_x_1_2_12_2
+ 17 OCM_x_1_2_13_2 + 11 OCM_x_1_2_14_2 + 89 OCM_x_1_2_17_2
+ 5 OCM_x_1_2_18_2 + 4 OCM_x_1_2_19_2 + 7 OCM_x_1_2_1_2 + 7 OCM_x_1_2_2_2
+ 12 OCM_x_1_2_3_2 + 6 OCM_x_1_2_4_2 + 3 OCM_x_1_2_5_2 + 11 OCM_x_1_2_6_2
+ 7 OCM_x_1_2_8_2 + 3 OCM_x_1_2_9_2 + 4 OCS_x_2_2_12_2 + 2 OCS_x_2_2_13_2
+ 3 OCS_x_2_2_14_2 + OCS_x_2_2_15_2 + OCS_x_2_2_16_2 + OCS_x_2_2_17_2
+ 29 OCS_x_2_2_1_2 + 3 OCS_x_2_2_23_2 + 9 OCS_x_2_2_25_2 + 2 OCS_x_2_2_26_2
+ OCS_x_2_2_27_2 + 2 OCS_x_2_2_28_2 + OCS_x_2_2_34_2 + 19 OCS_x_2_2_3_2
+ 4 OCS_x_2_2_7_2 + 2 OCS_x_2_2_8_2 <= 34.0909090909

_C49: 16 OCM_x_1_2_10_2 + 20 OCM_x_1_2_11_2 + 7 OCM_x_1_2_12_2
+ 17 OCM_x_1_2_13_2 + 11 OCM_x_1_2_14_2 + 89 OCM_x_1_2_17_2
+ 5 OCM_x_1_2_18_2 + 4 OCM_x_1_2_19_2 + 7 OCM_x_1_2_1_2 + 7 OCM_x_1_2_2_2
+ 12 OCM_x_1_2_3_2 + 6 OCM_x_1_2_4_2 + 3 OCM_x_1_2_5_2 + 11 OCM_x_1_2_6_2
+ 7 OCM_x_1_2_8_2 + 3 OCM_x_1_2_9_2 + 4 OCS_x_2_2_12_2 + 2 OCS_x_2_2_13_2
+ 3 OCS_x_2_2_14_2 + OCS_x_2_2_15_2 + OCS_x_2_2_16_2 + OCS_x_2_2_17_2
+ 29 OCS_x_2_2_1_2 + 3 OCS_x_2_2_23_2 + 9 OCS_x_2_2_25_2 + 2 OCS_x_2_2_26_2

+ OCS_x_2_2_27_2 + 2 OCS_x_2_2_28_2 + OCS_x_2_2_34_2 + 19 OCS_x_2_2_3_2
+ 4 OCS_x_2_2_7_2 + 2 OCS_x_2_2_8_2 >= 0

_C50: 13 PVM_x_1_3_10_3 + 9 PVM_x_1_3_11_3 + 6 PVM_x_1_3_12_3
+ 9 PVM_x_1_3_13_3 + 21 PVM_x_1_3_14_3 + 7 PVM_x_1_3_15_3 + 7 PVM_x_1_3_16_3
+ 8 PVM_x_1_3_17_3 + 4 PVM_x_1_3_18_3 + 10 PVM_x_1_3_19_3 + 5 PVM_x_1_3_1_3
+ 12 PVM_x_1_3_3_3 + 14 PVM_x_1_3_4_3 + 9 PVM_x_1_3_5_3 + 14 PVM_x_1_3_6_3
+ 9 PVM_x_1_3_7_3 + 11 PVM_x_1_3_8_3 + 7 PVM_x_1_3_9_3 + 7 PVS_x_2_3_10_3
+ 4 PVS_x_2_3_11_3 + 2 PVS_x_2_3_12_3 + 2 PVS_x_2_3_13_3 + 4 PVS_x_2_3_1_3
+ 19 PVS_x_2_3_4_3 + 19 PVS_x_2_3_5_3 + 8 PVS_x_2_3_9_3 <= 34.0909090909

_C51: 13 PVM_x_1_3_10_3 + 9 PVM_x_1_3_11_3 + 6 PVM_x_1_3_12_3
+ 9 PVM_x_1_3_13_3 + 21 PVM_x_1_3_14_3 + 7 PVM_x_1_3_15_3 + 7 PVM_x_1_3_16_3
+ 8 PVM_x_1_3_17_3 + 4 PVM_x_1_3_18_3 + 10 PVM_x_1_3_19_3 + 5 PVM_x_1_3_1_3
+ 12 PVM_x_1_3_3_3 + 14 PVM_x_1_3_4_3 + 9 PVM_x_1_3_5_3 + 14 PVM_x_1_3_6_3
+ 9 PVM_x_1_3_7_3 + 11 PVM_x_1_3_8_3 + 7 PVM_x_1_3_9_3 + 7 PVS_x_2_3_10_3
+ 4 PVS_x_2_3_11_3 + 2 PVS_x_2_3_12_3 + 2 PVS_x_2_3_13_3 + 4 PVS_x_2_3_1_3
+ 19 PVS_x_2_3_4_3 + 19 PVS_x_2_3_5_3 + 8 PVS_x_2_3_9_3 >= 0

_C52: 24 TPM_x_1_1_10_1 + 40 TPM_x_1_1_11_1 + 23 TPM_x_1_1_12_1
+ 41 TPM_x_1_1_13_1 + 35 TPM_x_1_1_14_1 + 14 TPM_x_1_1_15_1
+ 32 TPM_x_1_1_16_1 + 26 TPM_x_1_1_17_1 + 14 TPM_x_1_1_18_1
+ 24 TPM_x_1_1_19_1 + 26 TPM_x_1_1_1_1 + 29 TPM_x_1_1_2_1 + 45 TPM_x_1_1_3_1
+ 25 TPM_x_1_1_4_1 + 36 TPM_x_1_1_5_1 + 25 TPM_x_1_1_6_1 + 24 TPM_x_1_1_7_1
+ 12 TPM_x_1_1_8_1 + 21 TPM_x_1_1_9_1 + 15 TPS_x_2_1_10_1 + 4 TPS_x_2_1_11_1
+ 5 TPS_x_2_1_12_1 + 3 TPS_x_2_1_13_1 + TPS_x_2_1_14_1 + 11 TPS_x_2_1_1_1
+ 4 TPS_x_2_1_2_1 + 32 TPS_x_2_1_3_1 + 6 TPS_x_2_1_4_1 + 3 TPS_x_2_1_5_1
+ 10 TPS_x_2_1_6_1 + 6 TPS_x_2_1_7_1 + 6 TPS_x_2_1_8_1 + 4 TPS_x_2_1_9_1
<= 119.318181818

_C53: 24 TPM_x_1_1_10_1 + 40 TPM_x_1_1_11_1 + 23 TPM_x_1_1_12_1
+ 41 TPM_x_1_1_13_1 + 35 TPM_x_1_1_14_1 + 14 TPM_x_1_1_15_1
+ 32 TPM_x_1_1_16_1 + 26 TPM_x_1_1_17_1 + 14 TPM_x_1_1_18_1
+ 24 TPM_x_1_1_19_1 + 26 TPM_x_1_1_1_1 + 29 TPM_x_1_1_2_1 + 45 TPM_x_1_1_3_1
+ 25 TPM_x_1_1_4_1 + 36 TPM_x_1_1_5_1 + 25 TPM_x_1_1_6_1 + 24 TPM_x_1_1_7_1
+ 12 TPM_x_1_1_8_1 + 21 TPM_x_1_1_9_1 + 15 TPS_x_2_1_10_1 + 4 TPS_x_2_1_11_1
+ 5 TPS_x_2_1_12_1 + 3 TPS_x_2_1_13_1 + TPS_x_2_1_14_1 + 11 TPS_x_2_1_1_1
+ 4 TPS_x_2_1_2_1 + 32 TPS_x_2_1_3_1 + 6 TPS_x_2_1_4_1 + 3 TPS_x_2_1_5_1
+ 10 TPS_x_2_1_6_1 + 6 TPS_x_2_1_7_1 + 6 TPS_x_2_1_8_1 + 4 TPS_x_2_1_9_1
>= 14.2045454545

_C54: 11 OCM_x_1_2_10_2 + 24 OCM_x_1_2_11_2 + 18 OCM_x_1_2_12_2
+ 15 OCM_x_1_2_13_2 + 11 OCM_x_1_2_14_2 + 16 OCM_x_1_2_17_2
+ 39 OCM_x_1_2_18_2 + 35 OCM_x_1_2_19_2 + 25 OCM_x_1_2_1_2 + 28 OCM_x_1_2_2_2
+ 20 OCM_x_1_2_3_2 + 38 OCM_x_1_2_4_2 + 25 OCM_x_1_2_5_2 + 24 OCM_x_1_2_6_2
+ 24 OCM_x_1_2_7_2 + 17 OCM_x_1_2_8_2 + 15 OCM_x_1_2_9_2 + 12 OCS_x_2_2_12_2
+ 11 OCS_x_2_2_13_2 + 11 OCS_x_2_2_14_2 + 4 OCS_x_2_2_15_2 + 6 OCS_x_2_2_16_2

+ 9 OCS_x_2_2_17_2 + 36 OCS_x_2_2_1_2 + 10 OCS_x_2_2_23_2 + 16 OCS_x_2_2_25_2
+ 5 OCS_x_2_2_26_2 + 6 OCS_x_2_2_27_2 + 4 OCS_x_2_2_28_2 + 6 OCS_x_2_2_2_2
+ 5 OCS_x_2_2_31_2 + 4 OCS_x_2_2_32_2 + 5 OCS_x_2_2_33_2 + 4 OCS_x_2_2_34_2
+ 3 OCS_x_2_2_3_2 + 3 OCS_x_2_2_5_2 + 9 OCS_x_2_2_7_2 + 7 OCS_x_2_2_8_2
<= 119.318181818

_C55: 11 OCM_x_1_2_10_2 + 24 OCM_x_1_2_11_2 + 18 OCM_x_1_2_12_2
+ 15 OCM_x_1_2_13_2 + 11 OCM_x_1_2_14_2 + 16 OCM_x_1_2_17_2
+ 39 OCM_x_1_2_18_2 + 35 OCM_x_1_2_19_2 + 25 OCM_x_1_2_1_2 + 28 OCM_x_1_2_2_2
+ 20 OCM_x_1_2_3_2 + 38 OCM_x_1_2_4_2 + 25 OCM_x_1_2_5_2 + 24 OCM_x_1_2_6_2
+ 24 OCM_x_1_2_7_2 + 17 OCM_x_1_2_8_2 + 15 OCM_x_1_2_9_2 + 12 OCS_x_2_2_12_2
+ 11 OCS_x_2_2_13_2 + 11 OCS_x_2_2_14_2 + 4 OCS_x_2_2_15_2 + 6 OCS_x_2_2_16_2
+ 9 OCS_x_2_2_17_2 + 36 OCS_x_2_2_1_2 + 10 OCS_x_2_2_23_2 + 16 OCS_x_2_2_25_2
+ 5 OCS_x_2_2_26_2 + 6 OCS_x_2_2_27_2 + 4 OCS_x_2_2_28_2 + 6 OCS_x_2_2_2_2
+ 5 OCS_x_2_2_31_2 + 4 OCS_x_2_2_32_2 + 5 OCS_x_2_2_33_2 + 4 OCS_x_2_2_34_2
+ 3 OCS_x_2_2_3_2 + 3 OCS_x_2_2_5_2 + 9 OCS_x_2_2_7_2 + 7 OCS_x_2_2_8_2
>= 14.2045454545

_C56: 23 PVM_x_1_3_10_3 + 19 PVM_x_1_3_11_3 + 21 PVM_x_1_3_12_3
+ 14 PVM_x_1_3_13_3 + 28 PVM_x_1_3_14_3 + 37 PVM_x_1_3_15_3
+ 29 PVM_x_1_3_16_3 + 22 PVM_x_1_3_17_3 + 20 PVM_x_1_3_18_3
+ 11 PVM_x_1_3_19_3 + 25 PVM_x_1_3_1_3 + 13 PVM_x_1_3_2_3 + 35 PVM_x_1_3_3_3
+ 46 PVM_x_1_3_4_3 + 35 PVM_x_1_3_5_3 + 21 PVM_x_1_3_6_3 + 17 PVM_x_1_3_7_3
+ 17 PVM_x_1_3_8_3 + 30 PVM_x_1_3_9_3 + 10 PVS_x_2_3_10_3 + 12 PVS_x_2_3_11_3
+ 3 PVS_x_2_3_12_3 + 6 PVS_x_2_3_13_3 + PVS_x_2_3_1_3 + 24 PVS_x_2_3_2_3
+ 6 PVS_x_2_3_3_3 + 37 PVS_x_2_3_4_3 + 3 PVS_x_2_3_5_3 + 11 PVS_x_2_3_6_3
+ 4 PVS_x_2_3_7_3 + 6 PVS_x_2_3_8_3 + 13 PVS_x_2_3_9_3 <= 119.318181818

_C57: 23 PVM_x_1_3_10_3 + 19 PVM_x_1_3_11_3 + 21 PVM_x_1_3_12_3
+ 14 PVM_x_1_3_13_3 + 28 PVM_x_1_3_14_3 + 37 PVM_x_1_3_15_3
+ 29 PVM_x_1_3_16_3 + 22 PVM_x_1_3_17_3 + 20 PVM_x_1_3_18_3
+ 11 PVM_x_1_3_19_3 + 25 PVM_x_1_3_1_3 + 13 PVM_x_1_3_2_3 + 35 PVM_x_1_3_3_3
+ 46 PVM_x_1_3_4_3 + 35 PVM_x_1_3_5_3 + 21 PVM_x_1_3_6_3 + 17 PVM_x_1_3_7_3
+ 17 PVM_x_1_3_8_3 + 30 PVM_x_1_3_9_3 + 10 PVS_x_2_3_10_3 + 12 PVS_x_2_3_11_3
+ 3 PVS_x_2_3_12_3 + 6 PVS_x_2_3_13_3 + PVS_x_2_3_1_3 + 24 PVS_x_2_3_2_3
+ 6 PVS_x_2_3_3_3 + 37 PVS_x_2_3_4_3 + 3 PVS_x_2_3_5_3 + 11 PVS_x_2_3_6_3
+ 4 PVS_x_2_3_7_3 + 6 PVS_x_2_3_8_3 + 13 PVS_x_2_3_9_3 >= 14.2045454545

VARIABLES

0 <= OCM_x_1_2_10_2 <= 1 Integer
0 <= OCM_x_1_2_11_2 <= 1 Integer
0 <= OCM_x_1_2_12_2 <= 1 Integer
0 <= OCM_x_1_2_13_2 <= 1 Integer
0 <= OCM_x_1_2_14_2 <= 1 Integer
0 <= OCM_x_1_2_17_2 <= 1 Integer
0 <= OCM_x_1_2_18_2 <= 1 Integer
0 <= OCM_x_1_2_19_2 <= 1 Integer

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0 <= OCM_x_1_2_1_2 <= 1 Integer
0 <= OCM_x_1_2_2_2 <= 1 Integer
0 <= OCM_x_1_2_3_2 <= 1 Integer
0 <= OCM_x_1_2_4_2 <= 1 Integer
0 <= OCM_x_1_2_5_2 <= 1 Integer
0 <= OCM_x_1_2_6_2 <= 1 Integer
0 <= OCM_x_1_2_7_2 <= 1 Integer
0 <= OCM_x_1_2_8_2 <= 1 Integer
0 <= OCM_x_1_2_9_2 <= 1 Integer
0 <= OCS_x_2_2_12_2 <= 1 Integer
0 <= OCS_x_2_2_13_2 <= 1 Integer
0 <= OCS_x_2_2_14_2 <= 1 Integer
0 <= OCS_x_2_2_15_2 <= 1 Integer
0 <= OCS_x_2_2_16_2 <= 1 Integer
0 <= OCS_x_2_2_17_2 <= 1 Integer
0 <= OCS_x_2_2_1_2 <= 1 Integer
0 <= OCS_x_2_2_23_2 <= 1 Integer
0 <= OCS_x_2_2_25_2 <= 1 Integer
0 <= OCS_x_2_2_26_2 <= 1 Integer
0 <= OCS_x_2_2_27_2 <= 1 Integer
0 <= OCS_x_2_2_28_2 <= 1 Integer
0 <= OCS_x_2_2_2_2 <= 1 Integer
0 <= OCS_x_2_2_31_2 <= 1 Integer
0 <= OCS_x_2_2_32_2 <= 1 Integer
0 <= OCS_x_2_2_33_2 <= 1 Integer
0 <= OCS_x_2_2_34_2 <= 1 Integer
0 <= OCS_x_2_2_3_2 <= 1 Integer
0 <= OCS_x_2_2_5_2 <= 1 Integer
0 <= OCS_x_2_2_7_2 <= 1 Integer
0 <= OCS_x_2_2_8_2 <= 1 Integer
0 <= PVM_x_1_3_10_3 <= 1 Integer
0 <= PVM_x_1_3_11_3 <= 1 Integer
0 <= PVM_x_1_3_12_3 <= 1 Integer
0 <= PVM_x_1_3_13_3 <= 1 Integer
0 <= PVM_x_1_3_14_3 <= 1 Integer
0 <= PVM_x_1_3_15_3 <= 1 Integer
0 <= PVM_x_1_3_16_3 <= 1 Integer
0 <= PVM_x_1_3_17_3 <= 1 Integer
0 <= PVM_x_1_3_18_3 <= 1 Integer
0 <= PVM_x_1_3_19_3 <= 1 Integer
0 <= PVM_x_1_3_1_3 <= 1 Integer
0 <= PVM_x_1_3_2_3 <= 1 Integer
0 <= PVM_x_1_3_3_3 <= 1 Integer
0 <= PVM_x_1_3_4_3 <= 1 Integer
0 <= PVM_x_1_3_5_3 <= 1 Integer
0 <= PVM_x_1_3_6_3 <= 1 Integer
0 <= PVM_x_1_3_7_3 <= 1 Integer

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0 <= PVM_x_1_3_8_3 <= 1 Integer
0 <= PVM_x_1_3_9_3 <= 1 Integer
0 <= PVS_x_2_3_10_3 <= 1 Integer
0 <= PVS_x_2_3_11_3 <= 1 Integer
0 <= PVS_x_2_3_12_3 <= 1 Integer
0 <= PVS_x_2_3_13_3 <= 1 Integer
0 <= PVS_x_2_3_1_3 <= 1 Integer
0 <= PVS_x_2_3_2_3 <= 1 Integer
0 <= PVS_x_2_3_3_3 <= 1 Integer
0 <= PVS_x_2_3_4_3 <= 1 Integer
0 <= PVS_x_2_3_5_3 <= 1 Integer
0 <= PVS_x_2_3_6_3 <= 1 Integer
0 <= PVS_x_2_3_7_3 <= 1 Integer
0 <= PVS_x_2_3_8_3 <= 1 Integer
0 <= PVS_x_2_3_9_3 <= 1 Integer
0 <= TPM_x_1_1_10_1 <= 1 Integer
0 <= TPM_x_1_1_11_1 <= 1 Integer
0 <= TPM_x_1_1_12_1 <= 1 Integer
0 <= TPM_x_1_1_13_1 <= 1 Integer
0 <= TPM_x_1_1_14_1 <= 1 Integer
0 <= TPM_x_1_1_15_1 <= 1 Integer
0 <= TPM_x_1_1_16_1 <= 1 Integer
0 <= TPM_x_1_1_17_1 <= 1 Integer
0 <= TPM_x_1_1_18_1 <= 1 Integer
0 <= TPM_x_1_1_19_1 <= 1 Integer
0 <= TPM_x_1_1_1_1 <= 1 Integer
0 <= TPM_x_1_1_2_1 <= 1 Integer
0 <= TPM_x_1_1_3_1 <= 1 Integer
0 <= TPM_x_1_1_4_1 <= 1 Integer
0 <= TPM_x_1_1_5_1 <= 1 Integer
0 <= TPM_x_1_1_6_1 <= 1 Integer
0 <= TPM_x_1_1_7_1 <= 1 Integer
0 <= TPM_x_1_1_8_1 <= 1 Integer
0 <= TPM_x_1_1_9_1 <= 1 Integer
0 <= TPS_x_2_1_10_1 <= 1 Integer
0 <= TPS_x_2_1_11_1 <= 1 Integer
0 <= TPS_x_2_1_12_1 <= 1 Integer
0 <= TPS_x_2_1_13_1 <= 1 Integer
0 <= TPS_x_2_1_14_1 <= 1 Integer
0 <= TPS_x_2_1_1_1 <= 1 Integer
0 <= TPS_x_2_1_2_1 <= 1 Integer
0 <= TPS_x_2_1_3_1 <= 1 Integer
0 <= TPS_x_2_1_4_1 <= 1 Integer
0 <= TPS_x_2_1_5_1 <= 1 Integer
0 <= TPS_x_2_1_6_1 <= 1 Integer
0 <= TPS_x_2_1_7_1 <= 1 Integer
0 <= TPS_x_2_1_8_1 <= 1 Integer

```

0 <= TPS_x_2_1_9_1 <= 1 Integer

[38]: LP_TP

[38]: Maximum_three_day_meals_in_TP:

MAXIMIZE

0.901194811397947*TPM_x_1_1_10_1 + 0.901194811397947*TPM_x_1_1_10_2 +
0.901194811397947*TPM_x_1_1_10_3 + 0.6692889135715295*TPM_x_1_1_11_1 +
0.6692889135715295*TPM_x_1_1_11_2 + 0.6692889135715295*TPM_x_1_1_11_3 +
0.7261526474414177*TPM_x_1_1_12_1 + 0.7261526474414177*TPM_x_1_1_12_2 +
0.7261526474414177*TPM_x_1_1_12_3 + 0.8832062268286088*TPM_x_1_1_13_1 +
0.8832062268286088*TPM_x_1_1_13_2 + 0.8832062268286088*TPM_x_1_1_13_3 +
0.7174062845441498*TPM_x_1_1_14_1 + 0.7174062845441498*TPM_x_1_1_14_2 +
0.7174062845441498*TPM_x_1_1_14_3 + 0.7944314486689009*TPM_x_1_1_15_1 +
0.7944314486689009*TPM_x_1_1_15_2 + 0.7944314486689009*TPM_x_1_1_15_3 +
0.9484924424042286*TPM_x_1_1_16_1 + 0.9484924424042286*TPM_x_1_1_16_2 +
0.9484924424042286*TPM_x_1_1_16_3 + 0.7856569092329795*TPM_x_1_1_17_1 +
0.7856569092329795*TPM_x_1_1_17_2 + 0.7856569092329795*TPM_x_1_1_17_3 +
0.7557688936953282*TPM_x_1_1_18_1 + 0.7557688936953282*TPM_x_1_1_18_2 +
0.7557688936953282*TPM_x_1_1_18_3 + 0.9445644514963183*TPM_x_1_1_19_1 +
0.9445644514963183*TPM_x_1_1_19_2 + 0.9445644514963183*TPM_x_1_1_19_3 +
1.0218065660788294*TPM_x_1_1_1_1 + 1.0218065660788294*TPM_x_1_1_1_2 +
1.0218065660788294*TPM_x_1_1_1_3 + 0.9023922881310513*TPM_x_1_1_2_1 +
0.9023922881310513*TPM_x_1_1_2_2 + 0.9023922881310513*TPM_x_1_1_2_3 +
0.810447253431802*TPM_x_1_1_3_1 + 0.810447253431802*TPM_x_1_1_3_2 +
0.810447253431802*TPM_x_1_1_3_3 + 1.04386364886159*TPM_x_1_1_4_1 +
1.04386364886159*TPM_x_1_1_4_2 + 1.04386364886159*TPM_x_1_1_4_3 +
0.5096502445583078*TPM_x_1_1_5_1 + 0.5096502445583078*TPM_x_1_1_5_2 +
0.5096502445583078*TPM_x_1_1_5_3 + 0.8192312721544819*TPM_x_1_1_6_1 +
0.8192312721544819*TPM_x_1_1_6_2 + 0.8192312721544819*TPM_x_1_1_6_3 +
0.9073796233883028*TPM_x_1_1_7_1 + 0.9073796233883028*TPM_x_1_1_7_2 +
0.9073796233883028*TPM_x_1_1_7_3 + 1.003177639029572*TPM_x_1_1_8_1 +
1.003177639029572*TPM_x_1_1_8_2 + 1.003177639029572*TPM_x_1_1_8_3 +
1.09844443502014*TPM_x_1_1_9_1 + 1.09844443502014*TPM_x_1_1_9_2 +
1.09844443502014*TPM_x_1_1_9_3 + 2.9504076238427457*TPS_x_2_1_10_1 +
2.9504076238427457*TPS_x_2_1_10_2 + 2.9504076238427457*TPS_x_2_1_10_3 +
3.137632171991596*TPS_x_2_1_11_1 + 3.137632171991596*TPS_x_2_1_11_2 +
3.137632171991596*TPS_x_2_1_11_3 + 3.315422666931677*TPS_x_2_1_12_1 +
3.315422666931677*TPS_x_2_1_12_2 + 3.315422666931677*TPS_x_2_1_12_3 +
3.496965440302525*TPS_x_2_1_13_1 + 3.496965440302525*TPS_x_2_1_13_2 +
3.496965440302525*TPS_x_2_1_13_3 + 3.1162437936300837*TPS_x_2_1_14_1 +
3.1162437936300837*TPS_x_2_1_14_2 + 3.1162437936300837*TPS_x_2_1_14_3 +
3.9815477976143487*TPS_x_2_1_1_1 + 3.9815477976143487*TPS_x_2_1_1_2 +
3.9815477976143487*TPS_x_2_1_1_3 + 6.433106441628679*TPS_x_2_1_2_1 +
6.433106441628679*TPS_x_2_1_2_2 + 6.433106441628679*TPS_x_2_1_2_3 +
0.7242461469257859*TPS_x_2_1_3_1 + 0.7242461469257859*TPS_x_2_1_3_2 +
0.7242461469257859*TPS_x_2_1_3_3 + 1.8609019155472921*TPS_x_2_1_4_1 +

1.8609019155472921*TPS_x_2_1_4_2 + 1.8609019155472921*TPS_x_2_1_4_3 +
 1.582313952158506*TPS_x_2_1_5_1 + 1.582313952158506*TPS_x_2_1_5_2 +
 1.582313952158506*TPS_x_2_1_5_3 + 1.416635916089331*TPS_x_2_1_6_1 +
 1.416635916089331*TPS_x_2_1_6_2 + 1.416635916089331*TPS_x_2_1_6_3 +
 1.495432345769248*TPS_x_2_1_7_1 + 1.495432345769248*TPS_x_2_1_7_2 +
 1.495432345769248*TPS_x_2_1_7_3 + 3.2715495087791453*TPS_x_2_1_8_1 +
 3.2715495087791453*TPS_x_2_1_8_2 + 3.2715495087791453*TPS_x_2_1_8_3 +
 3.2274275960172214*TPS_x_2_1_9_1 + 3.2274275960172214*TPS_x_2_1_9_2 +
 3.2274275960172214*TPS_x_2_1_9_3 + 0.0

SUBJECT TO

Price_constraints_for_TP: 6.3675 TPM_x_1_1_10_1 + 6.3675 TPM_x_1_1_10_2
 + 6.3675 TPM_x_1_1_10_3 + 8.2425 TPM_x_1_1_11_1 + 8.2425 TPM_x_1_1_11_2
 + 8.2425 TPM_x_1_1_11_3 + 7.7175 TPM_x_1_1_12_1 + 7.7175 TPM_x_1_1_12_2
 + 7.7175 TPM_x_1_1_12_3 + 7.7175 TPM_x_1_1_13_1 + 7.7175 TPM_x_1_1_13_2
 + 7.7175 TPM_x_1_1_13_3 + 8.2425 TPM_x_1_1_14_1 + 8.2425 TPM_x_1_1_14_2
 + 8.2425 TPM_x_1_1_14_3 + 7.7175 TPM_x_1_1_15_1 + 7.7175 TPM_x_1_1_15_2
 + 7.7175 TPM_x_1_1_15_3 + 7.7175 TPM_x_1_1_16_1 + 7.7175 TPM_x_1_1_16_2
 + 7.7175 TPM_x_1_1_16_3 + 8.2425 TPM_x_1_1_17_1 + 8.2425 TPM_x_1_1_17_2
 + 8.2425 TPM_x_1_1_17_3 + 8.2425 TPM_x_1_1_18_1 + 8.2425 TPM_x_1_1_18_2
 + 8.2425 TPM_x_1_1_18_3 + 7.4925 TPM_x_1_1_19_1 + 7.4925 TPM_x_1_1_19_2
 + 7.4925 TPM_x_1_1_19_3 + 6.2175 TPM_x_1_1_1_1 + 6.2175 TPM_x_1_1_1_2
 + 6.2175 TPM_x_1_1_1_3 + 6.9675 TPM_x_1_1_2_1 + 6.9675 TPM_x_1_1_2_2
 + 6.9675 TPM_x_1_1_2_3 + 7.4925 TPM_x_1_1_3_1 + 7.4925 TPM_x_1_1_3_2
 + 7.4925 TPM_x_1_1_3_3 + 6.7425 TPM_x_1_1_4_1 + 6.7425 TPM_x_1_1_4_2
 + 6.7425 TPM_x_1_1_4_3 + 10.4925 TPM_x_1_1_5_1 + 10.4925 TPM_x_1_1_5_2
 + 10.4925 TPM_x_1_1_5_3 + 5.9925 TPM_x_1_1_6_1 + 5.9925 TPM_x_1_1_6_2
 + 5.9925 TPM_x_1_1_6_3 + 6.2175 TPM_x_1_1_7_1 + 6.2175 TPM_x_1_1_7_2
 + 6.2175 TPM_x_1_1_7_3 + 6.7425 TPM_x_1_1_8_1 + 6.7425 TPM_x_1_1_8_2
 + 6.7425 TPM_x_1_1_8_3 + 5.9925 TPM_x_1_1_9_1 + 5.9925 TPM_x_1_1_9_2
 + 5.9925 TPM_x_1_1_9_3 + 1.8675 TPS_x_2_1_10_1 + 1.8675 TPS_x_2_1_10_2
 + 1.8675 TPS_x_2_1_10_3 + 1.8675 TPS_x_2_1_11_1 + 1.8675 TPS_x_2_1_11_2
 + 1.8675 TPS_x_2_1_11_3 + 1.8675 TPS_x_2_1_12_1 + 1.8675 TPS_x_2_1_12_2
 + 1.8675 TPS_x_2_1_12_3 + 1.8675 TPS_x_2_1_13_1 + 1.8675 TPS_x_2_1_13_2
 + 1.8675 TPS_x_2_1_13_3 + 1.8675 TPS_x_2_1_14_1 + 1.8675 TPS_x_2_1_14_2
 + 1.8675 TPS_x_2_1_14_3 + 1.4925 TPS_x_2_1_1_1 + 1.4925 TPS_x_2_1_1_2
 + 1.4925 TPS_x_2_1_1_3 + 0.8925 TPS_x_2_1_2_1 + 0.8925 TPS_x_2_1_2_2
 + 0.8925 TPS_x_2_1_2_3 + 6.9675 TPS_x_2_1_3_1 + 6.9675 TPS_x_2_1_3_2
 + 6.9675 TPS_x_2_1_3_3 + 3.5175 TPS_x_2_1_4_1 + 3.5175 TPS_x_2_1_4_2
 + 3.5175 TPS_x_2_1_4_3 + 3.9675 TPS_x_2_1_5_1 + 3.9675 TPS_x_2_1_5_2
 + 3.9675 TPS_x_2_1_5_3 + 3.7425 TPS_x_2_1_6_1 + 3.7425 TPS_x_2_1_6_2
 + 3.7425 TPS_x_2_1_6_3 + 3.7425 TPS_x_2_1_7_1 + 3.7425 TPS_x_2_1_7_2
 + 3.7425 TPS_x_2_1_7_3 + 1.8675 TPS_x_2_1_8_1 + 1.8675 TPS_x_2_1_8_2
 + 1.8675 TPS_x_2_1_8_3 + 1.8675 TPS_x_2_1_9_1 + 1.8675 TPS_x_2_1_9_2
 + 1.8675 TPS_x_2_1_9_3 <= 36.4090909091

_C1: TPM_x_1_1_1_1 + TPM_x_1_1_1_2 + TPM_x_1_1_1_3 <= 1

$_C2: \text{TPM_x_1_1_2_1} + \text{TPM_x_1_1_2_2} + \text{TPM_x_1_1_2_3} \leq 1$
 $_C3: \text{TPM_x_1_1_3_1} + \text{TPM_x_1_1_3_2} + \text{TPM_x_1_1_3_3} \leq 1$
 $_C4: \text{TPM_x_1_1_4_1} + \text{TPM_x_1_1_4_2} + \text{TPM_x_1_1_4_3} \leq 1$
 $_C5: \text{TPM_x_1_1_5_1} + \text{TPM_x_1_1_5_2} + \text{TPM_x_1_1_5_3} \leq 1$
 $_C6: \text{TPM_x_1_1_6_1} + \text{TPM_x_1_1_6_2} + \text{TPM_x_1_1_6_3} \leq 1$
 $_C7: \text{TPM_x_1_1_7_1} + \text{TPM_x_1_1_7_2} + \text{TPM_x_1_1_7_3} \leq 1$
 $_C8: \text{TPM_x_1_1_8_1} + \text{TPM_x_1_1_8_2} + \text{TPM_x_1_1_8_3} \leq 1$
 $_C9: \text{TPM_x_1_1_9_1} + \text{TPM_x_1_1_9_2} + \text{TPM_x_1_1_9_3} \leq 1$
 $_C10: \text{TPM_x_1_1_10_1} + \text{TPM_x_1_1_10_2} + \text{TPM_x_1_1_10_3} \leq 1$
 $_C11: \text{TPM_x_1_1_11_1} + \text{TPM_x_1_1_11_2} + \text{TPM_x_1_1_11_3} \leq 1$
 $_C12: \text{TPM_x_1_1_12_1} + \text{TPM_x_1_1_12_2} + \text{TPM_x_1_1_12_3} \leq 1$
 $_C13: \text{TPM_x_1_1_13_1} + \text{TPM_x_1_1_13_2} + \text{TPM_x_1_1_13_3} \leq 1$
 $_C14: \text{TPM_x_1_1_14_1} + \text{TPM_x_1_1_14_2} + \text{TPM_x_1_1_14_3} \leq 1$
 $_C15: \text{TPM_x_1_1_15_1} + \text{TPM_x_1_1_15_2} + \text{TPM_x_1_1_15_3} \leq 1$
 $_C16: \text{TPM_x_1_1_16_1} + \text{TPM_x_1_1_16_2} + \text{TPM_x_1_1_16_3} \leq 1$
 $_C17: \text{TPM_x_1_1_17_1} + \text{TPM_x_1_1_17_2} + \text{TPM_x_1_1_17_3} \leq 1$
 $_C18: \text{TPM_x_1_1_18_1} + \text{TPM_x_1_1_18_2} + \text{TPM_x_1_1_18_3} \leq 1$
 $_C19: \text{TPM_x_1_1_19_1} + \text{TPM_x_1_1_19_2} + \text{TPM_x_1_1_19_3} \leq 1$

$\text{TP_one_main_in_first_day: TPM_x_1_1_10_1} + \text{TPM_x_1_1_11_1} + \text{TPM_x_1_1_12_1}$
 $+ \text{TPM_x_1_1_13_1} + \text{TPM_x_1_1_14_1} + \text{TPM_x_1_1_15_1} + \text{TPM_x_1_1_16_1}$
 $+ \text{TPM_x_1_1_17_1} + \text{TPM_x_1_1_18_1} + \text{TPM_x_1_1_19_1} + \text{TPM_x_1_1_1_1}$
 $+ \text{TPM_x_1_1_2_1} + \text{TPM_x_1_1_3_1} + \text{TPM_x_1_1_4_1} + \text{TPM_x_1_1_5_1}$
 $+ \text{TPM_x_1_1_6_1} + \text{TPM_x_1_1_7_1} + \text{TPM_x_1_1_8_1} + \text{TPM_x_1_1_9_1} = 1$

$\text{TP_one_side_in_first_day: TPS_x_2_1_10_1} + \text{TPS_x_2_1_11_1} + \text{TPS_x_2_1_12_1}$
 $+ \text{TPS_x_2_1_13_1} + \text{TPS_x_2_1_14_1} + \text{TPS_x_2_1_1_1} + \text{TPS_x_2_1_2_1}$
 $+ \text{TPS_x_2_1_3_1} + \text{TPS_x_2_1_4_1} + \text{TPS_x_2_1_5_1} + \text{TPS_x_2_1_6_1}$
 $+ \text{TPS_x_2_1_7_1} + \text{TPS_x_2_1_8_1} + \text{TPS_x_2_1_9_1} = 1$

TP_one_main_in_second_day: TPM_x_1_1_10_2 + TPM_x_1_1_11_2 + TPM_x_1_1_12_2
+ TPM_x_1_1_13_2 + TPM_x_1_1_14_2 + TPM_x_1_1_15_2 + TPM_x_1_1_16_2
+ TPM_x_1_1_17_2 + TPM_x_1_1_18_2 + TPM_x_1_1_19_2 + TPM_x_1_1_1_2
+ TPM_x_1_1_2_2 + TPM_x_1_1_3_2 + TPM_x_1_1_4_2 + TPM_x_1_1_5_2
+ TPM_x_1_1_6_2 + TPM_x_1_1_7_2 + TPM_x_1_1_8_2 + TPM_x_1_1_9_2 = 1

TP_one_side_in_second_day: TPS_x_2_1_10_2 + TPS_x_2_1_11_2 + TPS_x_2_1_12_2
+ TPS_x_2_1_13_2 + TPS_x_2_1_14_2 + TPS_x_2_1_1_2 + TPS_x_2_1_2_2
+ TPS_x_2_1_3_2 + TPS_x_2_1_4_2 + TPS_x_2_1_5_2 + TPS_x_2_1_6_2
+ TPS_x_2_1_7_2 + TPS_x_2_1_8_2 + TPS_x_2_1_9_2 = 1

TP_one_main_in_third_day: TPM_x_1_1_10_3 + TPM_x_1_1_11_3 + TPM_x_1_1_12_3
+ TPM_x_1_1_13_3 + TPM_x_1_1_14_3 + TPM_x_1_1_15_3 + TPM_x_1_1_16_3
+ TPM_x_1_1_17_3 + TPM_x_1_1_18_3 + TPM_x_1_1_19_3 + TPM_x_1_1_1_3
+ TPM_x_1_1_2_3 + TPM_x_1_1_3_3 + TPM_x_1_1_4_3 + TPM_x_1_1_5_3
+ TPM_x_1_1_6_3 + TPM_x_1_1_7_3 + TPM_x_1_1_8_3 + TPM_x_1_1_9_3 = 1

TP_one_side_in_third_day: TPS_x_2_1_10_3 + TPS_x_2_1_11_3 + TPS_x_2_1_12_3
+ TPS_x_2_1_13_3 + TPS_x_2_1_14_3 + TPS_x_2_1_1_3 + TPS_x_2_1_2_3
+ TPS_x_2_1_3_3 + TPS_x_2_1_4_3 + TPS_x_2_1_5_3 + TPS_x_2_1_6_3
+ TPS_x_2_1_7_3 + TPS_x_2_1_8_3 + TPS_x_2_1_9_3 = 1

_C20: 790 TPM_x_1_1_10_1 + 840 TPM_x_1_1_11_1 + 740 TPM_x_1_1_12_1
+ 790 TPM_x_1_1_13_1 + 790 TPM_x_1_1_14_1 + 470 TPM_x_1_1_15_1
+ 520 TPM_x_1_1_16_1 + 520 TPM_x_1_1_17_1 + 430 TPM_x_1_1_18_1
+ 560 TPM_x_1_1_19_1 + 580 TPM_x_1_1_1_1 + 640 TPM_x_1_1_2_1
+ 670 TPM_x_1_1_3_1 + 580 TPM_x_1_1_4_1 + 810 TPM_x_1_1_5_1
+ 880 TPM_x_1_1_6_1 + 880 TPM_x_1_1_7_1 + 610 TPM_x_1_1_8_1
+ 480 TPM_x_1_1_9_1 + 80 TPS_x_2_1_10_1 + 200 TPS_x_2_1_11_1
+ 140 TPS_x_2_1_12_1 + 170 TPS_x_2_1_13_1 + 120 TPS_x_2_1_14_1
+ 340 TPS_x_2_1_1_1 + 60 TPS_x_2_1_2_1 + 1160 TPS_x_2_1_3_1
+ 540 TPS_x_2_1_4_1 + 480 TPS_x_2_1_5_1 + 350 TPS_x_2_1_6_1
+ 310 TPS_x_2_1_7_1 + 310 TPS_x_2_1_8_1 + 110 TPS_x_2_1_9_1 <= 1363.63636364

_C21: 790 TPM_x_1_1_10_1 + 840 TPM_x_1_1_11_1 + 740 TPM_x_1_1_12_1
+ 790 TPM_x_1_1_13_1 + 790 TPM_x_1_1_14_1 + 470 TPM_x_1_1_15_1
+ 520 TPM_x_1_1_16_1 + 520 TPM_x_1_1_17_1 + 430 TPM_x_1_1_18_1
+ 560 TPM_x_1_1_19_1 + 580 TPM_x_1_1_1_1 + 640 TPM_x_1_1_2_1
+ 670 TPM_x_1_1_3_1 + 580 TPM_x_1_1_4_1 + 810 TPM_x_1_1_5_1
+ 880 TPM_x_1_1_6_1 + 880 TPM_x_1_1_7_1 + 610 TPM_x_1_1_8_1
+ 480 TPM_x_1_1_9_1 + 80 TPS_x_2_1_10_1 + 200 TPS_x_2_1_11_1
+ 140 TPS_x_2_1_12_1 + 170 TPS_x_2_1_13_1 + 120 TPS_x_2_1_14_1
+ 340 TPS_x_2_1_1_1 + 60 TPS_x_2_1_2_1 + 1160 TPS_x_2_1_3_1
+ 540 TPS_x_2_1_4_1 + 480 TPS_x_2_1_5_1 + 350 TPS_x_2_1_6_1
+ 310 TPS_x_2_1_7_1 + 310 TPS_x_2_1_8_1 + 110 TPS_x_2_1_9_1 >= 568.181818182

_C22: 790 TPM_x_1_1_10_2 + 840 TPM_x_1_1_11_2 + 740 TPM_x_1_1_12_2

+ 790 TPM_x_1_1_13_2 + 790 TPM_x_1_1_14_2 + 470 TPM_x_1_1_15_2
+ 520 TPM_x_1_1_16_2 + 520 TPM_x_1_1_17_2 + 430 TPM_x_1_1_18_2
+ 560 TPM_x_1_1_19_2 + 580 TPM_x_1_1_1_2 + 640 TPM_x_1_1_2_2
+ 670 TPM_x_1_1_3_2 + 580 TPM_x_1_1_4_2 + 810 TPM_x_1_1_5_2
+ 880 TPM_x_1_1_6_2 + 880 TPM_x_1_1_7_2 + 610 TPM_x_1_1_8_2
+ 480 TPM_x_1_1_9_2 + 80 TPS_x_2_1_10_2 + 200 TPS_x_2_1_11_2
+ 140 TPS_x_2_1_12_2 + 170 TPS_x_2_1_13_2 + 120 TPS_x_2_1_14_2
+ 340 TPS_x_2_1_1_2 + 60 TPS_x_2_1_2_2 + 1160 TPS_x_2_1_3_2
+ 540 TPS_x_2_1_4_2 + 480 TPS_x_2_1_5_2 + 350 TPS_x_2_1_6_2
+ 310 TPS_x_2_1_7_2 + 310 TPS_x_2_1_8_2 + 110 TPS_x_2_1_9_2 <= 1363.63636364

_C23: 790 TPM_x_1_1_10_2 + 840 TPM_x_1_1_11_2 + 740 TPM_x_1_1_12_2
+ 790 TPM_x_1_1_13_2 + 790 TPM_x_1_1_14_2 + 470 TPM_x_1_1_15_2
+ 520 TPM_x_1_1_16_2 + 520 TPM_x_1_1_17_2 + 430 TPM_x_1_1_18_2
+ 560 TPM_x_1_1_19_2 + 580 TPM_x_1_1_1_2 + 640 TPM_x_1_1_2_2
+ 670 TPM_x_1_1_3_2 + 580 TPM_x_1_1_4_2 + 810 TPM_x_1_1_5_2
+ 880 TPM_x_1_1_6_2 + 880 TPM_x_1_1_7_2 + 610 TPM_x_1_1_8_2
+ 480 TPM_x_1_1_9_2 + 80 TPS_x_2_1_10_2 + 200 TPS_x_2_1_11_2
+ 140 TPS_x_2_1_12_2 + 170 TPS_x_2_1_13_2 + 120 TPS_x_2_1_14_2
+ 340 TPS_x_2_1_1_2 + 60 TPS_x_2_1_2_2 + 1160 TPS_x_2_1_3_2
+ 540 TPS_x_2_1_4_2 + 480 TPS_x_2_1_5_2 + 350 TPS_x_2_1_6_2
+ 310 TPS_x_2_1_7_2 + 310 TPS_x_2_1_8_2 + 110 TPS_x_2_1_9_2 >= 568.181818182

_C24: 790 TPM_x_1_1_10_3 + 840 TPM_x_1_1_11_3 + 740 TPM_x_1_1_12_3
+ 790 TPM_x_1_1_13_3 + 790 TPM_x_1_1_14_3 + 470 TPM_x_1_1_15_3
+ 520 TPM_x_1_1_16_3 + 520 TPM_x_1_1_17_3 + 430 TPM_x_1_1_18_3
+ 560 TPM_x_1_1_19_3 + 580 TPM_x_1_1_1_3 + 640 TPM_x_1_1_2_3
+ 670 TPM_x_1_1_3_3 + 580 TPM_x_1_1_4_3 + 810 TPM_x_1_1_5_3
+ 880 TPM_x_1_1_6_3 + 880 TPM_x_1_1_7_3 + 610 TPM_x_1_1_8_3
+ 480 TPM_x_1_1_9_3 + 80 TPS_x_2_1_10_3 + 200 TPS_x_2_1_11_3
+ 140 TPS_x_2_1_12_3 + 170 TPS_x_2_1_13_3 + 120 TPS_x_2_1_14_3
+ 340 TPS_x_2_1_1_3 + 60 TPS_x_2_1_2_3 + 1160 TPS_x_2_1_3_3
+ 540 TPS_x_2_1_4_3 + 480 TPS_x_2_1_5_3 + 350 TPS_x_2_1_6_3
+ 310 TPS_x_2_1_7_3 + 310 TPS_x_2_1_8_3 + 110 TPS_x_2_1_9_3 <= 1363.63636364

_C25: 790 TPM_x_1_1_10_3 + 840 TPM_x_1_1_11_3 + 740 TPM_x_1_1_12_3
+ 790 TPM_x_1_1_13_3 + 790 TPM_x_1_1_14_3 + 470 TPM_x_1_1_15_3
+ 520 TPM_x_1_1_16_3 + 520 TPM_x_1_1_17_3 + 430 TPM_x_1_1_18_3
+ 560 TPM_x_1_1_19_3 + 580 TPM_x_1_1_1_3 + 640 TPM_x_1_1_2_3
+ 670 TPM_x_1_1_3_3 + 580 TPM_x_1_1_4_3 + 810 TPM_x_1_1_5_3
+ 880 TPM_x_1_1_6_3 + 880 TPM_x_1_1_7_3 + 610 TPM_x_1_1_8_3
+ 480 TPM_x_1_1_9_3 + 80 TPS_x_2_1_10_3 + 200 TPS_x_2_1_11_3
+ 140 TPS_x_2_1_12_3 + 170 TPS_x_2_1_13_3 + 120 TPS_x_2_1_14_3
+ 340 TPS_x_2_1_1_3 + 60 TPS_x_2_1_2_3 + 1160 TPS_x_2_1_3_3
+ 540 TPS_x_2_1_4_3 + 480 TPS_x_2_1_5_3 + 350 TPS_x_2_1_6_3
+ 310 TPS_x_2_1_7_3 + 310 TPS_x_2_1_8_3 + 110 TPS_x_2_1_9_3 >= 568.181818182

_C26: 71 TPM_x_1_1_10_1 + 54 TPM_x_1_1_11_1 + 29 TPM_x_1_1_12_1
+ 25 TPM_x_1_1_13_1 + 31 TPM_x_1_1_14_1 + 23 TPM_x_1_1_15_1
+ 19 TPM_x_1_1_16_1 + 25 TPM_x_1_1_17_1 + 10 TPM_x_1_1_18_1
+ 11 TPM_x_1_1_19_1 + 27 TPM_x_1_1_1_1 + 32 TPM_x_1_1_2_1 + 22 TPM_x_1_1_3_1
+ 30 TPM_x_1_1_4_1 + 52 TPM_x_1_1_5_1 + 53 TPM_x_1_1_6_1 + 51 TPM_x_1_1_7_1
+ 38 TPM_x_1_1_8_1 + 27 TPM_x_1_1_9_1 + TPS_x_2_1_10_1 + 10 TPS_x_2_1_11_1
+ 3 TPS_x_2_1_12_1 + 2 TPS_x_2_1_13_1 + 8 TPS_x_2_1_14_1 + 32 TPS_x_2_1_1_1
+ 5 TPS_x_2_1_2_1 + 86 TPS_x_2_1_3_1 + 26 TPS_x_2_1_4_1 + 24 TPS_x_2_1_5_1
+ 10 TPS_x_2_1_6_1 + 6 TPS_x_2_1_7_1 + 2.5 TPS_x_2_1_8_1 + 4 TPS_x_2_1_9_1
<= 53.0303030303

_C27: 71 TPM_x_1_1_10_1 + 54 TPM_x_1_1_11_1 + 29 TPM_x_1_1_12_1
+ 25 TPM_x_1_1_13_1 + 31 TPM_x_1_1_14_1 + 23 TPM_x_1_1_15_1
+ 19 TPM_x_1_1_16_1 + 25 TPM_x_1_1_17_1 + 10 TPM_x_1_1_18_1
+ 11 TPM_x_1_1_19_1 + 27 TPM_x_1_1_1_1 + 32 TPM_x_1_1_2_1 + 22 TPM_x_1_1_3_1
+ 30 TPM_x_1_1_4_1 + 52 TPM_x_1_1_5_1 + 53 TPM_x_1_1_6_1 + 51 TPM_x_1_1_7_1
+ 38 TPM_x_1_1_8_1 + 27 TPM_x_1_1_9_1 + TPS_x_2_1_10_1 + 10 TPS_x_2_1_11_1
+ 3 TPS_x_2_1_12_1 + 2 TPS_x_2_1_13_1 + 8 TPS_x_2_1_14_1 + 32 TPS_x_2_1_1_1
+ 5 TPS_x_2_1_2_1 + 86 TPS_x_2_1_3_1 + 26 TPS_x_2_1_4_1 + 24 TPS_x_2_1_5_1
+ 10 TPS_x_2_1_6_1 + 6 TPS_x_2_1_7_1 + 2.5 TPS_x_2_1_8_1 + 4 TPS_x_2_1_9_1
>= 12.6262626263

_C28: 71 TPM_x_1_1_10_2 + 54 TPM_x_1_1_11_2 + 29 TPM_x_1_1_12_2
+ 25 TPM_x_1_1_13_2 + 31 TPM_x_1_1_14_2 + 23 TPM_x_1_1_15_2
+ 19 TPM_x_1_1_16_2 + 25 TPM_x_1_1_17_2 + 10 TPM_x_1_1_18_2
+ 11 TPM_x_1_1_19_2 + 27 TPM_x_1_1_1_2 + 32 TPM_x_1_1_2_2 + 22 TPM_x_1_1_3_2
+ 30 TPM_x_1_1_4_2 + 52 TPM_x_1_1_5_2 + 53 TPM_x_1_1_6_2 + 51 TPM_x_1_1_7_2
+ 38 TPM_x_1_1_8_2 + 27 TPM_x_1_1_9_2 + TPS_x_2_1_10_2 + 10 TPS_x_2_1_11_2
+ 3 TPS_x_2_1_12_2 + 2 TPS_x_2_1_13_2 + 8 TPS_x_2_1_14_2 + 32 TPS_x_2_1_1_2
+ 5 TPS_x_2_1_2_2 + 86 TPS_x_2_1_3_2 + 26 TPS_x_2_1_4_2 + 24 TPS_x_2_1_5_2
+ 10 TPS_x_2_1_6_2 + 6 TPS_x_2_1_7_2 + 2.5 TPS_x_2_1_8_2 + 4 TPS_x_2_1_9_2
<= 53.0303030303

_C29: 71 TPM_x_1_1_10_2 + 54 TPM_x_1_1_11_2 + 29 TPM_x_1_1_12_2
+ 25 TPM_x_1_1_13_2 + 31 TPM_x_1_1_14_2 + 23 TPM_x_1_1_15_2
+ 19 TPM_x_1_1_16_2 + 25 TPM_x_1_1_17_2 + 10 TPM_x_1_1_18_2
+ 11 TPM_x_1_1_19_2 + 27 TPM_x_1_1_1_2 + 32 TPM_x_1_1_2_2 + 22 TPM_x_1_1_3_2
+ 30 TPM_x_1_1_4_2 + 52 TPM_x_1_1_5_2 + 53 TPM_x_1_1_6_2 + 51 TPM_x_1_1_7_2
+ 38 TPM_x_1_1_8_2 + 27 TPM_x_1_1_9_2 + TPS_x_2_1_10_2 + 10 TPS_x_2_1_11_2
+ 3 TPS_x_2_1_12_2 + 2 TPS_x_2_1_13_2 + 8 TPS_x_2_1_14_2 + 32 TPS_x_2_1_1_2
+ 5 TPS_x_2_1_2_2 + 86 TPS_x_2_1_3_2 + 26 TPS_x_2_1_4_2 + 24 TPS_x_2_1_5_2
+ 10 TPS_x_2_1_6_2 + 6 TPS_x_2_1_7_2 + 2.5 TPS_x_2_1_8_2 + 4 TPS_x_2_1_9_2
>= 12.6262626263

_C30: 71 TPM_x_1_1_10_3 + 54 TPM_x_1_1_11_3 + 29 TPM_x_1_1_12_3
+ 25 TPM_x_1_1_13_3 + 31 TPM_x_1_1_14_3 + 23 TPM_x_1_1_15_3
+ 19 TPM_x_1_1_16_3 + 25 TPM_x_1_1_17_3 + 10 TPM_x_1_1_18_3

+ 11 TPM_x_1_1_19_3 + 27 TPM_x_1_1_1_3 + 32 TPM_x_1_1_2_3 + 22 TPM_x_1_1_3_3
+ 30 TPM_x_1_1_4_3 + 52 TPM_x_1_1_5_3 + 53 TPM_x_1_1_6_3 + 51 TPM_x_1_1_7_3
+ 38 TPM_x_1_1_8_3 + 27 TPM_x_1_1_9_3 + TPS_x_2_1_10_3 + 10 TPS_x_2_1_11_3
+ 3 TPS_x_2_1_12_3 + 2 TPS_x_2_1_13_3 + 8 TPS_x_2_1_14_3 + 32 TPS_x_2_1_1_3
+ 5 TPS_x_2_1_2_3 + 86 TPS_x_2_1_3_3 + 26 TPS_x_2_1_4_3 + 24 TPS_x_2_1_5_3
+ 10 TPS_x_2_1_6_3 + 6 TPS_x_2_1_7_3 + 2.5 TPS_x_2_1_8_3 + 4 TPS_x_2_1_9_3
<= 53.0303030303

_C31: 71 TPM_x_1_1_10_3 + 54 TPM_x_1_1_11_3 + 29 TPM_x_1_1_12_3
+ 25 TPM_x_1_1_13_3 + 31 TPM_x_1_1_14_3 + 23 TPM_x_1_1_15_3
+ 19 TPM_x_1_1_16_3 + 25 TPM_x_1_1_17_3 + 10 TPM_x_1_1_18_3
+ 11 TPM_x_1_1_19_3 + 27 TPM_x_1_1_1_3 + 32 TPM_x_1_1_2_3 + 22 TPM_x_1_1_3_3
+ 30 TPM_x_1_1_4_3 + 52 TPM_x_1_1_5_3 + 53 TPM_x_1_1_6_3 + 51 TPM_x_1_1_7_3
+ 38 TPM_x_1_1_8_3 + 27 TPM_x_1_1_9_3 + TPS_x_2_1_10_3 + 10 TPS_x_2_1_11_3
+ 3 TPS_x_2_1_12_3 + 2 TPS_x_2_1_13_3 + 8 TPS_x_2_1_14_3 + 32 TPS_x_2_1_1_3
+ 5 TPS_x_2_1_2_3 + 86 TPS_x_2_1_3_3 + 26 TPS_x_2_1_4_3 + 24 TPS_x_2_1_5_3
+ 10 TPS_x_2_1_6_3 + 6 TPS_x_2_1_7_3 + 2.5 TPS_x_2_1_8_3 + 4 TPS_x_2_1_9_3
>= 12.6262626263

_C32: 15 TPM_x_1_1_10_1 + 27 TPM_x_1_1_11_1 + 9 TPM_x_1_1_12_1
+ 4.5 TPM_x_1_1_13_1 + 6 TPM_x_1_1_14_1 + 8 TPM_x_1_1_15_1
+ 3.5 TPM_x_1_1_16_1 + 5 TPM_x_1_1_17_1 + TPM_x_1_1_18_1 + TPM_x_1_1_19_1
+ 8 TPM_x_1_1_1_1 + 11 TPM_x_1_1_2_1 + 7 TPM_x_1_1_3_1 + 3.5 TPM_x_1_1_4_1
+ 22 TPM_x_1_1_5_1 + 33 TPM_x_1_1_6_1 + 16 TPM_x_1_1_7_1 + 10 TPM_x_1_1_8_1
+ 10 TPM_x_1_1_9_1 + 1.5 TPS_x_2_1_11_1 + 5 TPS_x_2_1_14_1 + 11 TPS_x_2_1_1_1
+ 3 TPS_x_2_1_2_1 + 4.5 TPS_x_2_1_3_1 + 2 TPS_x_2_1_4_1 + 3 TPS_x_2_1_5_1
+ 4 TPS_x_2_1_6_1 + TPS_x_2_1_7_1 <= 15.1515151515

_C33: 15 TPM_x_1_1_10_1 + 27 TPM_x_1_1_11_1 + 9 TPM_x_1_1_12_1
+ 4.5 TPM_x_1_1_13_1 + 6 TPM_x_1_1_14_1 + 8 TPM_x_1_1_15_1
+ 3.5 TPM_x_1_1_16_1 + 5 TPM_x_1_1_17_1 + TPM_x_1_1_18_1 + TPM_x_1_1_19_1
+ 8 TPM_x_1_1_1_1 + 11 TPM_x_1_1_2_1 + 7 TPM_x_1_1_3_1 + 3.5 TPM_x_1_1_4_1
+ 22 TPM_x_1_1_5_1 + 33 TPM_x_1_1_6_1 + 16 TPM_x_1_1_7_1 + 10 TPM_x_1_1_8_1
+ 10 TPM_x_1_1_9_1 + 1.5 TPS_x_2_1_11_1 + 5 TPS_x_2_1_14_1 + 11 TPS_x_2_1_1_1
+ 3 TPS_x_2_1_2_1 + 4.5 TPS_x_2_1_3_1 + 2 TPS_x_2_1_4_1 + 3 TPS_x_2_1_5_1
+ 4 TPS_x_2_1_6_1 + TPS_x_2_1_7_1 >= 0

_C34: 15 TPM_x_1_1_10_2 + 27 TPM_x_1_1_11_2 + 9 TPM_x_1_1_12_2
+ 4.5 TPM_x_1_1_13_2 + 6 TPM_x_1_1_14_2 + 8 TPM_x_1_1_15_2
+ 3.5 TPM_x_1_1_16_2 + 5 TPM_x_1_1_17_2 + TPM_x_1_1_18_2 + TPM_x_1_1_19_2
+ 8 TPM_x_1_1_1_2 + 11 TPM_x_1_1_2_2 + 7 TPM_x_1_1_3_2 + 3.5 TPM_x_1_1_4_2
+ 22 TPM_x_1_1_5_2 + 33 TPM_x_1_1_6_2 + 16 TPM_x_1_1_7_2 + 10 TPM_x_1_1_8_2
+ 10 TPM_x_1_1_9_2 + 1.5 TPS_x_2_1_11_2 + 5 TPS_x_2_1_14_2 + 11 TPS_x_2_1_1_2
+ 3 TPS_x_2_1_2_2 + 4.5 TPS_x_2_1_3_2 + 2 TPS_x_2_1_4_2 + 3 TPS_x_2_1_5_2
+ 4 TPS_x_2_1_6_2 + TPS_x_2_1_7_2 <= 15.1515151515

_C35: 15 TPM_x_1_1_10_2 + 27 TPM_x_1_1_11_2 + 9 TPM_x_1_1_12_2

+ 4.5 TPM_x_1_1_13_2 + 6 TPM_x_1_1_14_2 + 8 TPM_x_1_1_15_2
+ 3.5 TPM_x_1_1_16_2 + 5 TPM_x_1_1_17_2 + TPM_x_1_1_18_2 + TPM_x_1_1_19_2
+ 8 TPM_x_1_1_1_2 + 11 TPM_x_1_1_2_2 + 7 TPM_x_1_1_3_2 + 3.5 TPM_x_1_1_4_2
+ 22 TPM_x_1_1_5_2 + 33 TPM_x_1_1_6_2 + 16 TPM_x_1_1_7_2 + 10 TPM_x_1_1_8_2
+ 10 TPM_x_1_1_9_2 + 1.5 TPS_x_2_1_11_2 + 5 TPS_x_2_1_14_2 + 11 TPS_x_2_1_1_2
+ 3 TPS_x_2_1_2_2 + 4.5 TPS_x_2_1_3_2 + 2 TPS_x_2_1_4_2 + 3 TPS_x_2_1_5_2
+ 4 TPS_x_2_1_6_2 + TPS_x_2_1_7_2 >= 0

_C36: 15 TPM_x_1_1_10_3 + 27 TPM_x_1_1_11_3 + 9 TPM_x_1_1_12_3
+ 4.5 TPM_x_1_1_13_3 + 6 TPM_x_1_1_14_3 + 8 TPM_x_1_1_15_3
+ 3.5 TPM_x_1_1_16_3 + 5 TPM_x_1_1_17_3 + TPM_x_1_1_18_3 + TPM_x_1_1_19_3
+ 8 TPM_x_1_1_1_3 + 11 TPM_x_1_1_2_3 + 7 TPM_x_1_1_3_3 + 3.5 TPM_x_1_1_4_3
+ 22 TPM_x_1_1_5_3 + 33 TPM_x_1_1_6_3 + 16 TPM_x_1_1_7_3 + 10 TPM_x_1_1_8_3
+ 10 TPM_x_1_1_9_3 + 1.5 TPS_x_2_1_11_3 + 5 TPS_x_2_1_14_3 + 11 TPS_x_2_1_1_3
+ 3 TPS_x_2_1_2_3 + 4.5 TPS_x_2_1_3_3 + 2 TPS_x_2_1_4_3 + 3 TPS_x_2_1_5_3
+ 4 TPS_x_2_1_6_3 + TPS_x_2_1_7_3 <= 15.1515151515

_C37: 15 TPM_x_1_1_10_3 + 27 TPM_x_1_1_11_3 + 9 TPM_x_1_1_12_3
+ 4.5 TPM_x_1_1_13_3 + 6 TPM_x_1_1_14_3 + 8 TPM_x_1_1_15_3
+ 3.5 TPM_x_1_1_16_3 + 5 TPM_x_1_1_17_3 + TPM_x_1_1_18_3 + TPM_x_1_1_19_3
+ 8 TPM_x_1_1_1_3 + 11 TPM_x_1_1_2_3 + 7 TPM_x_1_1_3_3 + 3.5 TPM_x_1_1_4_3
+ 22 TPM_x_1_1_5_3 + 33 TPM_x_1_1_6_3 + 16 TPM_x_1_1_7_3 + 10 TPM_x_1_1_8_3
+ 10 TPM_x_1_1_9_3 + 1.5 TPS_x_2_1_11_3 + 5 TPS_x_2_1_14_3 + 11 TPS_x_2_1_1_3
+ 3 TPS_x_2_1_2_3 + 4.5 TPS_x_2_1_3_3 + 2 TPS_x_2_1_4_3 + 3 TPS_x_2_1_5_3
+ 4 TPS_x_2_1_6_3 + TPS_x_2_1_7_3 >= 0

_C38: 1.5 TPM_x_1_1_11_1 + 0.5 TPM_x_1_1_1_1 + 0.5 TPM_x_1_1_2_1
+ TPM_x_1_1_5_1 + 2 TPM_x_1_1_6_1 + 0.5 TPM_x_1_1_8_1 <= 1.51515151515

_C39: 1.5 TPM_x_1_1_11_1 + 0.5 TPM_x_1_1_1_1 + 0.5 TPM_x_1_1_2_1
+ TPM_x_1_1_5_1 + 2 TPM_x_1_1_6_1 + 0.5 TPM_x_1_1_8_1 >= 0

_C40: 1.5 TPM_x_1_1_11_2 + 0.5 TPM_x_1_1_1_2 + 0.5 TPM_x_1_1_2_2
+ TPM_x_1_1_5_2 + 2 TPM_x_1_1_6_2 + 0.5 TPM_x_1_1_8_2 <= 1.51515151515

_C41: 1.5 TPM_x_1_1_11_2 + 0.5 TPM_x_1_1_1_2 + 0.5 TPM_x_1_1_2_2
+ TPM_x_1_1_5_2 + 2 TPM_x_1_1_6_2 + 0.5 TPM_x_1_1_8_2 >= 0

_C42: 1.5 TPM_x_1_1_11_3 + 0.5 TPM_x_1_1_1_3 + 0.5 TPM_x_1_1_2_3
+ TPM_x_1_1_5_3 + 2 TPM_x_1_1_6_3 + 0.5 TPM_x_1_1_8_3 <= 1.51515151515

_C43: 1.5 TPM_x_1_1_11_3 + 0.5 TPM_x_1_1_1_3 + 0.5 TPM_x_1_1_2_3
+ TPM_x_1_1_5_3 + 2 TPM_x_1_1_6_3 + 0.5 TPM_x_1_1_8_3 >= 0

_C44: 5 TPM_x_1_1_10_1 + 210 TPM_x_1_1_11_1 + 10 TPM_x_1_1_12_1
+ 10 TPM_x_1_1_13_1 + 10 TPM_x_1_1_14_1 + 10 TPM_x_1_1_15_1
+ 10 TPM_x_1_1_16_1 + 10 TPM_x_1_1_17_1 + 15 TPM_x_1_1_18_1

+ 80 TPM_x_1_1_1_1 + 95 TPM_x_1_1_2_1 + 110 TPM_x_1_1_3_1 + 15 TPM_x_1_1_4_1
+ 150 TPM_x_1_1_5_1 + 140 TPM_x_1_1_6_1 + 80 TPM_x_1_1_7_1 + 60 TPM_x_1_1_8_1
+ 55 TPM_x_1_1_9_1 + 135 TPS_x_2_1_10_1 + 25 TPS_x_2_1_14_1
+ 70 TPS_x_2_1_1_1 + 15 TPS_x_2_1_2_1 + 70 TPS_x_2_1_3_1 + 205 TPS_x_2_1_6_1
<= 136.363636364

_C45: 5 TPM_x_1_1_10_1 + 210 TPM_x_1_1_11_1 + 10 TPM_x_1_1_12_1
+ 10 TPM_x_1_1_13_1 + 10 TPM_x_1_1_14_1 + 10 TPM_x_1_1_15_1
+ 10 TPM_x_1_1_16_1 + 10 TPM_x_1_1_17_1 + 15 TPM_x_1_1_18_1
+ 80 TPM_x_1_1_1_1 + 95 TPM_x_1_1_2_1 + 110 TPM_x_1_1_3_1 + 15 TPM_x_1_1_4_1
+ 150 TPM_x_1_1_5_1 + 140 TPM_x_1_1_6_1 + 80 TPM_x_1_1_7_1 + 60 TPM_x_1_1_8_1
+ 55 TPM_x_1_1_9_1 + 135 TPS_x_2_1_10_1 + 25 TPS_x_2_1_14_1
+ 70 TPS_x_2_1_1_1 + 15 TPS_x_2_1_2_1 + 70 TPS_x_2_1_3_1 + 205 TPS_x_2_1_6_1
>= 0

_C46: 5 TPM_x_1_1_10_2 + 210 TPM_x_1_1_11_2 + 10 TPM_x_1_1_12_2
+ 10 TPM_x_1_1_13_2 + 10 TPM_x_1_1_14_2 + 10 TPM_x_1_1_15_2
+ 10 TPM_x_1_1_16_2 + 10 TPM_x_1_1_17_2 + 15 TPM_x_1_1_18_2
+ 80 TPM_x_1_1_1_2 + 95 TPM_x_1_1_2_2 + 110 TPM_x_1_1_3_2 + 15 TPM_x_1_1_4_2
+ 150 TPM_x_1_1_5_2 + 140 TPM_x_1_1_6_2 + 80 TPM_x_1_1_7_2 + 60 TPM_x_1_1_8_2
+ 55 TPM_x_1_1_9_2 + 135 TPS_x_2_1_10_2 + 25 TPS_x_2_1_14_2
+ 70 TPS_x_2_1_1_2 + 15 TPS_x_2_1_2_2 + 70 TPS_x_2_1_3_2 + 205 TPS_x_2_1_6_2
<= 136.363636364

_C47: 5 TPM_x_1_1_10_2 + 210 TPM_x_1_1_11_2 + 10 TPM_x_1_1_12_2
+ 10 TPM_x_1_1_13_2 + 10 TPM_x_1_1_14_2 + 10 TPM_x_1_1_15_2
+ 10 TPM_x_1_1_16_2 + 10 TPM_x_1_1_17_2 + 15 TPM_x_1_1_18_2
+ 80 TPM_x_1_1_1_2 + 95 TPM_x_1_1_2_2 + 110 TPM_x_1_1_3_2 + 15 TPM_x_1_1_4_2
+ 150 TPM_x_1_1_5_2 + 140 TPM_x_1_1_6_2 + 80 TPM_x_1_1_7_2 + 60 TPM_x_1_1_8_2
+ 55 TPM_x_1_1_9_2 + 135 TPS_x_2_1_10_2 + 25 TPS_x_2_1_14_2
+ 70 TPS_x_2_1_1_2 + 15 TPS_x_2_1_2_2 + 70 TPS_x_2_1_3_2 + 205 TPS_x_2_1_6_2
>= 0

_C48: 5 TPM_x_1_1_10_3 + 210 TPM_x_1_1_11_3 + 10 TPM_x_1_1_12_3
+ 10 TPM_x_1_1_13_3 + 10 TPM_x_1_1_14_3 + 10 TPM_x_1_1_15_3
+ 10 TPM_x_1_1_16_3 + 10 TPM_x_1_1_17_3 + 15 TPM_x_1_1_18_3
+ 80 TPM_x_1_1_1_3 + 95 TPM_x_1_1_2_3 + 110 TPM_x_1_1_3_3 + 15 TPM_x_1_1_4_3
+ 150 TPM_x_1_1_5_3 + 140 TPM_x_1_1_6_3 + 80 TPM_x_1_1_7_3 + 60 TPM_x_1_1_8_3
+ 55 TPM_x_1_1_9_3 + 135 TPS_x_2_1_10_3 + 25 TPS_x_2_1_14_3
+ 70 TPS_x_2_1_1_3 + 15 TPS_x_2_1_2_3 + 70 TPS_x_2_1_3_3 + 205 TPS_x_2_1_6_3
<= 136.363636364

_C49: 5 TPM_x_1_1_10_3 + 210 TPM_x_1_1_11_3 + 10 TPM_x_1_1_12_3
+ 10 TPM_x_1_1_13_3 + 10 TPM_x_1_1_14_3 + 10 TPM_x_1_1_15_3
+ 10 TPM_x_1_1_16_3 + 10 TPM_x_1_1_17_3 + 15 TPM_x_1_1_18_3
+ 80 TPM_x_1_1_1_3 + 95 TPM_x_1_1_2_3 + 110 TPM_x_1_1_3_3 + 15 TPM_x_1_1_4_3
+ 150 TPM_x_1_1_5_3 + 140 TPM_x_1_1_6_3 + 80 TPM_x_1_1_7_3 + 60 TPM_x_1_1_8_3

+ 55 TPM_x_1_1_9_3 + 135 TPS_x_2_1_10_3 + 25 TPS_x_2_1_14_3
+ 70 TPS_x_2_1_1_3 + 15 TPS_x_2_1_2_3 + 70 TPS_x_2_1_3_3 + 205 TPS_x_2_1_6_3
>= 0

_C50: 460 TPM_x_1_1_10_1 + 1830 TPM_x_1_1_11_1 + 1770 TPM_x_1_1_12_1
+ 1880 TPM_x_1_1_13_1 + 2105 TPM_x_1_1_14_1 + 1120 TPM_x_1_1_15_1
+ 1230 TPM_x_1_1_16_1 + 1455 TPM_x_1_1_17_1 + 750 TPM_x_1_1_18_1
+ 640 TPM_x_1_1_19_1 + 1700 TPM_x_1_1_1_1 + 1810 TPM_x_1_1_2_1
+ 1690 TPM_x_1_1_3_1 + 1330 TPM_x_1_1_4_1 + 2030 TPM_x_1_1_5_1
+ 1880 TPM_x_1_1_6_1 + 2510 TPM_x_1_1_7_1 + 730 TPM_x_1_1_8_1
+ 720 TPM_x_1_1_9_1 + 750 TPS_x_2_1_10_1 + 620 TPS_x_2_1_11_1
+ 470 TPS_x_2_1_12_1 + 290 TPS_x_2_1_13_1 + 115 TPS_x_2_1_14_1
+ 680 TPS_x_2_1_1_1 + 105 TPS_x_2_1_2_1 + 1700 TPS_x_2_1_3_1
+ 1350 TPS_x_2_1_4_1 + 710 TPS_x_2_1_5_1 + 1200 TPS_x_2_1_6_1
+ 1170 TPS_x_2_1_7_1 + 190 TPS_x_2_1_8_1 + 440 TPS_x_2_1_9_1 <= 1045.45454545

_C51: 460 TPM_x_1_1_10_1 + 1830 TPM_x_1_1_11_1 + 1770 TPM_x_1_1_12_1
+ 1880 TPM_x_1_1_13_1 + 2105 TPM_x_1_1_14_1 + 1120 TPM_x_1_1_15_1
+ 1230 TPM_x_1_1_16_1 + 1455 TPM_x_1_1_17_1 + 750 TPM_x_1_1_18_1
+ 640 TPM_x_1_1_19_1 + 1700 TPM_x_1_1_1_1 + 1810 TPM_x_1_1_2_1
+ 1690 TPM_x_1_1_3_1 + 1330 TPM_x_1_1_4_1 + 2030 TPM_x_1_1_5_1
+ 1880 TPM_x_1_1_6_1 + 2510 TPM_x_1_1_7_1 + 730 TPM_x_1_1_8_1
+ 720 TPM_x_1_1_9_1 + 750 TPS_x_2_1_10_1 + 620 TPS_x_2_1_11_1
+ 470 TPS_x_2_1_12_1 + 290 TPS_x_2_1_13_1 + 115 TPS_x_2_1_14_1
+ 680 TPS_x_2_1_1_1 + 105 TPS_x_2_1_2_1 + 1700 TPS_x_2_1_3_1
+ 1350 TPS_x_2_1_4_1 + 710 TPS_x_2_1_5_1 + 1200 TPS_x_2_1_6_1
+ 1170 TPS_x_2_1_7_1 + 190 TPS_x_2_1_8_1 + 440 TPS_x_2_1_9_1 >= 0

_C52: 460 TPM_x_1_1_10_2 + 1830 TPM_x_1_1_11_2 + 1770 TPM_x_1_1_12_2
+ 1880 TPM_x_1_1_13_2 + 2105 TPM_x_1_1_14_2 + 1120 TPM_x_1_1_15_2
+ 1230 TPM_x_1_1_16_2 + 1455 TPM_x_1_1_17_2 + 750 TPM_x_1_1_18_2
+ 640 TPM_x_1_1_19_2 + 1700 TPM_x_1_1_1_2 + 1810 TPM_x_1_1_2_2
+ 1690 TPM_x_1_1_3_2 + 1330 TPM_x_1_1_4_2 + 2030 TPM_x_1_1_5_2
+ 1880 TPM_x_1_1_6_2 + 2510 TPM_x_1_1_7_2 + 730 TPM_x_1_1_8_2
+ 720 TPM_x_1_1_9_2 + 750 TPS_x_2_1_10_2 + 620 TPS_x_2_1_11_2
+ 470 TPS_x_2_1_12_2 + 290 TPS_x_2_1_13_2 + 115 TPS_x_2_1_14_2
+ 680 TPS_x_2_1_1_2 + 105 TPS_x_2_1_2_2 + 1700 TPS_x_2_1_3_2
+ 1350 TPS_x_2_1_4_2 + 710 TPS_x_2_1_5_2 + 1200 TPS_x_2_1_6_2
+ 1170 TPS_x_2_1_7_2 + 190 TPS_x_2_1_8_2 + 440 TPS_x_2_1_9_2 <= 1045.45454545

_C53: 460 TPM_x_1_1_10_2 + 1830 TPM_x_1_1_11_2 + 1770 TPM_x_1_1_12_2
+ 1880 TPM_x_1_1_13_2 + 2105 TPM_x_1_1_14_2 + 1120 TPM_x_1_1_15_2
+ 1230 TPM_x_1_1_16_2 + 1455 TPM_x_1_1_17_2 + 750 TPM_x_1_1_18_2
+ 640 TPM_x_1_1_19_2 + 1700 TPM_x_1_1_1_2 + 1810 TPM_x_1_1_2_2
+ 1690 TPM_x_1_1_3_2 + 1330 TPM_x_1_1_4_2 + 2030 TPM_x_1_1_5_2
+ 1880 TPM_x_1_1_6_2 + 2510 TPM_x_1_1_7_2 + 730 TPM_x_1_1_8_2
+ 720 TPM_x_1_1_9_2 + 750 TPS_x_2_1_10_2 + 620 TPS_x_2_1_11_2

+ 470 TPS_x_2_1_12_2 + 290 TPS_x_2_1_13_2 + 115 TPS_x_2_1_14_2
+ 680 TPS_x_2_1_1_2 + 105 TPS_x_2_1_2_2 + 1700 TPS_x_2_1_3_2
+ 1350 TPS_x_2_1_4_2 + 710 TPS_x_2_1_5_2 + 1200 TPS_x_2_1_6_2
+ 1170 TPS_x_2_1_7_2 + 190 TPS_x_2_1_8_2 + 440 TPS_x_2_1_9_2 >= 0

_C54: 460 TPM_x_1_1_10_3 + 1830 TPM_x_1_1_11_3 + 1770 TPM_x_1_1_12_3
+ 1880 TPM_x_1_1_13_3 + 2105 TPM_x_1_1_14_3 + 1120 TPM_x_1_1_15_3
+ 1230 TPM_x_1_1_16_3 + 1455 TPM_x_1_1_17_3 + 750 TPM_x_1_1_18_3
+ 640 TPM_x_1_1_19_3 + 1700 TPM_x_1_1_1_3 + 1810 TPM_x_1_1_2_3
+ 1690 TPM_x_1_1_3_3 + 1330 TPM_x_1_1_4_3 + 2030 TPM_x_1_1_5_3
+ 1880 TPM_x_1_1_6_3 + 2510 TPM_x_1_1_7_3 + 730 TPM_x_1_1_8_3
+ 720 TPM_x_1_1_9_3 + 750 TPS_x_2_1_10_3 + 620 TPS_x_2_1_11_3
+ 470 TPS_x_2_1_12_3 + 290 TPS_x_2_1_13_3 + 115 TPS_x_2_1_14_3
+ 680 TPS_x_2_1_1_3 + 105 TPS_x_2_1_2_3 + 1700 TPS_x_2_1_3_3
+ 1350 TPS_x_2_1_4_3 + 710 TPS_x_2_1_5_3 + 1200 TPS_x_2_1_6_3
+ 1170 TPS_x_2_1_7_3 + 190 TPS_x_2_1_8_3 + 440 TPS_x_2_1_9_3 <= 1045.45454545

_C55: 460 TPM_x_1_1_10_3 + 1830 TPM_x_1_1_11_3 + 1770 TPM_x_1_1_12_3
+ 1880 TPM_x_1_1_13_3 + 2105 TPM_x_1_1_14_3 + 1120 TPM_x_1_1_15_3
+ 1230 TPM_x_1_1_16_3 + 1455 TPM_x_1_1_17_3 + 750 TPM_x_1_1_18_3
+ 640 TPM_x_1_1_19_3 + 1700 TPM_x_1_1_1_3 + 1810 TPM_x_1_1_2_3
+ 1690 TPM_x_1_1_3_3 + 1330 TPM_x_1_1_4_3 + 2030 TPM_x_1_1_5_3
+ 1880 TPM_x_1_1_6_3 + 2510 TPM_x_1_1_7_3 + 730 TPM_x_1_1_8_3
+ 720 TPM_x_1_1_9_3 + 750 TPS_x_2_1_10_3 + 620 TPS_x_2_1_11_3
+ 470 TPS_x_2_1_12_3 + 290 TPS_x_2_1_13_3 + 115 TPS_x_2_1_14_3
+ 680 TPS_x_2_1_1_3 + 105 TPS_x_2_1_2_3 + 1700 TPS_x_2_1_3_3
+ 1350 TPS_x_2_1_4_3 + 710 TPS_x_2_1_5_3 + 1200 TPS_x_2_1_6_3
+ 1170 TPS_x_2_1_7_3 + 190 TPS_x_2_1_8_3 + 440 TPS_x_2_1_9_3 >= 0

_C56: 16 TPM_x_1_1_10_1 + 48 TPM_x_1_1_11_1 + 31 TPM_x_1_1_12_1
+ 117 TPM_x_1_1_13_1 + 61 TPM_x_1_1_14_1 + 31 TPM_x_1_1_15_1
+ 117 TPM_x_1_1_16_1 + 61 TPM_x_1_1_17_1 + 72 TPM_x_1_1_18_1
+ 91 TPM_x_1_1_19_1 + 59 TPM_x_1_1_1_1 + 59 TPM_x_1_1_2_1 + 67 TPM_x_1_1_3_1
+ 59 TPM_x_1_1_4_1 + 39 TPM_x_1_1_5_1 + 70 TPM_x_1_1_6_1 + 79 TPM_x_1_1_7_1
+ 58 TPM_x_1_1_8_1 + 42 TPM_x_1_1_9_1 + 2 TPS_x_2_1_10_1 + 28 TPS_x_2_1_11_1
+ 25 TPS_x_2_1_12_1 + 37 TPS_x_2_1_13_1 + 9 TPS_x_2_1_14_1 + 61 TPS_x_2_1_3_1
+ 70 TPS_x_2_1_4_1 + 62 TPS_x_2_1_5_1 + 58 TPS_x_2_1_6_1 + 60 TPS_x_2_1_7_1
+ 66 TPS_x_2_1_8_1 + 16 TPS_x_2_1_9_1 <= 147.727272727

_C57: 16 TPM_x_1_1_10_1 + 48 TPM_x_1_1_11_1 + 31 TPM_x_1_1_12_1
+ 117 TPM_x_1_1_13_1 + 61 TPM_x_1_1_14_1 + 31 TPM_x_1_1_15_1
+ 117 TPM_x_1_1_16_1 + 61 TPM_x_1_1_17_1 + 72 TPM_x_1_1_18_1
+ 91 TPM_x_1_1_19_1 + 59 TPM_x_1_1_1_1 + 59 TPM_x_1_1_2_1 + 67 TPM_x_1_1_3_1
+ 59 TPM_x_1_1_4_1 + 39 TPM_x_1_1_5_1 + 70 TPM_x_1_1_6_1 + 79 TPM_x_1_1_7_1
+ 58 TPM_x_1_1_8_1 + 42 TPM_x_1_1_9_1 + 2 TPS_x_2_1_10_1 + 28 TPS_x_2_1_11_1
+ 25 TPS_x_2_1_12_1 + 37 TPS_x_2_1_13_1 + 9 TPS_x_2_1_14_1 + 61 TPS_x_2_1_3_1
+ 70 TPS_x_2_1_4_1 + 62 TPS_x_2_1_5_1 + 58 TPS_x_2_1_6_1 + 60 TPS_x_2_1_7_1

+ 3 TPS_x_2_1_11_1 + 6 TPS_x_2_1_12_1 + 10 TPS_x_2_1_13_1 + TPS_x_2_1_14_1
+ 2 TPS_x_2_1_3_1 + 6 TPS_x_2_1_4_1 + 4 TPS_x_2_1_5_1 + 2 TPS_x_2_1_6_1
+ 4 TPS_x_2_1_7_1 + 3 TPS_x_2_1_8_1 + 4 TPS_x_2_1_9_1 >= 9.54545454545

_C63: 5 TPM_x_1_1_10_2 + 8 TPM_x_1_1_11_2 + 8 TPM_x_1_1_12_2
+ 9 TPM_x_1_1_13_2 + 10 TPM_x_1_1_14_2 + 8 TPM_x_1_1_15_2 + 9 TPM_x_1_1_16_2
+ 10 TPM_x_1_1_17_2 + 5 TPM_x_1_1_18_2 + 11 TPM_x_1_1_19_2 + 7 TPM_x_1_1_1_2
+ 7 TPM_x_1_1_2_2 + 4 TPM_x_1_1_3_2 + 12 TPM_x_1_1_4_2 + 5 TPM_x_1_1_5_2
+ 4 TPM_x_1_1_6_2 + 6 TPM_x_1_1_7_2 + 12 TPM_x_1_1_8_2 + 6 TPM_x_1_1_9_2
+ 3 TPS_x_2_1_11_2 + 6 TPS_x_2_1_12_2 + 10 TPS_x_2_1_13_2 + TPS_x_2_1_14_2
+ 2 TPS_x_2_1_3_2 + 6 TPS_x_2_1_4_2 + 4 TPS_x_2_1_5_2 + 2 TPS_x_2_1_6_2
+ 4 TPS_x_2_1_7_2 + 3 TPS_x_2_1_8_2 + 4 TPS_x_2_1_9_2 >= 9.54545454545

_C64: 5 TPM_x_1_1_10_3 + 8 TPM_x_1_1_11_3 + 8 TPM_x_1_1_12_3
+ 9 TPM_x_1_1_13_3 + 10 TPM_x_1_1_14_3 + 8 TPM_x_1_1_15_3 + 9 TPM_x_1_1_16_3
+ 10 TPM_x_1_1_17_3 + 5 TPM_x_1_1_18_3 + 11 TPM_x_1_1_19_3 + 7 TPM_x_1_1_1_3
+ 7 TPM_x_1_1_2_3 + 4 TPM_x_1_1_3_3 + 12 TPM_x_1_1_4_3 + 5 TPM_x_1_1_5_3
+ 4 TPM_x_1_1_6_3 + 6 TPM_x_1_1_7_3 + 12 TPM_x_1_1_8_3 + 6 TPM_x_1_1_9_3
+ 3 TPS_x_2_1_11_3 + 6 TPS_x_2_1_12_3 + 10 TPS_x_2_1_13_3 + TPS_x_2_1_14_3
+ 2 TPS_x_2_1_3_3 + 6 TPS_x_2_1_4_3 + 4 TPS_x_2_1_5_3 + 2 TPS_x_2_1_6_3
+ 4 TPS_x_2_1_7_3 + 3 TPS_x_2_1_8_3 + 4 TPS_x_2_1_9_3 >= 9.54545454545

_C65: 7 TPM_x_1_1_10_1 + 6 TPM_x_1_1_11_1 + 99 TPM_x_1_1_12_1
+ 103 TPM_x_1_1_13_1 + 95 TPM_x_1_1_14_1 + 54 TPM_x_1_1_15_1
+ 58 TPM_x_1_1_16_1 + 50 TPM_x_1_1_17_1 + 16 TPM_x_1_1_18_1
+ 25 TPM_x_1_1_19_1 + 11 TPM_x_1_1_1_1 + 11 TPM_x_1_1_2_1 + 23 TPM_x_1_1_3_1
+ 6 TPM_x_1_1_4_1 + 7 TPM_x_1_1_5_1 + TPM_x_1_1_6_1 + 16 TPM_x_1_1_8_1
+ 9 TPM_x_1_1_9_1 + 19 TPS_x_2_1_11_1 + 9 TPS_x_2_1_12_1 + 15 TPS_x_2_1_13_1
+ TPS_x_2_1_14_1 + 17 TPS_x_2_1_3_1 + 19 TPS_x_2_1_5_1 + 28 TPS_x_2_1_6_1
+ 28 TPS_x_2_1_7_1 + 7 TPS_x_2_1_9_1 <= 34.0909090909

_C66: 7 TPM_x_1_1_10_1 + 6 TPM_x_1_1_11_1 + 99 TPM_x_1_1_12_1
+ 103 TPM_x_1_1_13_1 + 95 TPM_x_1_1_14_1 + 54 TPM_x_1_1_15_1
+ 58 TPM_x_1_1_16_1 + 50 TPM_x_1_1_17_1 + 16 TPM_x_1_1_18_1
+ 25 TPM_x_1_1_19_1 + 11 TPM_x_1_1_1_1 + 11 TPM_x_1_1_2_1 + 23 TPM_x_1_1_3_1
+ 6 TPM_x_1_1_4_1 + 7 TPM_x_1_1_5_1 + TPM_x_1_1_6_1 + 16 TPM_x_1_1_8_1
+ 9 TPM_x_1_1_9_1 + 19 TPS_x_2_1_11_1 + 9 TPS_x_2_1_12_1 + 15 TPS_x_2_1_13_1
+ TPS_x_2_1_14_1 + 17 TPS_x_2_1_3_1 + 19 TPS_x_2_1_5_1 + 28 TPS_x_2_1_6_1
+ 28 TPS_x_2_1_7_1 + 7 TPS_x_2_1_9_1 >= 0

_C67: 7 TPM_x_1_1_10_2 + 6 TPM_x_1_1_11_2 + 99 TPM_x_1_1_12_2
+ 103 TPM_x_1_1_13_2 + 95 TPM_x_1_1_14_2 + 54 TPM_x_1_1_15_2
+ 58 TPM_x_1_1_16_2 + 50 TPM_x_1_1_17_2 + 16 TPM_x_1_1_18_2
+ 25 TPM_x_1_1_19_2 + 11 TPM_x_1_1_1_2 + 11 TPM_x_1_1_2_2 + 23 TPM_x_1_1_3_2
+ 6 TPM_x_1_1_4_2 + 7 TPM_x_1_1_5_2 + TPM_x_1_1_6_2 + 16 TPM_x_1_1_8_2
+ 9 TPM_x_1_1_9_2 + 19 TPS_x_2_1_11_2 + 9 TPS_x_2_1_12_2 + 15 TPS_x_2_1_13_2
+ TPS_x_2_1_14_2 + 17 TPS_x_2_1_3_2 + 19 TPS_x_2_1_5_2 + 28 TPS_x_2_1_6_2

$$+ 28 \text{TPS_x_2_1_7_2} + 7 \text{TPS_x_2_1_9_2} \leq 34.0909090909$$

$$\begin{aligned} _C68: & 7 \text{TPM_x_1_1_10_2} + 6 \text{TPM_x_1_1_11_2} + 99 \text{TPM_x_1_1_12_2} \\ & + 103 \text{TPM_x_1_1_13_2} + 95 \text{TPM_x_1_1_14_2} + 54 \text{TPM_x_1_1_15_2} \\ & + 58 \text{TPM_x_1_1_16_2} + 50 \text{TPM_x_1_1_17_2} + 16 \text{TPM_x_1_1_18_2} \\ & + 25 \text{TPM_x_1_1_19_2} + 11 \text{TPM_x_1_1_1_2} + 11 \text{TPM_x_1_1_2_2} + 23 \text{TPM_x_1_1_3_2} \\ & + 6 \text{TPM_x_1_1_4_2} + 7 \text{TPM_x_1_1_5_2} + \text{TPM_x_1_1_6_2} + 16 \text{TPM_x_1_1_8_2} \\ & + 9 \text{TPM_x_1_1_9_2} + 19 \text{TPS_x_2_1_11_2} + 9 \text{TPS_x_2_1_12_2} + 15 \text{TPS_x_2_1_13_2} \\ & + \text{TPS_x_2_1_14_2} + 17 \text{TPS_x_2_1_3_2} + 19 \text{TPS_x_2_1_5_2} + 28 \text{TPS_x_2_1_6_2} \\ & + 28 \text{TPS_x_2_1_7_2} + 7 \text{TPS_x_2_1_9_2} \geq 0 \end{aligned}$$

$$\begin{aligned} _C69: & 7 \text{TPM_x_1_1_10_3} + 6 \text{TPM_x_1_1_11_3} + 99 \text{TPM_x_1_1_12_3} \\ & + 103 \text{TPM_x_1_1_13_3} + 95 \text{TPM_x_1_1_14_3} + 54 \text{TPM_x_1_1_15_3} \\ & + 58 \text{TPM_x_1_1_16_3} + 50 \text{TPM_x_1_1_17_3} + 16 \text{TPM_x_1_1_18_3} \\ & + 25 \text{TPM_x_1_1_19_3} + 11 \text{TPM_x_1_1_1_3} + 11 \text{TPM_x_1_1_2_3} + 23 \text{TPM_x_1_1_3_3} \\ & + 6 \text{TPM_x_1_1_4_3} + 7 \text{TPM_x_1_1_5_3} + \text{TPM_x_1_1_6_3} + 16 \text{TPM_x_1_1_8_3} \\ & + 9 \text{TPM_x_1_1_9_3} + 19 \text{TPS_x_2_1_11_3} + 9 \text{TPS_x_2_1_12_3} + 15 \text{TPS_x_2_1_13_3} \\ & + \text{TPS_x_2_1_14_3} + 17 \text{TPS_x_2_1_3_3} + 19 \text{TPS_x_2_1_5_3} + 28 \text{TPS_x_2_1_6_3} \\ & + 28 \text{TPS_x_2_1_7_3} + 7 \text{TPS_x_2_1_9_3} \leq 34.0909090909 \end{aligned}$$

$$\begin{aligned} _C70: & 7 \text{TPM_x_1_1_10_3} + 6 \text{TPM_x_1_1_11_3} + 99 \text{TPM_x_1_1_12_3} \\ & + 103 \text{TPM_x_1_1_13_3} + 95 \text{TPM_x_1_1_14_3} + 54 \text{TPM_x_1_1_15_3} \\ & + 58 \text{TPM_x_1_1_16_3} + 50 \text{TPM_x_1_1_17_3} + 16 \text{TPM_x_1_1_18_3} \\ & + 25 \text{TPM_x_1_1_19_3} + 11 \text{TPM_x_1_1_1_3} + 11 \text{TPM_x_1_1_2_3} + 23 \text{TPM_x_1_1_3_3} \\ & + 6 \text{TPM_x_1_1_4_3} + 7 \text{TPM_x_1_1_5_3} + \text{TPM_x_1_1_6_3} + 16 \text{TPM_x_1_1_8_3} \\ & + 9 \text{TPM_x_1_1_9_3} + 19 \text{TPS_x_2_1_11_3} + 9 \text{TPS_x_2_1_12_3} + 15 \text{TPS_x_2_1_13_3} \\ & + \text{TPS_x_2_1_14_3} + 17 \text{TPS_x_2_1_3_3} + 19 \text{TPS_x_2_1_5_3} + 28 \text{TPS_x_2_1_6_3} \\ & + 28 \text{TPS_x_2_1_7_3} + 7 \text{TPS_x_2_1_9_3} \geq 0 \end{aligned}$$

$$\begin{aligned} _C71: & 24 \text{TPM_x_1_1_10_1} + 40 \text{TPM_x_1_1_11_1} + 23 \text{TPM_x_1_1_12_1} \\ & + 41 \text{TPM_x_1_1_13_1} + 35 \text{TPM_x_1_1_14_1} + 14 \text{TPM_x_1_1_15_1} \\ & + 32 \text{TPM_x_1_1_16_1} + 26 \text{TPM_x_1_1_17_1} + 14 \text{TPM_x_1_1_18_1} \\ & + 24 \text{TPM_x_1_1_19_1} + 26 \text{TPM_x_1_1_1_1} + 29 \text{TPM_x_1_1_2_1} + 45 \text{TPM_x_1_1_3_1} \\ & + 25 \text{TPM_x_1_1_4_1} + 36 \text{TPM_x_1_1_5_1} + 25 \text{TPM_x_1_1_6_1} + 24 \text{TPM_x_1_1_7_1} \\ & + 12 \text{TPM_x_1_1_8_1} + 21 \text{TPM_x_1_1_9_1} + 15 \text{TPS_x_2_1_10_1} + 4 \text{TPS_x_2_1_11_1} \\ & + 5 \text{TPS_x_2_1_12_1} + 3 \text{TPS_x_2_1_13_1} + \text{TPS_x_2_1_14_1} + 11 \text{TPS_x_2_1_1_1} \\ & + 4 \text{TPS_x_2_1_2_1} + 32 \text{TPS_x_2_1_3_1} + 6 \text{TPS_x_2_1_4_1} + 3 \text{TPS_x_2_1_5_1} \\ & + 10 \text{TPS_x_2_1_6_1} + 6 \text{TPS_x_2_1_7_1} + 6 \text{TPS_x_2_1_8_1} + 4 \text{TPS_x_2_1_9_1} \\ & \leq 119.318181818 \end{aligned}$$

$$\begin{aligned} _C72: & 24 \text{TPM_x_1_1_10_1} + 40 \text{TPM_x_1_1_11_1} + 23 \text{TPM_x_1_1_12_1} \\ & + 41 \text{TPM_x_1_1_13_1} + 35 \text{TPM_x_1_1_14_1} + 14 \text{TPM_x_1_1_15_1} \\ & + 32 \text{TPM_x_1_1_16_1} + 26 \text{TPM_x_1_1_17_1} + 14 \text{TPM_x_1_1_18_1} \\ & + 24 \text{TPM_x_1_1_19_1} + 26 \text{TPM_x_1_1_1_1} + 29 \text{TPM_x_1_1_2_1} + 45 \text{TPM_x_1_1_3_1} \\ & + 25 \text{TPM_x_1_1_4_1} + 36 \text{TPM_x_1_1_5_1} + 25 \text{TPM_x_1_1_6_1} + 24 \text{TPM_x_1_1_7_1} \\ & + 12 \text{TPM_x_1_1_8_1} + 21 \text{TPM_x_1_1_9_1} + 15 \text{TPS_x_2_1_10_1} + 4 \text{TPS_x_2_1_11_1} \\ & + 5 \text{TPS_x_2_1_12_1} + 3 \text{TPS_x_2_1_13_1} + \text{TPS_x_2_1_14_1} + 11 \text{TPS_x_2_1_1_1} \end{aligned}$$

+ 4 TPS_x_2_1_2_1 + 32 TPS_x_2_1_3_1 + 6 TPS_x_2_1_4_1 + 3 TPS_x_2_1_5_1
+ 10 TPS_x_2_1_6_1 + 6 TPS_x_2_1_7_1 + 6 TPS_x_2_1_8_1 + 4 TPS_x_2_1_9_1
>= 14.2045454545

_C73: 24 TPM_x_1_1_10_2 + 40 TPM_x_1_1_11_2 + 23 TPM_x_1_1_12_2
+ 41 TPM_x_1_1_13_2 + 35 TPM_x_1_1_14_2 + 14 TPM_x_1_1_15_2
+ 32 TPM_x_1_1_16_2 + 26 TPM_x_1_1_17_2 + 14 TPM_x_1_1_18_2
+ 24 TPM_x_1_1_19_2 + 26 TPM_x_1_1_1_2 + 29 TPM_x_1_1_2_2 + 45 TPM_x_1_1_3_2
+ 25 TPM_x_1_1_4_2 + 36 TPM_x_1_1_5_2 + 25 TPM_x_1_1_6_2 + 24 TPM_x_1_1_7_2
+ 12 TPM_x_1_1_8_2 + 21 TPM_x_1_1_9_2 + 15 TPS_x_2_1_10_2 + 4 TPS_x_2_1_11_2
+ 5 TPS_x_2_1_12_2 + 3 TPS_x_2_1_13_2 + TPS_x_2_1_14_2 + 11 TPS_x_2_1_1_2
+ 4 TPS_x_2_1_2_2 + 32 TPS_x_2_1_3_2 + 6 TPS_x_2_1_4_2 + 3 TPS_x_2_1_5_2
+ 10 TPS_x_2_1_6_2 + 6 TPS_x_2_1_7_2 + 6 TPS_x_2_1_8_2 + 4 TPS_x_2_1_9_2
<= 119.318181818

_C74: 24 TPM_x_1_1_10_2 + 40 TPM_x_1_1_11_2 + 23 TPM_x_1_1_12_2
+ 41 TPM_x_1_1_13_2 + 35 TPM_x_1_1_14_2 + 14 TPM_x_1_1_15_2
+ 32 TPM_x_1_1_16_2 + 26 TPM_x_1_1_17_2 + 14 TPM_x_1_1_18_2
+ 24 TPM_x_1_1_19_2 + 26 TPM_x_1_1_1_2 + 29 TPM_x_1_1_2_2 + 45 TPM_x_1_1_3_2
+ 25 TPM_x_1_1_4_2 + 36 TPM_x_1_1_5_2 + 25 TPM_x_1_1_6_2 + 24 TPM_x_1_1_7_2
+ 12 TPM_x_1_1_8_2 + 21 TPM_x_1_1_9_2 + 15 TPS_x_2_1_10_2 + 4 TPS_x_2_1_11_2
+ 5 TPS_x_2_1_12_2 + 3 TPS_x_2_1_13_2 + TPS_x_2_1_14_2 + 11 TPS_x_2_1_1_2
+ 4 TPS_x_2_1_2_2 + 32 TPS_x_2_1_3_2 + 6 TPS_x_2_1_4_2 + 3 TPS_x_2_1_5_2
+ 10 TPS_x_2_1_6_2 + 6 TPS_x_2_1_7_2 + 6 TPS_x_2_1_8_2 + 4 TPS_x_2_1_9_2
>= 14.2045454545

_C75: 24 TPM_x_1_1_10_3 + 40 TPM_x_1_1_11_3 + 23 TPM_x_1_1_12_3
+ 41 TPM_x_1_1_13_3 + 35 TPM_x_1_1_14_3 + 14 TPM_x_1_1_15_3
+ 32 TPM_x_1_1_16_3 + 26 TPM_x_1_1_17_3 + 14 TPM_x_1_1_18_3
+ 24 TPM_x_1_1_19_3 + 26 TPM_x_1_1_1_3 + 29 TPM_x_1_1_2_3 + 45 TPM_x_1_1_3_3
+ 25 TPM_x_1_1_4_3 + 36 TPM_x_1_1_5_3 + 25 TPM_x_1_1_6_3 + 24 TPM_x_1_1_7_3
+ 12 TPM_x_1_1_8_3 + 21 TPM_x_1_1_9_3 + 15 TPS_x_2_1_10_3 + 4 TPS_x_2_1_11_3
+ 5 TPS_x_2_1_12_3 + 3 TPS_x_2_1_13_3 + TPS_x_2_1_14_3 + 11 TPS_x_2_1_1_3
+ 4 TPS_x_2_1_2_3 + 32 TPS_x_2_1_3_3 + 6 TPS_x_2_1_4_3 + 3 TPS_x_2_1_5_3
+ 10 TPS_x_2_1_6_3 + 6 TPS_x_2_1_7_3 + 6 TPS_x_2_1_8_3 + 4 TPS_x_2_1_9_3
<= 119.318181818

_C76: 24 TPM_x_1_1_10_3 + 40 TPM_x_1_1_11_3 + 23 TPM_x_1_1_12_3
+ 41 TPM_x_1_1_13_3 + 35 TPM_x_1_1_14_3 + 14 TPM_x_1_1_15_3
+ 32 TPM_x_1_1_16_3 + 26 TPM_x_1_1_17_3 + 14 TPM_x_1_1_18_3
+ 24 TPM_x_1_1_19_3 + 26 TPM_x_1_1_1_3 + 29 TPM_x_1_1_2_3 + 45 TPM_x_1_1_3_3
+ 25 TPM_x_1_1_4_3 + 36 TPM_x_1_1_5_3 + 25 TPM_x_1_1_6_3 + 24 TPM_x_1_1_7_3
+ 12 TPM_x_1_1_8_3 + 21 TPM_x_1_1_9_3 + 15 TPS_x_2_1_10_3 + 4 TPS_x_2_1_11_3
+ 5 TPS_x_2_1_12_3 + 3 TPS_x_2_1_13_3 + TPS_x_2_1_14_3 + 11 TPS_x_2_1_1_3
+ 4 TPS_x_2_1_2_3 + 32 TPS_x_2_1_3_3 + 6 TPS_x_2_1_4_3 + 3 TPS_x_2_1_5_3
+ 10 TPS_x_2_1_6_3 + 6 TPS_x_2_1_7_3 + 6 TPS_x_2_1_8_3 + 4 TPS_x_2_1_9_3
>= 14.2045454545

VARIABLES

0 <= TPM_x_1_1_10_1 <= 1 Integer
0 <= TPM_x_1_1_10_2 <= 1 Integer
0 <= TPM_x_1_1_10_3 <= 1 Integer
0 <= TPM_x_1_1_11_1 <= 1 Integer
0 <= TPM_x_1_1_11_2 <= 1 Integer
0 <= TPM_x_1_1_11_3 <= 1 Integer
0 <= TPM_x_1_1_12_1 <= 1 Integer
0 <= TPM_x_1_1_12_2 <= 1 Integer
0 <= TPM_x_1_1_12_3 <= 1 Integer
0 <= TPM_x_1_1_13_1 <= 1 Integer
0 <= TPM_x_1_1_13_2 <= 1 Integer
0 <= TPM_x_1_1_13_3 <= 1 Integer
0 <= TPM_x_1_1_14_1 <= 1 Integer
0 <= TPM_x_1_1_14_2 <= 1 Integer
0 <= TPM_x_1_1_14_3 <= 1 Integer
0 <= TPM_x_1_1_15_1 <= 1 Integer
0 <= TPM_x_1_1_15_2 <= 1 Integer
0 <= TPM_x_1_1_15_3 <= 1 Integer
0 <= TPM_x_1_1_16_1 <= 1 Integer
0 <= TPM_x_1_1_16_2 <= 1 Integer
0 <= TPM_x_1_1_16_3 <= 1 Integer
0 <= TPM_x_1_1_17_1 <= 1 Integer
0 <= TPM_x_1_1_17_2 <= 1 Integer
0 <= TPM_x_1_1_17_3 <= 1 Integer
0 <= TPM_x_1_1_18_1 <= 1 Integer
0 <= TPM_x_1_1_18_2 <= 1 Integer
0 <= TPM_x_1_1_18_3 <= 1 Integer
0 <= TPM_x_1_1_19_1 <= 1 Integer
0 <= TPM_x_1_1_19_2 <= 1 Integer
0 <= TPM_x_1_1_19_3 <= 1 Integer
0 <= TPM_x_1_1_1_1 <= 1 Integer
0 <= TPM_x_1_1_1_2 <= 1 Integer
0 <= TPM_x_1_1_1_3 <= 1 Integer
0 <= TPM_x_1_1_2_1 <= 1 Integer
0 <= TPM_x_1_1_2_2 <= 1 Integer
0 <= TPM_x_1_1_2_3 <= 1 Integer
0 <= TPM_x_1_1_3_1 <= 1 Integer
0 <= TPM_x_1_1_3_2 <= 1 Integer
0 <= TPM_x_1_1_3_3 <= 1 Integer
0 <= TPM_x_1_1_4_1 <= 1 Integer
0 <= TPM_x_1_1_4_2 <= 1 Integer
0 <= TPM_x_1_1_4_3 <= 1 Integer
0 <= TPM_x_1_1_5_1 <= 1 Integer
0 <= TPM_x_1_1_5_2 <= 1 Integer
0 <= TPM_x_1_1_5_3 <= 1 Integer

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0 <= TPM_x_1_1_6_1 <= 1 Integer
0 <= TPM_x_1_1_6_2 <= 1 Integer
0 <= TPM_x_1_1_6_3 <= 1 Integer
0 <= TPM_x_1_1_7_1 <= 1 Integer
0 <= TPM_x_1_1_7_2 <= 1 Integer
0 <= TPM_x_1_1_7_3 <= 1 Integer
0 <= TPM_x_1_1_8_1 <= 1 Integer
0 <= TPM_x_1_1_8_2 <= 1 Integer
0 <= TPM_x_1_1_8_3 <= 1 Integer
0 <= TPM_x_1_1_9_1 <= 1 Integer
0 <= TPM_x_1_1_9_2 <= 1 Integer
0 <= TPM_x_1_1_9_3 <= 1 Integer
0 <= TPS_x_2_1_10_1 <= 1 Integer
0 <= TPS_x_2_1_10_2 <= 1 Integer
0 <= TPS_x_2_1_10_3 <= 1 Integer
0 <= TPS_x_2_1_11_1 <= 1 Integer
0 <= TPS_x_2_1_11_2 <= 1 Integer
0 <= TPS_x_2_1_11_3 <= 1 Integer
0 <= TPS_x_2_1_12_1 <= 1 Integer
0 <= TPS_x_2_1_12_2 <= 1 Integer
0 <= TPS_x_2_1_12_3 <= 1 Integer
0 <= TPS_x_2_1_13_1 <= 1 Integer
0 <= TPS_x_2_1_13_2 <= 1 Integer
0 <= TPS_x_2_1_13_3 <= 1 Integer
0 <= TPS_x_2_1_14_1 <= 1 Integer
0 <= TPS_x_2_1_14_2 <= 1 Integer
0 <= TPS_x_2_1_14_3 <= 1 Integer
0 <= TPS_x_2_1_1_1 <= 1 Integer
0 <= TPS_x_2_1_1_2 <= 1 Integer
0 <= TPS_x_2_1_1_3 <= 1 Integer
0 <= TPS_x_2_1_2_1 <= 1 Integer
0 <= TPS_x_2_1_2_2 <= 1 Integer
0 <= TPS_x_2_1_2_3 <= 1 Integer
0 <= TPS_x_2_1_3_1 <= 1 Integer
0 <= TPS_x_2_1_3_2 <= 1 Integer
0 <= TPS_x_2_1_3_3 <= 1 Integer
0 <= TPS_x_2_1_4_1 <= 1 Integer
0 <= TPS_x_2_1_4_2 <= 1 Integer
0 <= TPS_x_2_1_4_3 <= 1 Integer
0 <= TPS_x_2_1_5_1 <= 1 Integer
0 <= TPS_x_2_1_5_2 <= 1 Integer
0 <= TPS_x_2_1_5_3 <= 1 Integer
0 <= TPS_x_2_1_6_1 <= 1 Integer
0 <= TPS_x_2_1_6_2 <= 1 Integer
0 <= TPS_x_2_1_6_3 <= 1 Integer
0 <= TPS_x_2_1_7_1 <= 1 Integer
0 <= TPS_x_2_1_7_2 <= 1 Integer

```

```

0 <= TPS_x_2_1_7_3 <= 1 Integer
0 <= TPS_x_2_1_8_1 <= 1 Integer
0 <= TPS_x_2_1_8_2 <= 1 Integer
0 <= TPS_x_2_1_8_3 <= 1 Integer
0 <= TPS_x_2_1_9_1 <= 1 Integer
0 <= TPS_x_2_1_9_2 <= 1 Integer
0 <= TPS_x_2_1_9_3 <= 1 Integer

```

[39]: LP_OC

[39]: Maximum_three_day_meals_in_OC:

```

MAXIMIZE
0.9576552521161849*OCM_x_1_2_10_1 + 0.9576552521161849*OCM_x_1_2_10_2 +
0.9576552521161849*OCM_x_1_2_10_3 + 0.9318365982191371*OCM_x_1_2_11_1 +
0.9318365982191371*OCM_x_1_2_11_2 + 0.9318365982191371*OCM_x_1_2_11_3 +
1.0919893187223886*OCM_x_1_2_12_1 + 1.0919893187223886*OCM_x_1_2_12_2 +
1.0919893187223886*OCM_x_1_2_12_3 + 1.0031959664229202*OCM_x_1_2_13_1 +
1.0031959664229202*OCM_x_1_2_13_2 + 1.0031959664229202*OCM_x_1_2_13_3 +
1.026136301176557*OCM_x_1_2_14_1 + 1.026136301176557*OCM_x_1_2_14_2 +
1.026136301176557*OCM_x_1_2_14_3 + 0.7824868296691835*OCM_x_1_2_17_1 +
0.7824868296691835*OCM_x_1_2_17_2 + 0.7824868296691835*OCM_x_1_2_17_3 +
0.9989754873696746*OCM_x_1_2_18_1 + 0.9989754873696746*OCM_x_1_2_18_2 +
0.9989754873696746*OCM_x_1_2_18_3 + 0.9073749846446427*OCM_x_1_2_19_1 +
0.9073749846446427*OCM_x_1_2_19_2 + 0.9073749846446427*OCM_x_1_2_19_3 +
1.0531811790535024*OCM_x_1_2_1_1 + 1.0531811790535024*OCM_x_1_2_1_2 +
1.0531811790535024*OCM_x_1_2_1_3 + 0.9272587953447773*OCM_x_1_2_2_1 +
0.9272587953447773*OCM_x_1_2_2_2 + 0.9272587953447773*OCM_x_1_2_2_3 +
0.8835354938275384*OCM_x_1_2_3_1 + 0.8835354938275384*OCM_x_1_2_3_2 +
0.8835354938275384*OCM_x_1_2_3_3 + 0.7687427955627508*OCM_x_1_2_4_1 +
0.7687427955627508*OCM_x_1_2_4_2 + 0.7687427955627508*OCM_x_1_2_4_3 +
0.8539338769759574*OCM_x_1_2_5_1 + 0.8539338769759574*OCM_x_1_2_5_2 +
0.8539338769759574*OCM_x_1_2_5_3 + 0.6287106357949971*OCM_x_1_2_6_1 +
0.6287106357949971*OCM_x_1_2_6_2 + 0.6287106357949971*OCM_x_1_2_6_3 +
0.9073796233883028*OCM_x_1_2_7_1 + 0.9073796233883028*OCM_x_1_2_7_2 +
0.9073796233883028*OCM_x_1_2_7_3 + 0.8407239742915169*OCM_x_1_2_8_1 +
0.8407239742915169*OCM_x_1_2_8_2 + 0.8407239742915169*OCM_x_1_2_8_3 +
0.9530046974534184*OCM_x_1_2_9_1 + 0.9530046974534184*OCM_x_1_2_9_2 +
0.9530046974534184*OCM_x_1_2_9_3 + 3.221053840560431*OCS_x_2_2_12_1 +
3.221053840560431*OCS_x_2_2_12_2 + 3.221053840560431*OCS_x_2_2_12_3 +
3.2614204679070706*OCS_x_2_2_13_1 + 3.2614204679070706*OCS_x_2_2_13_2 +
3.2614204679070706*OCS_x_2_2_13_3 + 3.2676710286005153*OCS_x_2_2_14_1 +
3.2676710286005153*OCS_x_2_2_14_2 + 3.2676710286005153*OCS_x_2_2_14_3 +
3.278190865031152*OCS_x_2_2_15_1 + 3.278190865031152*OCS_x_2_2_15_2 +
3.278190865031152*OCS_x_2_2_15_3 + 2.244009108777738*OCS_x_2_2_16_1 +
2.244009108777738*OCS_x_2_2_16_2 + 2.244009108777738*OCS_x_2_2_16_3 +
1.6077890441826286*OCS_x_2_2_17_1 + 1.6077890441826286*OCS_x_2_2_17_2 +
1.6077890441826286*OCS_x_2_2_17_3 + 0.7323212530181816*OCS_x_2_2_1_1 +

```

0.7323212530181816*OCS_x_2_2_1_2 + 0.7323212530181816*OCS_x_2_2_1_3 +
 2.456212718238581*OCS_x_2_2_23_1 + 2.456212718238581*OCS_x_2_2_23_2 +
 2.456212718238581*OCS_x_2_2_23_3 + 2.8839209576708935*OCS_x_2_2_25_1 +
 2.8839209576708935*OCS_x_2_2_25_2 + 2.8839209576708935*OCS_x_2_2_25_3 +
 2.6146571848571596*OCS_x_2_2_26_1 + 2.6146571848571596*OCS_x_2_2_26_2 +
 2.6146571848571596*OCS_x_2_2_26_3 + 2.6459384303504963*OCS_x_2_2_27_1 +
 2.6459384303504963*OCS_x_2_2_27_2 + 2.6459384303504963*OCS_x_2_2_27_3 +
 2.5259703123813826*OCS_x_2_2_28_1 + 2.5259703123813826*OCS_x_2_2_28_2 +
 2.5259703123813826*OCS_x_2_2_28_3 + 1.8609019155472921*OCS_x_2_2_2_1 +
 1.8609019155472921*OCS_x_2_2_2_2 + 1.8609019155472921*OCS_x_2_2_2_3 +
 3.0172120923521093*OCS_x_2_2_31_1 + 3.0172120923521093*OCS_x_2_2_31_2 +
 3.0172120923521093*OCS_x_2_2_31_3 + 2.9238273155609016*OCS_x_2_2_32_1 +
 2.9238273155609016*OCS_x_2_2_32_2 + 2.9238273155609016*OCS_x_2_2_32_3 +
 3.0304368057487867*OCS_x_2_2_33_1 + 3.0304368057487867*OCS_x_2_2_33_2 +
 3.0304368057487867*OCS_x_2_2_33_3 + 2.993461813695805*OCS_x_2_2_34_1 +
 2.993461813695805*OCS_x_2_2_34_2 + 2.993461813695805*OCS_x_2_2_34_3 +
 1.560471298302596*OCS_x_2_2_3_1 + 1.560471298302596*OCS_x_2_2_3_2 +
 1.560471298302596*OCS_x_2_2_3_3 + 6.375179687580844*OCS_x_2_2_5_1 +
 6.375179687580844*OCS_x_2_2_5_2 + 6.375179687580844*OCS_x_2_2_5_3 +
 1.795297349398081*OCS_x_2_2_7_1 + 1.795297349398081*OCS_x_2_2_7_2 +
 1.795297349398081*OCS_x_2_2_7_3 + 1.631462363073269*OCS_x_2_2_8_1 +
 1.631462363073269*OCS_x_2_2_8_2 + 1.631462363073269*OCS_x_2_2_8_3 + 0.0

SUBJECT TO

Price_constraints_for_OC: 6.7425 OCM_x_1_2_10_1 + 6.7425 OCM_x_1_2_10_2
 + 6.7425 OCM_x_1_2_10_3 + 8.2425 OCM_x_1_2_11_1 + 8.2425 OCM_x_1_2_11_2
 + 8.2425 OCM_x_1_2_11_3 + 6.7425 OCM_x_1_2_12_1 + 6.7425 OCM_x_1_2_12_2
 + 6.7425 OCM_x_1_2_12_3 + 6.9675 OCM_x_1_2_13_1 + 6.9675 OCM_x_1_2_13_2
 + 6.9675 OCM_x_1_2_13_3 + 5.9925 OCM_x_1_2_14_1 + 5.9925 OCM_x_1_2_14_2
 + 5.9925 OCM_x_1_2_14_3 + 5.9925 OCM_x_1_2_17_1 + 5.9925 OCM_x_1_2_17_2
 + 5.9925 OCM_x_1_2_17_3 + 6.7425 OCM_x_1_2_18_1 + 6.7425 OCM_x_1_2_18_2
 + 6.7425 OCM_x_1_2_18_3 + 7.4925 OCM_x_1_2_19_1 + 7.4925 OCM_x_1_2_19_2
 + 7.4925 OCM_x_1_2_19_3 + 6.2175 OCM_x_1_2_1_1 + 6.2175 OCM_x_1_2_1_2
 + 6.2175 OCM_x_1_2_1_3 + 6.9675 OCM_x_1_2_2_1 + 6.9675 OCM_x_1_2_2_2
 + 6.9675 OCM_x_1_2_2_3 + 8.2425 OCM_x_1_2_3_1 + 8.2425 OCM_x_1_2_3_2
 + 8.2425 OCM_x_1_2_3_3 + 8.2425 OCM_x_1_2_4_1 + 8.2425 OCM_x_1_2_4_2
 + 8.2425 OCM_x_1_2_4_3 + 5.9925 OCM_x_1_2_5_1 + 5.9925 OCM_x_1_2_5_2
 + 5.9925 OCM_x_1_2_5_3 + 8.9925 OCM_x_1_2_6_1 + 8.9925 OCM_x_1_2_6_2
 + 8.9925 OCM_x_1_2_6_3 + 6.2175 OCM_x_1_2_7_1 + 6.2175 OCM_x_1_2_7_2
 + 6.2175 OCM_x_1_2_7_3 + 7.4925 OCM_x_1_2_8_1 + 7.4925 OCM_x_1_2_8_2
 + 7.4925 OCM_x_1_2_8_3 + 6.7425 OCM_x_1_2_9_1 + 6.7425 OCM_x_1_2_9_2
 + 6.7425 OCM_x_1_2_9_3 + 1.9425 OCS_x_2_2_12_1 + 1.9425 OCS_x_2_2_12_2
 + 1.9425 OCS_x_2_2_12_3 + 1.9425 OCS_x_2_2_13_1 + 1.9425 OCS_x_2_2_13_2
 + 1.9425 OCS_x_2_2_13_3 + 1.9425 OCS_x_2_2_14_1 + 1.9425 OCS_x_2_2_14_2
 + 1.9425 OCS_x_2_2_14_3 + 1.8375 OCS_x_2_2_15_1 + 1.8375 OCS_x_2_2_15_2
 + 1.8375 OCS_x_2_2_15_3 + 2.7675 OCS_x_2_2_16_1 + 2.7675 OCS_x_2_2_16_2
 + 2.7675 OCS_x_2_2_16_3 + 3.9675 OCS_x_2_2_17_1 + 3.9675 OCS_x_2_2_17_2
 + 3.9675 OCS_x_2_2_17_3 + 6.9675 OCS_x_2_2_1_1 + 6.9675 OCS_x_2_2_1_2

+ 6.9675 OCS_x_2_2_1_3 + 2.7675 OCS_x_2_2_23_1 + 2.7675 OCS_x_2_2_23_2
 + 2.7675 OCS_x_2_2_23_3 + 2.2425 OCS_x_2_2_25_1 + 2.2425 OCS_x_2_2_25_2
 + 2.2425 OCS_x_2_2_25_3 + 2.4675 OCS_x_2_2_26_1 + 2.4675 OCS_x_2_2_26_2
 + 2.4675 OCS_x_2_2_26_3 + 2.4675 OCS_x_2_2_27_1 + 2.4675 OCS_x_2_2_27_2
 + 2.4675 OCS_x_2_2_27_3 + 2.4675 OCS_x_2_2_28_1 + 2.4675 OCS_x_2_2_28_2
 + 2.4675 OCS_x_2_2_28_3 + 3.5175 OCS_x_2_2_2_1 + 3.5175 OCS_x_2_2_2_2
 + 3.5175 OCS_x_2_2_2_3 + 2.0925 OCS_x_2_2_31_1 + 2.0925 OCS_x_2_2_31_2
 + 2.0925 OCS_x_2_2_31_3 + 2.0925 OCS_x_2_2_32_1 + 2.0925 OCS_x_2_2_32_2
 + 2.0925 OCS_x_2_2_32_3 + 2.0925 OCS_x_2_2_33_1 + 2.0925 OCS_x_2_2_33_2
 + 2.0925 OCS_x_2_2_33_3 + 2.0925 OCS_x_2_2_34_1 + 2.0925 OCS_x_2_2_34_2
 + 2.0925 OCS_x_2_2_34_3 + 3.9675 OCS_x_2_2_3_1 + 3.9675 OCS_x_2_2_3_2
 + 3.9675 OCS_x_2_2_3_3 + 0.8925 OCS_x_2_2_5_1 + 0.8925 OCS_x_2_2_5_2
 + 0.8925 OCS_x_2_2_5_3 + 3.7425 OCS_x_2_2_7_1 + 3.7425 OCS_x_2_2_7_2
 + 3.7425 OCS_x_2_2_7_3 + 3.7425 OCS_x_2_2_8_1 + 3.7425 OCS_x_2_2_8_2
 + 3.7425 OCS_x_2_2_8_3 <= 36.4090909091

_C1: OCM_x_1_2_1_1 + OCM_x_1_2_1_2 + OCM_x_1_2_1_3 <= 1

_C2: OCM_x_1_2_2_1 + OCM_x_1_2_2_2 + OCM_x_1_2_2_3 <= 1

_C3: OCM_x_1_2_3_1 + OCM_x_1_2_3_2 + OCM_x_1_2_3_3 <= 1

_C4: OCM_x_1_2_4_1 + OCM_x_1_2_4_2 + OCM_x_1_2_4_3 <= 1

_C5: OCM_x_1_2_5_1 + OCM_x_1_2_5_2 + OCM_x_1_2_5_3 <= 1

_C6: OCM_x_1_2_6_1 + OCM_x_1_2_6_2 + OCM_x_1_2_6_3 <= 1

_C7: OCM_x_1_2_7_1 + OCM_x_1_2_7_2 + OCM_x_1_2_7_3 <= 1

_C8: OCM_x_1_2_8_1 + OCM_x_1_2_8_2 + OCM_x_1_2_8_3 <= 1

_C9: OCM_x_1_2_9_1 + OCM_x_1_2_9_2 + OCM_x_1_2_9_3 <= 1

_C10: OCM_x_1_2_10_1 + OCM_x_1_2_10_2 + OCM_x_1_2_10_3 <= 1

_C11: OCM_x_1_2_11_1 + OCM_x_1_2_11_2 + OCM_x_1_2_11_3 <= 1

_C12: OCM_x_1_2_12_1 + OCM_x_1_2_12_2 + OCM_x_1_2_12_3 <= 1

_C13: OCM_x_1_2_13_1 + OCM_x_1_2_13_2 + OCM_x_1_2_13_3 <= 1

_C14: OCM_x_1_2_14_1 + OCM_x_1_2_14_2 + OCM_x_1_2_14_3 <= 1

_C15: OCM_x_1_2_17_1 + OCM_x_1_2_17_2 + OCM_x_1_2_17_3 <= 1

_C16: OCM_x_1_2_18_1 + OCM_x_1_2_18_2 + OCM_x_1_2_18_3 <= 1

$$_C17: OCM_x_1_2_19_1 + OCM_x_1_2_19_2 + OCM_x_1_2_19_3 \leq 1$$

$$\begin{aligned} OC_one_main_in_first_day: & OCM_x_1_2_10_1 + OCM_x_1_2_11_1 + OCM_x_1_2_12_1 \\ & + OCM_x_1_2_13_1 + OCM_x_1_2_14_1 + OCM_x_1_2_17_1 + OCM_x_1_2_18_1 \\ & + OCM_x_1_2_19_1 + OCM_x_1_2_1_1 + OCM_x_1_2_2_1 + OCM_x_1_2_3_1 \\ & + OCM_x_1_2_4_1 + OCM_x_1_2_5_1 + OCM_x_1_2_6_1 + OCM_x_1_2_7_1 \\ & + OCM_x_1_2_8_1 + OCM_x_1_2_9_1 = 1 \end{aligned}$$

$$\begin{aligned} OC_one_side_in_first_day: & OCS_x_2_2_12_1 + OCS_x_2_2_13_1 + OCS_x_2_2_14_1 \\ & + OCS_x_2_2_15_1 + OCS_x_2_2_16_1 + OCS_x_2_2_17_1 + OCS_x_2_2_1_1 \\ & + OCS_x_2_2_23_1 + OCS_x_2_2_25_1 + OCS_x_2_2_26_1 + OCS_x_2_2_27_1 \\ & + OCS_x_2_2_28_1 + OCS_x_2_2_2_1 + OCS_x_2_2_31_1 + OCS_x_2_2_32_1 \\ & + OCS_x_2_2_33_1 + OCS_x_2_2_34_1 + OCS_x_2_2_3_1 + OCS_x_2_2_5_1 \\ & + OCS_x_2_2_7_1 + OCS_x_2_2_8_1 = 1 \end{aligned}$$

$$\begin{aligned} OC_one_main_in_second_day: & OCM_x_1_2_10_2 + OCM_x_1_2_11_2 + OCM_x_1_2_12_2 \\ & + OCM_x_1_2_13_2 + OCM_x_1_2_14_2 + OCM_x_1_2_17_2 + OCM_x_1_2_18_2 \\ & + OCM_x_1_2_19_2 + OCM_x_1_2_1_2 + OCM_x_1_2_2_2 + OCM_x_1_2_3_2 \\ & + OCM_x_1_2_4_2 + OCM_x_1_2_5_2 + OCM_x_1_2_6_2 + OCM_x_1_2_7_2 \\ & + OCM_x_1_2_8_2 + OCM_x_1_2_9_2 = 1 \end{aligned}$$

$$\begin{aligned} OC_one_side_in_second_day: & OCS_x_2_2_12_2 + OCS_x_2_2_13_2 + OCS_x_2_2_14_2 \\ & + OCS_x_2_2_15_2 + OCS_x_2_2_16_2 + OCS_x_2_2_17_2 + OCS_x_2_2_1_2 \\ & + OCS_x_2_2_23_2 + OCS_x_2_2_25_2 + OCS_x_2_2_26_2 + OCS_x_2_2_27_2 \\ & + OCS_x_2_2_28_2 + OCS_x_2_2_2_2 + OCS_x_2_2_31_2 + OCS_x_2_2_32_2 \\ & + OCS_x_2_2_33_2 + OCS_x_2_2_34_2 + OCS_x_2_2_3_2 + OCS_x_2_2_5_2 \\ & + OCS_x_2_2_7_2 + OCS_x_2_2_8_2 = 1 \end{aligned}$$

$$\begin{aligned} OC_one_main_in_third_day: & OCM_x_1_2_10_3 + OCM_x_1_2_11_3 + OCM_x_1_2_12_3 \\ & + OCM_x_1_2_13_3 + OCM_x_1_2_14_3 + OCM_x_1_2_17_3 + OCM_x_1_2_18_3 \\ & + OCM_x_1_2_19_3 + OCM_x_1_2_1_3 + OCM_x_1_2_2_3 + OCM_x_1_2_3_3 \\ & + OCM_x_1_2_4_3 + OCM_x_1_2_5_3 + OCM_x_1_2_6_3 + OCM_x_1_2_7_3 \\ & + OCM_x_1_2_8_3 + OCM_x_1_2_9_3 = 1 \end{aligned}$$

$$\begin{aligned} OC_one_side_in_third_day: & OCS_x_2_2_12_3 + OCS_x_2_2_13_3 + OCS_x_2_2_14_3 \\ & + OCS_x_2_2_15_3 + OCS_x_2_2_16_3 + OCS_x_2_2_17_3 + OCS_x_2_2_1_3 \\ & + OCS_x_2_2_23_3 + OCS_x_2_2_25_3 + OCS_x_2_2_26_3 + OCS_x_2_2_27_3 \\ & + OCS_x_2_2_28_3 + OCS_x_2_2_2_3 + OCS_x_2_2_31_3 + OCS_x_2_2_32_3 \\ & + OCS_x_2_2_33_3 + OCS_x_2_2_34_3 + OCS_x_2_2_3_3 + OCS_x_2_2_5_3 \\ & + OCS_x_2_2_7_3 + OCS_x_2_2_8_3 = 1 \end{aligned}$$

$$\begin{aligned} _C18: & 880 OCM_x_1_2_10_1 + 840 OCM_x_1_2_11_1 + 600 OCM_x_1_2_12_1 \\ & + 590 OCM_x_1_2_13_1 + 480 OCM_x_1_2_14_1 + 540 OCM_x_1_2_17_1 \\ & + 710 OCM_x_1_2_18_1 + 700 OCM_x_1_2_19_1 + 570 OCM_x_1_2_1_1 \\ & + 630 OCM_x_1_2_2_1 + 600 OCM_x_1_2_3_1 + 530 OCM_x_1_2_4_1 \\ & + 900 OCM_x_1_2_5_1 + 560 OCM_x_1_2_6_1 + 880 OCM_x_1_2_7_1 \end{aligned}$$

+ 800 OCM_x_1_2_8_1 + 400 OCM_x_1_2_9_1 + 320 OCS_x_2_2_12_1
+ 300 OCS_x_2_2_13_1 + 310 OCS_x_2_2_14_1 + 180 OCS_x_2_2_15_1
+ 220 OCS_x_2_2_16_1 + 230 OCS_x_2_2_17_1 + 1330 OCS_x_2_2_1_1
+ 670 OCS_x_2_2_23_1 + 550 OCS_x_2_2_25_1 + 350 OCS_x_2_2_26_1
+ 570 OCS_x_2_2_27_1 + 330 OCS_x_2_2_28_1 + 540 OCS_x_2_2_2_1
+ 360 OCS_x_2_2_31_1 + 370 OCS_x_2_2_32_1 + 380 OCS_x_2_2_33_1
+ 360 OCS_x_2_2_34_1 + 400 OCS_x_2_2_3_1 + 60 OCS_x_2_2_5_1
+ 400 OCS_x_2_2_7_1 + 200 OCS_x_2_2_8_1 <= 1363.63636364

_C19: 880 OCM_x_1_2_10_1 + 840 OCM_x_1_2_11_1 + 600 OCM_x_1_2_12_1
+ 590 OCM_x_1_2_13_1 + 480 OCM_x_1_2_14_1 + 540 OCM_x_1_2_17_1
+ 710 OCM_x_1_2_18_1 + 700 OCM_x_1_2_19_1 + 570 OCM_x_1_2_1_1
+ 630 OCM_x_1_2_2_1 + 600 OCM_x_1_2_3_1 + 530 OCM_x_1_2_4_1
+ 900 OCM_x_1_2_5_1 + 560 OCM_x_1_2_6_1 + 880 OCM_x_1_2_7_1
+ 800 OCM_x_1_2_8_1 + 400 OCM_x_1_2_9_1 + 320 OCS_x_2_2_12_1
+ 300 OCS_x_2_2_13_1 + 310 OCS_x_2_2_14_1 + 180 OCS_x_2_2_15_1
+ 220 OCS_x_2_2_16_1 + 230 OCS_x_2_2_17_1 + 1330 OCS_x_2_2_1_1
+ 670 OCS_x_2_2_23_1 + 550 OCS_x_2_2_25_1 + 350 OCS_x_2_2_26_1
+ 570 OCS_x_2_2_27_1 + 330 OCS_x_2_2_28_1 + 540 OCS_x_2_2_2_1
+ 360 OCS_x_2_2_31_1 + 370 OCS_x_2_2_32_1 + 380 OCS_x_2_2_33_1
+ 360 OCS_x_2_2_34_1 + 400 OCS_x_2_2_3_1 + 60 OCS_x_2_2_5_1
+ 400 OCS_x_2_2_7_1 + 200 OCS_x_2_2_8_1 >= 568.181818182

_C20: 880 OCM_x_1_2_10_2 + 840 OCM_x_1_2_11_2 + 600 OCM_x_1_2_12_2
+ 590 OCM_x_1_2_13_2 + 480 OCM_x_1_2_14_2 + 540 OCM_x_1_2_17_2
+ 710 OCM_x_1_2_18_2 + 700 OCM_x_1_2_19_2 + 570 OCM_x_1_2_1_2
+ 630 OCM_x_1_2_2_2 + 600 OCM_x_1_2_3_2 + 530 OCM_x_1_2_4_2
+ 900 OCM_x_1_2_5_2 + 560 OCM_x_1_2_6_2 + 880 OCM_x_1_2_7_2
+ 800 OCM_x_1_2_8_2 + 400 OCM_x_1_2_9_2 + 320 OCS_x_2_2_12_2
+ 300 OCS_x_2_2_13_2 + 310 OCS_x_2_2_14_2 + 180 OCS_x_2_2_15_2
+ 220 OCS_x_2_2_16_2 + 230 OCS_x_2_2_17_2 + 1330 OCS_x_2_2_1_2
+ 670 OCS_x_2_2_23_2 + 550 OCS_x_2_2_25_2 + 350 OCS_x_2_2_26_2
+ 570 OCS_x_2_2_27_2 + 330 OCS_x_2_2_28_2 + 540 OCS_x_2_2_2_2
+ 360 OCS_x_2_2_31_2 + 370 OCS_x_2_2_32_2 + 380 OCS_x_2_2_33_2
+ 360 OCS_x_2_2_34_2 + 400 OCS_x_2_2_3_2 + 60 OCS_x_2_2_5_2
+ 400 OCS_x_2_2_7_2 + 200 OCS_x_2_2_8_2 <= 1363.63636364

_C21: 880 OCM_x_1_2_10_2 + 840 OCM_x_1_2_11_2 + 600 OCM_x_1_2_12_2
+ 590 OCM_x_1_2_13_2 + 480 OCM_x_1_2_14_2 + 540 OCM_x_1_2_17_2
+ 710 OCM_x_1_2_18_2 + 700 OCM_x_1_2_19_2 + 570 OCM_x_1_2_1_2
+ 630 OCM_x_1_2_2_2 + 600 OCM_x_1_2_3_2 + 530 OCM_x_1_2_4_2
+ 900 OCM_x_1_2_5_2 + 560 OCM_x_1_2_6_2 + 880 OCM_x_1_2_7_2
+ 800 OCM_x_1_2_8_2 + 400 OCM_x_1_2_9_2 + 320 OCS_x_2_2_12_2
+ 300 OCS_x_2_2_13_2 + 310 OCS_x_2_2_14_2 + 180 OCS_x_2_2_15_2
+ 220 OCS_x_2_2_16_2 + 230 OCS_x_2_2_17_2 + 1330 OCS_x_2_2_1_2
+ 670 OCS_x_2_2_23_2 + 550 OCS_x_2_2_25_2 + 350 OCS_x_2_2_26_2
+ 570 OCS_x_2_2_27_2 + 330 OCS_x_2_2_28_2 + 540 OCS_x_2_2_2_2

+ 360 OCS_x_2_2_31_2 + 370 OCS_x_2_2_32_2 + 380 OCS_x_2_2_33_2
+ 360 OCS_x_2_2_34_2 + 400 OCS_x_2_2_3_2 + 60 OCS_x_2_2_5_2
+ 400 OCS_x_2_2_7_2 + 200 OCS_x_2_2_8_2 >= 568.181818182

_C22: 880 OCM_x_1_2_10_3 + 840 OCM_x_1_2_11_3 + 600 OCM_x_1_2_12_3
+ 590 OCM_x_1_2_13_3 + 480 OCM_x_1_2_14_3 + 540 OCM_x_1_2_17_3
+ 710 OCM_x_1_2_18_3 + 700 OCM_x_1_2_19_3 + 570 OCM_x_1_2_1_3
+ 630 OCM_x_1_2_2_3 + 600 OCM_x_1_2_3_3 + 530 OCM_x_1_2_4_3
+ 900 OCM_x_1_2_5_3 + 560 OCM_x_1_2_6_3 + 880 OCM_x_1_2_7_3
+ 800 OCM_x_1_2_8_3 + 400 OCM_x_1_2_9_3 + 320 OCS_x_2_2_12_3
+ 300 OCS_x_2_2_13_3 + 310 OCS_x_2_2_14_3 + 180 OCS_x_2_2_15_3
+ 220 OCS_x_2_2_16_3 + 230 OCS_x_2_2_17_3 + 1330 OCS_x_2_2_1_3
+ 670 OCS_x_2_2_23_3 + 550 OCS_x_2_2_25_3 + 350 OCS_x_2_2_26_3
+ 570 OCS_x_2_2_27_3 + 330 OCS_x_2_2_28_3 + 540 OCS_x_2_2_2_3
+ 360 OCS_x_2_2_31_3 + 370 OCS_x_2_2_32_3 + 380 OCS_x_2_2_33_3
+ 360 OCS_x_2_2_34_3 + 400 OCS_x_2_2_3_3 + 60 OCS_x_2_2_5_3
+ 400 OCS_x_2_2_7_3 + 200 OCS_x_2_2_8_3 <= 1363.63636364

_C23: 880 OCM_x_1_2_10_3 + 840 OCM_x_1_2_11_3 + 600 OCM_x_1_2_12_3
+ 590 OCM_x_1_2_13_3 + 480 OCM_x_1_2_14_3 + 540 OCM_x_1_2_17_3
+ 710 OCM_x_1_2_18_3 + 700 OCM_x_1_2_19_3 + 570 OCM_x_1_2_1_3
+ 630 OCM_x_1_2_2_3 + 600 OCM_x_1_2_3_3 + 530 OCM_x_1_2_4_3
+ 900 OCM_x_1_2_5_3 + 560 OCM_x_1_2_6_3 + 880 OCM_x_1_2_7_3
+ 800 OCM_x_1_2_8_3 + 400 OCM_x_1_2_9_3 + 320 OCS_x_2_2_12_3
+ 300 OCS_x_2_2_13_3 + 310 OCS_x_2_2_14_3 + 180 OCS_x_2_2_15_3
+ 220 OCS_x_2_2_16_3 + 230 OCS_x_2_2_17_3 + 1330 OCS_x_2_2_1_3
+ 670 OCS_x_2_2_23_3 + 550 OCS_x_2_2_25_3 + 350 OCS_x_2_2_26_3
+ 570 OCS_x_2_2_27_3 + 330 OCS_x_2_2_28_3 + 540 OCS_x_2_2_2_3
+ 360 OCS_x_2_2_31_3 + 370 OCS_x_2_2_32_3 + 380 OCS_x_2_2_33_3
+ 360 OCS_x_2_2_34_3 + 400 OCS_x_2_2_3_3 + 60 OCS_x_2_2_5_3
+ 400 OCS_x_2_2_7_3 + 200 OCS_x_2_2_8_3 >= 568.181818182

_C24: 59 OCM_x_1_2_10_1 + 35 OCM_x_1_2_11_1 + 33 OCM_x_1_2_12_1
+ 29 OCM_x_1_2_13_1 + 27 OCM_x_1_2_14_1 + 14 OCM_x_1_2_17_1
+ 21 OCM_x_1_2_18_1 + 22 OCM_x_1_2_19_1 + 29 OCM_x_1_2_1_1 + 33 OCM_x_1_2_2_1
+ 20 OCM_x_1_2_3_1 + 20 OCM_x_1_2_4_1 + 56 OCM_x_1_2_5_1 + 16 OCM_x_1_2_6_1
+ 51 OCM_x_1_2_7_1 + 69 OCM_x_1_2_8_1 + 24 OCM_x_1_2_9_1 + 3.5 OCS_x_2_2_12_1
+ 1.5 OCS_x_2_2_13_1 + 3 OCS_x_2_2_14_1 + 9 OCS_x_2_2_15_1
+ 13 OCS_x_2_2_16_1 + 13 OCS_x_2_2_17_1 + 95 OCS_x_2_2_1_1
+ 28 OCS_x_2_2_23_1 + 30 OCS_x_2_2_25_1 + 14 OCS_x_2_2_26_1
+ 20 OCS_x_2_2_27_1 + 10 OCS_x_2_2_28_1 + 26 OCS_x_2_2_2_1
+ 17 OCS_x_2_2_31_1 + 18 OCS_x_2_2_32_1 + 19 OCS_x_2_2_33_1
+ 16 OCS_x_2_2_34_1 + 16 OCS_x_2_2_3_1 + 3.5 OCS_x_2_2_5_1 + 34 OCS_x_2_2_7_1
+ 12 OCS_x_2_2_8_1 <= 53.0303030303

_C25: 59 OCM_x_1_2_10_1 + 35 OCM_x_1_2_11_1 + 33 OCM_x_1_2_12_1
+ 29 OCM_x_1_2_13_1 + 27 OCM_x_1_2_14_1 + 14 OCM_x_1_2_17_1

+ 21 OCM_x_1_2_18_1 + 22 OCM_x_1_2_19_1 + 29 OCM_x_1_2_1_1 + 33 OCM_x_1_2_2_1
+ 20 OCM_x_1_2_3_1 + 20 OCM_x_1_2_4_1 + 56 OCM_x_1_2_5_1 + 16 OCM_x_1_2_6_1
+ 51 OCM_x_1_2_7_1 + 69 OCM_x_1_2_8_1 + 24 OCM_x_1_2_9_1 + 3.5 OCS_x_2_2_12_1
+ 1.5 OCS_x_2_2_13_1 + 3 OCS_x_2_2_14_1 + 9 OCS_x_2_2_15_1
+ 13 OCS_x_2_2_16_1 + 13 OCS_x_2_2_17_1 + 95 OCS_x_2_2_1_1
+ 28 OCS_x_2_2_23_1 + 30 OCS_x_2_2_25_1 + 14 OCS_x_2_2_26_1
+ 20 OCS_x_2_2_27_1 + 10 OCS_x_2_2_28_1 + 26 OCS_x_2_2_2_1
+ 17 OCS_x_2_2_31_1 + 18 OCS_x_2_2_32_1 + 19 OCS_x_2_2_33_1
+ 16 OCS_x_2_2_34_1 + 16 OCS_x_2_2_3_1 + 3.5 OCS_x_2_2_5_1 + 34 OCS_x_2_2_7_1
+ 12 OCS_x_2_2_8_1 >= 12.6262626263

_C26: 59 OCM_x_1_2_10_2 + 35 OCM_x_1_2_11_2 + 33 OCM_x_1_2_12_2
+ 29 OCM_x_1_2_13_2 + 27 OCM_x_1_2_14_2 + 14 OCM_x_1_2_17_2
+ 21 OCM_x_1_2_18_2 + 22 OCM_x_1_2_19_2 + 29 OCM_x_1_2_1_2 + 33 OCM_x_1_2_2_2
+ 20 OCM_x_1_2_3_2 + 20 OCM_x_1_2_4_2 + 56 OCM_x_1_2_5_2 + 16 OCM_x_1_2_6_2
+ 51 OCM_x_1_2_7_2 + 69 OCM_x_1_2_8_2 + 24 OCM_x_1_2_9_2 + 3.5 OCS_x_2_2_12_2
+ 1.5 OCS_x_2_2_13_2 + 3 OCS_x_2_2_14_2 + 9 OCS_x_2_2_15_2
+ 13 OCS_x_2_2_16_2 + 13 OCS_x_2_2_17_2 + 95 OCS_x_2_2_1_2
+ 28 OCS_x_2_2_23_2 + 30 OCS_x_2_2_25_2 + 14 OCS_x_2_2_26_2
+ 20 OCS_x_2_2_27_2 + 10 OCS_x_2_2_28_2 + 26 OCS_x_2_2_2_2
+ 17 OCS_x_2_2_31_2 + 18 OCS_x_2_2_32_2 + 19 OCS_x_2_2_33_2
+ 16 OCS_x_2_2_34_2 + 16 OCS_x_2_2_3_2 + 3.5 OCS_x_2_2_5_2 + 34 OCS_x_2_2_7_2
+ 12 OCS_x_2_2_8_2 <= 53.0303030303

_C27: 59 OCM_x_1_2_10_2 + 35 OCM_x_1_2_11_2 + 33 OCM_x_1_2_12_2
+ 29 OCM_x_1_2_13_2 + 27 OCM_x_1_2_14_2 + 14 OCM_x_1_2_17_2
+ 21 OCM_x_1_2_18_2 + 22 OCM_x_1_2_19_2 + 29 OCM_x_1_2_1_2 + 33 OCM_x_1_2_2_2
+ 20 OCM_x_1_2_3_2 + 20 OCM_x_1_2_4_2 + 56 OCM_x_1_2_5_2 + 16 OCM_x_1_2_6_2
+ 51 OCM_x_1_2_7_2 + 69 OCM_x_1_2_8_2 + 24 OCM_x_1_2_9_2 + 3.5 OCS_x_2_2_12_2
+ 1.5 OCS_x_2_2_13_2 + 3 OCS_x_2_2_14_2 + 9 OCS_x_2_2_15_2
+ 13 OCS_x_2_2_16_2 + 13 OCS_x_2_2_17_2 + 95 OCS_x_2_2_1_2
+ 28 OCS_x_2_2_23_2 + 30 OCS_x_2_2_25_2 + 14 OCS_x_2_2_26_2
+ 20 OCS_x_2_2_27_2 + 10 OCS_x_2_2_28_2 + 26 OCS_x_2_2_2_2
+ 17 OCS_x_2_2_31_2 + 18 OCS_x_2_2_32_2 + 19 OCS_x_2_2_33_2
+ 16 OCS_x_2_2_34_2 + 16 OCS_x_2_2_3_2 + 3.5 OCS_x_2_2_5_2 + 34 OCS_x_2_2_7_2
+ 12 OCS_x_2_2_8_2 >= 12.6262626263

_C28: 59 OCM_x_1_2_10_3 + 35 OCM_x_1_2_11_3 + 33 OCM_x_1_2_12_3
+ 29 OCM_x_1_2_13_3 + 27 OCM_x_1_2_14_3 + 14 OCM_x_1_2_17_3
+ 21 OCM_x_1_2_18_3 + 22 OCM_x_1_2_19_3 + 29 OCM_x_1_2_1_3 + 33 OCM_x_1_2_2_3
+ 20 OCM_x_1_2_3_3 + 20 OCM_x_1_2_4_3 + 56 OCM_x_1_2_5_3 + 16 OCM_x_1_2_6_3
+ 51 OCM_x_1_2_7_3 + 69 OCM_x_1_2_8_3 + 24 OCM_x_1_2_9_3 + 3.5 OCS_x_2_2_12_3
+ 1.5 OCS_x_2_2_13_3 + 3 OCS_x_2_2_14_3 + 9 OCS_x_2_2_15_3
+ 13 OCS_x_2_2_16_3 + 13 OCS_x_2_2_17_3 + 95 OCS_x_2_2_1_3
+ 28 OCS_x_2_2_23_3 + 30 OCS_x_2_2_25_3 + 14 OCS_x_2_2_26_3
+ 20 OCS_x_2_2_27_3 + 10 OCS_x_2_2_28_3 + 26 OCS_x_2_2_2_3
+ 17 OCS_x_2_2_31_3 + 18 OCS_x_2_2_32_3 + 19 OCS_x_2_2_33_3

+ 16 OCS_x_2_2_34_3 + 16 OCS_x_2_2_3_3 + 3.5 OCS_x_2_2_5_3 + 34 OCS_x_2_2_7_3
+ 12 OCS_x_2_2_8_3 <= 53.0303030303

_C29: 59 OCM_x_1_2_10_3 + 35 OCM_x_1_2_11_3 + 33 OCM_x_1_2_12_3
+ 29 OCM_x_1_2_13_3 + 27 OCM_x_1_2_14_3 + 14 OCM_x_1_2_17_3
+ 21 OCM_x_1_2_18_3 + 22 OCM_x_1_2_19_3 + 29 OCM_x_1_2_1_3 + 33 OCM_x_1_2_2_3
+ 20 OCM_x_1_2_3_3 + 20 OCM_x_1_2_4_3 + 56 OCM_x_1_2_5_3 + 16 OCM_x_1_2_6_3
+ 51 OCM_x_1_2_7_3 + 69 OCM_x_1_2_8_3 + 24 OCM_x_1_2_9_3 + 3.5 OCS_x_2_2_12_3
+ 1.5 OCS_x_2_2_13_3 + 3 OCS_x_2_2_14_3 + 9 OCS_x_2_2_15_3
+ 13 OCS_x_2_2_16_3 + 13 OCS_x_2_2_17_3 + 95 OCS_x_2_2_1_3
+ 28 OCS_x_2_2_23_3 + 30 OCS_x_2_2_25_3 + 14 OCS_x_2_2_26_3
+ 20 OCS_x_2_2_27_3 + 10 OCS_x_2_2_28_3 + 26 OCS_x_2_2_2_3
+ 17 OCS_x_2_2_31_3 + 18 OCS_x_2_2_32_3 + 19 OCS_x_2_2_33_3
+ 16 OCS_x_2_2_34_3 + 16 OCS_x_2_2_3_3 + 3.5 OCS_x_2_2_5_3 + 34 OCS_x_2_2_7_3
+ 12 OCS_x_2_2_8_3 >= 12.6262626263

_C30: 4 OCM_x_1_2_10_1 + 15 OCM_x_1_2_11_1 + 2 OCM_x_1_2_12_1
+ 1.5 OCM_x_1_2_13_1 + 6 OCM_x_1_2_14_1 + 5 OCM_x_1_2_17_1 + 7 OCM_x_1_2_18_1
+ 6 OCM_x_1_2_19_1 + 8 OCM_x_1_2_1_1 + 11 OCM_x_1_2_2_1 + 2 OCM_x_1_2_3_1
+ 4.5 OCM_x_1_2_4_1 + 31 OCM_x_1_2_5_1 + OCM_x_1_2_6_1 + 16 OCM_x_1_2_7_1
+ 8 OCM_x_1_2_8_1 + 6 OCM_x_1_2_9_1 + 0.5 OCS_x_2_2_12_1 + 0.5 OCS_x_2_2_14_1
+ 5 OCS_x_2_2_15_1 + 7 OCS_x_2_2_16_1 + 6 OCS_x_2_2_17_1 + 4.5 OCS_x_2_2_1_1
+ 17 OCS_x_2_2_23_1 + 4.5 OCS_x_2_2_25_1 + 1.5 OCS_x_2_2_26_1
+ 1.5 OCS_x_2_2_27_1 + OCS_x_2_2_28_1 + 2 OCS_x_2_2_2_1 + 7 OCS_x_2_2_31_1
+ 8 OCS_x_2_2_32_1 + 8 OCS_x_2_2_33_1 + 7 OCS_x_2_2_34_1 + 2 OCS_x_2_2_3_1
+ 3 OCS_x_2_2_5_1 + 4 OCS_x_2_2_7_1 + 3 OCS_x_2_2_8_1 <= 15.1515151515

_C31: 4 OCM_x_1_2_10_1 + 15 OCM_x_1_2_11_1 + 2 OCM_x_1_2_12_1
+ 1.5 OCM_x_1_2_13_1 + 6 OCM_x_1_2_14_1 + 5 OCM_x_1_2_17_1 + 7 OCM_x_1_2_18_1
+ 6 OCM_x_1_2_19_1 + 8 OCM_x_1_2_1_1 + 11 OCM_x_1_2_2_1 + 2 OCM_x_1_2_3_1
+ 4.5 OCM_x_1_2_4_1 + 31 OCM_x_1_2_5_1 + OCM_x_1_2_6_1 + 16 OCM_x_1_2_7_1
+ 8 OCM_x_1_2_8_1 + 6 OCM_x_1_2_9_1 + 0.5 OCS_x_2_2_12_1 + 0.5 OCS_x_2_2_14_1
+ 5 OCS_x_2_2_15_1 + 7 OCS_x_2_2_16_1 + 6 OCS_x_2_2_17_1 + 4.5 OCS_x_2_2_1_1
+ 17 OCS_x_2_2_23_1 + 4.5 OCS_x_2_2_25_1 + 1.5 OCS_x_2_2_26_1
+ 1.5 OCS_x_2_2_27_1 + OCS_x_2_2_28_1 + 2 OCS_x_2_2_2_1 + 7 OCS_x_2_2_31_1
+ 8 OCS_x_2_2_32_1 + 8 OCS_x_2_2_33_1 + 7 OCS_x_2_2_34_1 + 2 OCS_x_2_2_3_1
+ 3 OCS_x_2_2_5_1 + 4 OCS_x_2_2_7_1 + 3 OCS_x_2_2_8_1 >= 0

_C32: 4 OCM_x_1_2_10_2 + 15 OCM_x_1_2_11_2 + 2 OCM_x_1_2_12_2
+ 1.5 OCM_x_1_2_13_2 + 6 OCM_x_1_2_14_2 + 5 OCM_x_1_2_17_2 + 7 OCM_x_1_2_18_2
+ 6 OCM_x_1_2_19_2 + 8 OCM_x_1_2_1_2 + 11 OCM_x_1_2_2_2 + 2 OCM_x_1_2_3_2
+ 4.5 OCM_x_1_2_4_2 + 31 OCM_x_1_2_5_2 + OCM_x_1_2_6_2 + 16 OCM_x_1_2_7_2
+ 8 OCM_x_1_2_8_2 + 6 OCM_x_1_2_9_2 + 0.5 OCS_x_2_2_12_2 + 0.5 OCS_x_2_2_14_2
+ 5 OCS_x_2_2_15_2 + 7 OCS_x_2_2_16_2 + 6 OCS_x_2_2_17_2 + 4.5 OCS_x_2_2_1_2
+ 17 OCS_x_2_2_23_2 + 4.5 OCS_x_2_2_25_2 + 1.5 OCS_x_2_2_26_2
+ 1.5 OCS_x_2_2_27_2 + OCS_x_2_2_28_2 + 2 OCS_x_2_2_2_2 + 7 OCS_x_2_2_31_2
+ 8 OCS_x_2_2_32_2 + 8 OCS_x_2_2_33_2 + 7 OCS_x_2_2_34_2 + 2 OCS_x_2_2_3_2

$$+ 3 \text{ OCS_x_2_2_5_2} + 4 \text{ OCS_x_2_2_7_2} + 3 \text{ OCS_x_2_2_8_2} \leq 15.1515151515$$

```

_C33: 4 OCM_x_1_2_10_2 + 15 OCM_x_1_2_11_2 + 2 OCM_x_1_2_12_2
+ 1.5 OCM_x_1_2_13_2 + 6 OCM_x_1_2_14_2 + 5 OCM_x_1_2_17_2 + 7 OCM_x_1_2_18_2
+ 6 OCM_x_1_2_19_2 + 8 OCM_x_1_2_1_2 + 11 OCM_x_1_2_2_2 + 2 OCM_x_1_2_3_2
+ 4.5 OCM_x_1_2_4_2 + 31 OCM_x_1_2_5_2 + OCM_x_1_2_6_2 + 16 OCM_x_1_2_7_2
+ 8 OCM_x_1_2_8_2 + 6 OCM_x_1_2_9_2 + 0.5 OCS_x_2_2_12_2 + 0.5 OCS_x_2_2_14_2
+ 5 OCS_x_2_2_15_2 + 7 OCS_x_2_2_16_2 + 6 OCS_x_2_2_17_2 + 4.5 OCS_x_2_2_1_2
+ 17 OCS_x_2_2_23_2 + 4.5 OCS_x_2_2_25_2 + 1.5 OCS_x_2_2_26_2
+ 1.5 OCS_x_2_2_27_2 + OCS_x_2_2_28_2 + 2 OCS_x_2_2_2_2 + 7 OCS_x_2_2_31_2
+ 8 OCS_x_2_2_32_2 + 8 OCS_x_2_2_33_2 + 7 OCS_x_2_2_34_2 + 2 OCS_x_2_2_3_2
+ 3 OCS_x_2_2_5_2 + 4 OCS_x_2_2_7_2 + 3 OCS_x_2_2_8_2 >= 0

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```

_C34: 4 OCM_x_1_2_10_3 + 15 OCM_x_1_2_11_3 + 2 OCM_x_1_2_12_3
+ 1.5 OCM_x_1_2_13_3 + 6 OCM_x_1_2_14_3 + 5 OCM_x_1_2_17_3 + 7 OCM_x_1_2_18_3
+ 6 OCM_x_1_2_19_3 + 8 OCM_x_1_2_1_3 + 11 OCM_x_1_2_2_3 + 2 OCM_x_1_2_3_3
+ 4.5 OCM_x_1_2_4_3 + 31 OCM_x_1_2_5_3 + OCM_x_1_2_6_3 + 16 OCM_x_1_2_7_3
+ 8 OCM_x_1_2_8_3 + 6 OCM_x_1_2_9_3 + 0.5 OCS_x_2_2_12_3 + 0.5 OCS_x_2_2_14_3
+ 5 OCS_x_2_2_15_3 + 7 OCS_x_2_2_16_3 + 6 OCS_x_2_2_17_3 + 4.5 OCS_x_2_2_1_3
+ 17 OCS_x_2_2_23_3 + 4.5 OCS_x_2_2_25_3 + 1.5 OCS_x_2_2_26_3
+ 1.5 OCS_x_2_2_27_3 + OCS_x_2_2_28_3 + 2 OCS_x_2_2_2_3 + 7 OCS_x_2_2_31_3
+ 8 OCS_x_2_2_32_3 + 8 OCS_x_2_2_33_3 + 7 OCS_x_2_2_34_3 + 2 OCS_x_2_2_3_3
+ 3 OCS_x_2_2_5_3 + 4 OCS_x_2_2_7_3 + 3 OCS_x_2_2_8_3 <= 15.1515151515

```

```

_C35: 4 OCM_x_1_2_10_3 + 15 OCM_x_1_2_11_3 + 2 OCM_x_1_2_12_3
+ 1.5 OCM_x_1_2_13_3 + 6 OCM_x_1_2_14_3 + 5 OCM_x_1_2_17_3 + 7 OCM_x_1_2_18_3
+ 6 OCM_x_1_2_19_3 + 8 OCM_x_1_2_1_3 + 11 OCM_x_1_2_2_3 + 2 OCM_x_1_2_3_3
+ 4.5 OCM_x_1_2_4_3 + 31 OCM_x_1_2_5_3 + OCM_x_1_2_6_3 + 16 OCM_x_1_2_7_3
+ 8 OCM_x_1_2_8_3 + 6 OCM_x_1_2_9_3 + 0.5 OCS_x_2_2_12_3 + 0.5 OCS_x_2_2_14_3
+ 5 OCS_x_2_2_15_3 + 7 OCS_x_2_2_16_3 + 6 OCS_x_2_2_17_3 + 4.5 OCS_x_2_2_1_3
+ 17 OCS_x_2_2_23_3 + 4.5 OCS_x_2_2_25_3 + 1.5 OCS_x_2_2_26_3
+ 1.5 OCS_x_2_2_27_3 + OCS_x_2_2_28_3 + 2 OCS_x_2_2_2_3 + 7 OCS_x_2_2_31_3
+ 8 OCS_x_2_2_32_3 + 8 OCS_x_2_2_33_3 + 7 OCS_x_2_2_34_3 + 2 OCS_x_2_2_3_3
+ 3 OCS_x_2_2_5_3 + 4 OCS_x_2_2_7_3 + 3 OCS_x_2_2_8_3 >= 0

```

```
_C36: 0.5 OCM_x_1_2_1_1 + 0.5 OCM_x_1_2_2_1 + 1.5 OCM_x_1_2_5_1
+ 16 OCM x 1 2 6 1 + OCS x 2 2 23 1 <= 1.51515151515
```

$$_C37: 0.5 \text{ OCM_x_1_2_1_1} + 0.5 \text{ OCM_x_1_2_2_1} + 1.5 \text{ OCM_x_1_2_5_1} \\ + 16 \text{ OCM_x_1_2_6_1} + \text{OCS_x_2_2_23_1} \geq 0$$

```
_C38: 0.5 OCM_x_1_2_1_2 + 0.5 OCM_x_1_2_2_2 + 1.5 OCM_x_1_2_5_2
+ 16 OCM x 1 2 6 2 + OCS x 2 2 23 2 <= 1.51515151515
```

$$_C39: 0.5 \text{ OCM_x_1_2_1_2} + 0.5 \text{ OCM_x_1_2_2_2} + 1.5 \text{ OCM_x_1_2_5_2} \\ + 16 \text{ OCM_x_1_2_6_2} + \text{OCS_x_2_2_23_2} \geq 0$$

_C40: 0.5 OCM_x_1_2_1_3 + 0.5 OCM_x_1_2_2_3 + 1.5 OCM_x_1_2_5_3
+ 16 OCM_x_1_2_6_3 + OCS_x_2_2_23_3 <= 1.51515151515

_C41: 0.5 OCM_x_1_2_1_3 + 0.5 OCM_x_1_2_2_3 + 1.5 OCM_x_1_2_5_3
+ 16 OCM_x_1_2_6_3 + OCS_x_2_2_23_3 >= 0

_C42: 15 OCM_x_1_2_10_1 + 60 OCM_x_1_2_14_1 + 1405 OCM_x_1_2_17_1
+ 90 OCM_x_1_2_18_1 + 105 OCM_x_1_2_19_1 + 80 OCM_x_1_2_1_1
+ 95 OCM_x_1_2_2_1 + 100 OCM_x_1_2_4_1 + 130 OCM_x_1_2_5_1 + 35 OCM_x_1_2_6_1
+ 80 OCM_x_1_2_7_1 + 15 OCM_x_1_2_8_1 + 35 OCM_x_1_2_9_1 + 55 OCS_x_2_2_12_1
+ 55 OCS_x_2_2_13_1 + 55 OCS_x_2_2_14_1 + 20 OCS_x_2_2_15_1
+ 20 OCS_x_2_2_16_1 + 20 OCS_x_2_2_17_1 + 75 OCS_x_2_2_1_1
+ 95 OCS_x_2_2_23_1 + 60 OCS_x_2_2_25_1 + 50 OCS_x_2_2_26_1
+ 90 OCS_x_2_2_27_1 + 55 OCS_x_2_2_28_1 + 50 OCS_x_2_2_31_1
+ 15 OCS_x_2_2_32_1 + 50 OCS_x_2_2_33_1 + 50 OCS_x_2_2_34_1
+ 15 OCS_x_2_2_5_1 + 5 OCS_x_2_2_7_1 + 20 OCS_x_2_2_8_1 <= 136.363636364

_C43: 15 OCM_x_1_2_10_1 + 60 OCM_x_1_2_14_1 + 1405 OCM_x_1_2_17_1
+ 90 OCM_x_1_2_18_1 + 105 OCM_x_1_2_19_1 + 80 OCM_x_1_2_1_1
+ 95 OCM_x_1_2_2_1 + 100 OCM_x_1_2_4_1 + 130 OCM_x_1_2_5_1 + 35 OCM_x_1_2_6_1
+ 80 OCM_x_1_2_7_1 + 15 OCM_x_1_2_8_1 + 35 OCM_x_1_2_9_1 + 55 OCS_x_2_2_12_1
+ 55 OCS_x_2_2_13_1 + 55 OCS_x_2_2_14_1 + 20 OCS_x_2_2_15_1
+ 20 OCS_x_2_2_16_1 + 20 OCS_x_2_2_17_1 + 75 OCS_x_2_2_1_1
+ 95 OCS_x_2_2_23_1 + 60 OCS_x_2_2_25_1 + 50 OCS_x_2_2_26_1
+ 90 OCS_x_2_2_27_1 + 55 OCS_x_2_2_28_1 + 50 OCS_x_2_2_31_1
+ 15 OCS_x_2_2_32_1 + 50 OCS_x_2_2_33_1 + 50 OCS_x_2_2_34_1
+ 15 OCS_x_2_2_5_1 + 5 OCS_x_2_2_7_1 + 20 OCS_x_2_2_8_1 >= 0

_C44: 15 OCM_x_1_2_10_2 + 60 OCM_x_1_2_14_2 + 1405 OCM_x_1_2_17_2
+ 90 OCM_x_1_2_18_2 + 105 OCM_x_1_2_19_2 + 80 OCM_x_1_2_1_2
+ 95 OCM_x_1_2_2_2 + 100 OCM_x_1_2_4_2 + 130 OCM_x_1_2_5_2 + 35 OCM_x_1_2_6_2
+ 80 OCM_x_1_2_7_2 + 15 OCM_x_1_2_8_2 + 35 OCM_x_1_2_9_2 + 55 OCS_x_2_2_12_2
+ 55 OCS_x_2_2_13_2 + 55 OCS_x_2_2_14_2 + 20 OCS_x_2_2_15_2
+ 20 OCS_x_2_2_16_2 + 20 OCS_x_2_2_17_2 + 75 OCS_x_2_2_1_2
+ 95 OCS_x_2_2_23_2 + 60 OCS_x_2_2_25_2 + 50 OCS_x_2_2_26_2
+ 90 OCS_x_2_2_27_2 + 55 OCS_x_2_2_28_2 + 50 OCS_x_2_2_31_2
+ 15 OCS_x_2_2_32_2 + 50 OCS_x_2_2_33_2 + 50 OCS_x_2_2_34_2
+ 15 OCS_x_2_2_5_2 + 5 OCS_x_2_2_7_2 + 20 OCS_x_2_2_8_2 <= 136.363636364

_C45: 15 OCM_x_1_2_10_2 + 60 OCM_x_1_2_14_2 + 1405 OCM_x_1_2_17_2
+ 90 OCM_x_1_2_18_2 + 105 OCM_x_1_2_19_2 + 80 OCM_x_1_2_1_2
+ 95 OCM_x_1_2_2_2 + 100 OCM_x_1_2_4_2 + 130 OCM_x_1_2_5_2 + 35 OCM_x_1_2_6_2
+ 80 OCM_x_1_2_7_2 + 15 OCM_x_1_2_8_2 + 35 OCM_x_1_2_9_2 + 55 OCS_x_2_2_12_2
+ 55 OCS_x_2_2_13_2 + 55 OCS_x_2_2_14_2 + 20 OCS_x_2_2_15_2
+ 20 OCS_x_2_2_16_2 + 20 OCS_x_2_2_17_2 + 75 OCS_x_2_2_1_2
+ 95 OCS_x_2_2_23_2 + 60 OCS_x_2_2_25_2 + 50 OCS_x_2_2_26_2
+ 90 OCS_x_2_2_27_2 + 55 OCS_x_2_2_28_2 + 50 OCS_x_2_2_31_2

+ 15 OCS_x_2_2_32_2 + 50 OCS_x_2_2_33_2 + 50 OCS_x_2_2_34_2
+ 15 OCS_x_2_2_5_2 + 5 OCS_x_2_2_7_2 + 20 OCS_x_2_2_8_2 >= 0

_C46: 15 OCM_x_1_2_10_3 + 60 OCM_x_1_2_14_3 + 1405 OCM_x_1_2_17_3
+ 90 OCM_x_1_2_18_3 + 105 OCM_x_1_2_19_3 + 80 OCM_x_1_2_1_3
+ 95 OCM_x_1_2_2_3 + 100 OCM_x_1_2_4_3 + 130 OCM_x_1_2_5_3 + 35 OCM_x_1_2_6_3
+ 80 OCM_x_1_2_7_3 + 15 OCM_x_1_2_8_3 + 35 OCM_x_1_2_9_3 + 55 OCS_x_2_2_12_3
+ 55 OCS_x_2_2_13_3 + 55 OCS_x_2_2_14_3 + 20 OCS_x_2_2_15_3
+ 20 OCS_x_2_2_16_3 + 20 OCS_x_2_2_17_3 + 75 OCS_x_2_2_1_3
+ 95 OCS_x_2_2_23_3 + 60 OCS_x_2_2_25_3 + 50 OCS_x_2_2_26_3
+ 90 OCS_x_2_2_27_3 + 55 OCS_x_2_2_28_3 + 50 OCS_x_2_2_31_3
+ 15 OCS_x_2_2_32_3 + 50 OCS_x_2_2_33_3 + 50 OCS_x_2_2_34_3
+ 15 OCS_x_2_2_5_3 + 5 OCS_x_2_2_7_3 + 20 OCS_x_2_2_8_3 <= 136.363636364

_C47: 15 OCM_x_1_2_10_3 + 60 OCM_x_1_2_14_3 + 1405 OCM_x_1_2_17_3
+ 90 OCM_x_1_2_18_3 + 105 OCM_x_1_2_19_3 + 80 OCM_x_1_2_1_3
+ 95 OCM_x_1_2_2_3 + 100 OCM_x_1_2_4_3 + 130 OCM_x_1_2_5_3 + 35 OCM_x_1_2_6_3
+ 80 OCM_x_1_2_7_3 + 15 OCM_x_1_2_8_3 + 35 OCM_x_1_2_9_3 + 55 OCS_x_2_2_12_3
+ 55 OCS_x_2_2_13_3 + 55 OCS_x_2_2_14_3 + 20 OCS_x_2_2_15_3
+ 20 OCS_x_2_2_16_3 + 20 OCS_x_2_2_17_3 + 75 OCS_x_2_2_1_3
+ 95 OCS_x_2_2_23_3 + 60 OCS_x_2_2_25_3 + 50 OCS_x_2_2_26_3
+ 90 OCS_x_2_2_27_3 + 55 OCS_x_2_2_28_3 + 50 OCS_x_2_2_31_3
+ 15 OCS_x_2_2_32_3 + 50 OCS_x_2_2_33_3 + 50 OCS_x_2_2_34_3
+ 15 OCS_x_2_2_5_3 + 5 OCS_x_2_2_7_3 + 20 OCS_x_2_2_8_3 >= 0

_C48: 740 OCM_x_1_2_10_1 + 730 OCM_x_1_2_11_1 + 480 OCM_x_1_2_12_1
+ 1210 OCM_x_1_2_13_1 + 950 OCM_x_1_2_14_1 + 5 OCM_x_1_2_17_1
+ 1680 OCM_x_1_2_18_1 + 1500 OCM_x_1_2_19_1 + 1320 OCM_x_1_2_1_1
+ 1430 OCM_x_1_2_2_1 + 910 OCM_x_1_2_3_1 + 1810 OCM_x_1_2_4_1
+ 1020 OCM_x_1_2_5_1 + 1220 OCM_x_1_2_6_1 + 2510 OCM_x_1_2_7_1
+ 460 OCM_x_1_2_8_1 + 1010 OCM_x_1_2_9_1 + 30 OCS_x_2_2_15_1
+ 40 OCS_x_2_2_16_1 + 35 OCS_x_2_2_17_1 + 1810 OCS_x_2_2_1_1
+ 115 OCS_x_2_2_23_1 + 50 OCS_x_2_2_26_1 + 25 OCS_x_2_2_27_1
+ 35 OCS_x_2_2_28_1 + 1350 OCS_x_2_2_2_1 + 20 OCS_x_2_2_31_1
+ 20 OCS_x_2_2_32_1 + 20 OCS_x_2_2_33_1 + 20 OCS_x_2_2_34_1
+ 490 OCS_x_2_2_3_1 + 110 OCS_x_2_2_5_1 + 230 OCS_x_2_2_7_1
+ 510 OCS_x_2_2_8_1 <= 1045.45454545

_C49: 740 OCM_x_1_2_10_1 + 730 OCM_x_1_2_11_1 + 480 OCM_x_1_2_12_1
+ 1210 OCM_x_1_2_13_1 + 950 OCM_x_1_2_14_1 + 5 OCM_x_1_2_17_1
+ 1680 OCM_x_1_2_18_1 + 1500 OCM_x_1_2_19_1 + 1320 OCM_x_1_2_1_1
+ 1430 OCM_x_1_2_2_1 + 910 OCM_x_1_2_3_1 + 1810 OCM_x_1_2_4_1
+ 1020 OCM_x_1_2_5_1 + 1220 OCM_x_1_2_6_1 + 2510 OCM_x_1_2_7_1
+ 460 OCM_x_1_2_8_1 + 1010 OCM_x_1_2_9_1 + 30 OCS_x_2_2_15_1
+ 40 OCS_x_2_2_16_1 + 35 OCS_x_2_2_17_1 + 1810 OCS_x_2_2_1_1
+ 115 OCS_x_2_2_23_1 + 50 OCS_x_2_2_26_1 + 25 OCS_x_2_2_27_1
+ 35 OCS_x_2_2_28_1 + 1350 OCS_x_2_2_2_1 + 20 OCS_x_2_2_31_1

+ 20 OCS_x_2_2_32_1 + 20 OCS_x_2_2_33_1 + 20 OCS_x_2_2_34_1
+ 490 OCS_x_2_2_3_1 + 110 OCS_x_2_2_5_1 + 230 OCS_x_2_2_7_1
+ 510 OCS_x_2_2_8_1 >= 0

_C50: 740 OCM_x_1_2_10_2 + 730 OCM_x_1_2_11_2 + 480 OCM_x_1_2_12_2
+ 1210 OCM_x_1_2_13_2 + 950 OCM_x_1_2_14_2 + 5 OCM_x_1_2_17_2
+ 1680 OCM_x_1_2_18_2 + 1500 OCM_x_1_2_19_2 + 1320 OCM_x_1_2_1_2
+ 1430 OCM_x_1_2_2_2 + 910 OCM_x_1_2_3_2 + 1810 OCM_x_1_2_4_2
+ 1020 OCM_x_1_2_5_2 + 1220 OCM_x_1_2_6_2 + 2510 OCM_x_1_2_7_2
+ 460 OCM_x_1_2_8_2 + 1010 OCM_x_1_2_9_2 + 30 OCS_x_2_2_15_2
+ 40 OCS_x_2_2_16_2 + 35 OCS_x_2_2_17_2 + 1810 OCS_x_2_2_1_2
+ 115 OCS_x_2_2_23_2 + 50 OCS_x_2_2_26_2 + 25 OCS_x_2_2_27_2
+ 35 OCS_x_2_2_28_2 + 1350 OCS_x_2_2_2_2 + 20 OCS_x_2_2_31_2
+ 20 OCS_x_2_2_32_2 + 20 OCS_x_2_2_33_2 + 20 OCS_x_2_2_34_2
+ 490 OCS_x_2_2_3_2 + 110 OCS_x_2_2_5_2 + 230 OCS_x_2_2_7_2
+ 510 OCS_x_2_2_8_2 <= 1045.45454545

_C51: 740 OCM_x_1_2_10_2 + 730 OCM_x_1_2_11_2 + 480 OCM_x_1_2_12_2
+ 1210 OCM_x_1_2_13_2 + 950 OCM_x_1_2_14_2 + 5 OCM_x_1_2_17_2
+ 1680 OCM_x_1_2_18_2 + 1500 OCM_x_1_2_19_2 + 1320 OCM_x_1_2_1_2
+ 1430 OCM_x_1_2_2_2 + 910 OCM_x_1_2_3_2 + 1810 OCM_x_1_2_4_2
+ 1020 OCM_x_1_2_5_2 + 1220 OCM_x_1_2_6_2 + 2510 OCM_x_1_2_7_2
+ 460 OCM_x_1_2_8_2 + 1010 OCM_x_1_2_9_2 + 30 OCS_x_2_2_15_2
+ 40 OCS_x_2_2_16_2 + 35 OCS_x_2_2_17_2 + 1810 OCS_x_2_2_1_2
+ 115 OCS_x_2_2_23_2 + 50 OCS_x_2_2_26_2 + 25 OCS_x_2_2_27_2
+ 35 OCS_x_2_2_28_2 + 1350 OCS_x_2_2_2_2 + 20 OCS_x_2_2_31_2
+ 20 OCS_x_2_2_32_2 + 20 OCS_x_2_2_33_2 + 20 OCS_x_2_2_34_2
+ 490 OCS_x_2_2_3_2 + 110 OCS_x_2_2_5_2 + 230 OCS_x_2_2_7_2
+ 510 OCS_x_2_2_8_2 >= 0

_C52: 740 OCM_x_1_2_10_3 + 730 OCM_x_1_2_11_3 + 480 OCM_x_1_2_12_3
+ 1210 OCM_x_1_2_13_3 + 950 OCM_x_1_2_14_3 + 5 OCM_x_1_2_17_3
+ 1680 OCM_x_1_2_18_3 + 1500 OCM_x_1_2_19_3 + 1320 OCM_x_1_2_1_3
+ 1430 OCM_x_1_2_2_3 + 910 OCM_x_1_2_3_3 + 1810 OCM_x_1_2_4_3
+ 1020 OCM_x_1_2_5_3 + 1220 OCM_x_1_2_6_3 + 2510 OCM_x_1_2_7_3
+ 460 OCM_x_1_2_8_3 + 1010 OCM_x_1_2_9_3 + 30 OCS_x_2_2_15_3
+ 40 OCS_x_2_2_16_3 + 35 OCS_x_2_2_17_3 + 1810 OCS_x_2_2_1_3
+ 115 OCS_x_2_2_23_3 + 50 OCS_x_2_2_26_3 + 25 OCS_x_2_2_27_3
+ 35 OCS_x_2_2_28_3 + 1350 OCS_x_2_2_2_3 + 20 OCS_x_2_2_31_3
+ 20 OCS_x_2_2_32_3 + 20 OCS_x_2_2_33_3 + 20 OCS_x_2_2_34_3
+ 490 OCS_x_2_2_3_3 + 110 OCS_x_2_2_5_3 + 230 OCS_x_2_2_7_3
+ 510 OCS_x_2_2_8_3 <= 1045.45454545

_C53: 740 OCM_x_1_2_10_3 + 730 OCM_x_1_2_11_3 + 480 OCM_x_1_2_12_3
+ 1210 OCM_x_1_2_13_3 + 950 OCM_x_1_2_14_3 + 5 OCM_x_1_2_17_3
+ 1680 OCM_x_1_2_18_3 + 1500 OCM_x_1_2_19_3 + 1320 OCM_x_1_2_1_3
+ 1430 OCM_x_1_2_2_3 + 910 OCM_x_1_2_3_3 + 1810 OCM_x_1_2_4_3

+ 1020 OCM_x_1_2_5_3 + 1220 OCM_x_1_2_6_3 + 2510 OCM_x_1_2_7_3
+ 460 OCM_x_1_2_8_3 + 1010 OCM_x_1_2_9_3 + 30 OCS_x_2_2_15_3
+ 40 OCS_x_2_2_16_3 + 35 OCS_x_2_2_17_3 + 1810 OCS_x_2_2_1_3
+ 115 OCS_x_2_2_23_3 + 50 OCS_x_2_2_26_3 + 25 OCS_x_2_2_27_3
+ 35 OCS_x_2_2_28_3 + 1350 OCS_x_2_2_2_3 + 20 OCS_x_2_2_31_3
+ 20 OCS_x_2_2_32_3 + 20 OCS_x_2_2_33_3 + 20 OCS_x_2_2_34_3
+ 490 OCS_x_2_2_3_3 + 110 OCS_x_2_2_5_3 + 230 OCS_x_2_2_7_3
+ 510 OCS_x_2_2_8_3 >= 0

_C54: 64 OCM_x_1_2_10_1 + 113 OCM_x_1_2_11_1 + 64 OCM_x_1_2_12_1
+ 74 OCM_x_1_2_13_1 + 38 OCM_x_1_2_14_1 + 16 OCM_x_1_2_17_1
+ 93 OCM_x_1_2_18_1 + 92 OCM_x_1_2_19_1 + 54 OCM_x_1_2_1_1 + 54 OCM_x_1_2_2_1
+ 91 OCM_x_1_2_3_1 + 51 OCM_x_1_2_4_1 + 67 OCM_x_1_2_5_1 + 80 OCM_x_1_2_6_1
+ 79 OCM_x_1_2_7_1 + 34 OCM_x_1_2_8_1 + 33 OCM_x_1_2_9_1 + 5 OCS_x_2_2_12_1
+ 5 OCS_x_2_2_13_1 + 5 OCS_x_2_2_14_1 + 4 OCS_x_2_2_15_1 + 4 OCS_x_2_2_16_1
+ 4 OCS_x_2_2_17_1 + 78 OCS_x_2_2_1_1 + 45 OCS_x_2_2_23_1 + 20 OCS_x_2_2_25_1
+ 30 OCS_x_2_2_26_1 + 56 OCS_x_2_2_27_1 + 37 OCS_x_2_2_28_1
+ 70 OCS_x_2_2_2_1 + 31 OCS_x_2_2_31_1 + 31 OCS_x_2_2_32_1
+ 31 OCS_x_2_2_33_1 + 32 OCS_x_2_2_34_1 + 62 OCS_x_2_2_3_1 + 17 OCS_x_2_2_7_1
+ 17 OCS_x_2_2_8_1 <= 147.727272727

_C55: 64 OCM_x_1_2_10_1 + 113 OCM_x_1_2_11_1 + 64 OCM_x_1_2_12_1
+ 74 OCM_x_1_2_13_1 + 38 OCM_x_1_2_14_1 + 16 OCM_x_1_2_17_1
+ 93 OCM_x_1_2_18_1 + 92 OCM_x_1_2_19_1 + 54 OCM_x_1_2_1_1 + 54 OCM_x_1_2_2_1
+ 91 OCM_x_1_2_3_1 + 51 OCM_x_1_2_4_1 + 67 OCM_x_1_2_5_1 + 80 OCM_x_1_2_6_1
+ 79 OCM_x_1_2_7_1 + 34 OCM_x_1_2_8_1 + 33 OCM_x_1_2_9_1 + 5 OCS_x_2_2_12_1
+ 5 OCS_x_2_2_13_1 + 5 OCS_x_2_2_14_1 + 4 OCS_x_2_2_15_1 + 4 OCS_x_2_2_16_1
+ 4 OCS_x_2_2_17_1 + 78 OCS_x_2_2_1_1 + 45 OCS_x_2_2_23_1 + 20 OCS_x_2_2_25_1
+ 30 OCS_x_2_2_26_1 + 56 OCS_x_2_2_27_1 + 37 OCS_x_2_2_28_1
+ 70 OCS_x_2_2_2_1 + 31 OCS_x_2_2_31_1 + 31 OCS_x_2_2_32_1
+ 31 OCS_x_2_2_33_1 + 32 OCS_x_2_2_34_1 + 62 OCS_x_2_2_3_1 + 17 OCS_x_2_2_7_1
+ 17 OCS_x_2_2_8_1 >= 102.272727273

_C56: 64 OCM_x_1_2_10_2 + 113 OCM_x_1_2_11_2 + 64 OCM_x_1_2_12_2
+ 74 OCM_x_1_2_13_2 + 38 OCM_x_1_2_14_2 + 16 OCM_x_1_2_17_2
+ 93 OCM_x_1_2_18_2 + 92 OCM_x_1_2_19_2 + 54 OCM_x_1_2_1_2 + 54 OCM_x_1_2_2_2
+ 91 OCM_x_1_2_3_2 + 51 OCM_x_1_2_4_2 + 67 OCM_x_1_2_5_2 + 80 OCM_x_1_2_6_2
+ 79 OCM_x_1_2_7_2 + 34 OCM_x_1_2_8_2 + 33 OCM_x_1_2_9_2 + 5 OCS_x_2_2_12_2
+ 5 OCS_x_2_2_13_2 + 5 OCS_x_2_2_14_2 + 4 OCS_x_2_2_15_2 + 4 OCS_x_2_2_16_2
+ 4 OCS_x_2_2_17_2 + 78 OCS_x_2_2_1_2 + 45 OCS_x_2_2_23_2 + 20 OCS_x_2_2_25_2
+ 30 OCS_x_2_2_26_2 + 56 OCS_x_2_2_27_2 + 37 OCS_x_2_2_28_2
+ 70 OCS_x_2_2_2_2 + 31 OCS_x_2_2_31_2 + 31 OCS_x_2_2_32_2
+ 31 OCS_x_2_2_33_2 + 32 OCS_x_2_2_34_2 + 62 OCS_x_2_2_3_2 + 17 OCS_x_2_2_7_2
+ 17 OCS_x_2_2_8_2 <= 147.727272727

_C57: 64 OCM_x_1_2_10_2 + 113 OCM_x_1_2_11_2 + 64 OCM_x_1_2_12_2
+ 74 OCM_x_1_2_13_2 + 38 OCM_x_1_2_14_2 + 16 OCM_x_1_2_17_2

+ 93 OCM_x_1_2_18_2 + 92 OCM_x_1_2_19_2 + 54 OCM_x_1_2_1_2 + 54 OCM_x_1_2_2_2
+ 91 OCM_x_1_2_3_2 + 51 OCM_x_1_2_4_2 + 67 OCM_x_1_2_5_2 + 80 OCM_x_1_2_6_2
+ 79 OCM_x_1_2_7_2 + 34 OCM_x_1_2_8_2 + 33 OCM_x_1_2_9_2 + 5 OCS_x_2_2_12_2
+ 5 OCS_x_2_2_13_2 + 5 OCS_x_2_2_14_2 + 4 OCS_x_2_2_15_2 + 4 OCS_x_2_2_16_2
+ 4 OCS_x_2_2_17_2 + 78 OCS_x_2_2_1_2 + 45 OCS_x_2_2_23_2 + 20 OCS_x_2_2_25_2
+ 30 OCS_x_2_2_26_2 + 56 OCS_x_2_2_27_2 + 37 OCS_x_2_2_28_2
+ 70 OCS_x_2_2_2_2 + 31 OCS_x_2_2_31_2 + 31 OCS_x_2_2_32_2
+ 31 OCS_x_2_2_33_2 + 32 OCS_x_2_2_34_2 + 62 OCS_x_2_2_3_2 + 17 OCS_x_2_2_7_2
+ 17 OCS_x_2_2_8_2 >= 102.272727273

_C58: 64 OCM_x_1_2_10_3 + 113 OCM_x_1_2_11_3 + 64 OCM_x_1_2_12_3
+ 74 OCM_x_1_2_13_3 + 38 OCM_x_1_2_14_3 + 16 OCM_x_1_2_17_3
+ 93 OCM_x_1_2_18_3 + 92 OCM_x_1_2_19_3 + 54 OCM_x_1_2_1_3 + 54 OCM_x_1_2_2_3
+ 91 OCM_x_1_2_3_3 + 51 OCM_x_1_2_4_3 + 67 OCM_x_1_2_5_3 + 80 OCM_x_1_2_6_3
+ 79 OCM_x_1_2_7_3 + 34 OCM_x_1_2_8_3 + 33 OCM_x_1_2_9_3 + 5 OCS_x_2_2_12_3
+ 5 OCS_x_2_2_13_3 + 5 OCS_x_2_2_14_3 + 4 OCS_x_2_2_15_3 + 4 OCS_x_2_2_16_3
+ 4 OCS_x_2_2_17_3 + 78 OCS_x_2_2_1_3 + 45 OCS_x_2_2_23_3 + 20 OCS_x_2_2_25_3
+ 30 OCS_x_2_2_26_3 + 56 OCS_x_2_2_27_3 + 37 OCS_x_2_2_28_3
+ 70 OCS_x_2_2_2_3 + 31 OCS_x_2_2_31_3 + 31 OCS_x_2_2_32_3
+ 31 OCS_x_2_2_33_3 + 32 OCS_x_2_2_34_3 + 62 OCS_x_2_2_3_3 + 17 OCS_x_2_2_7_3
+ 17 OCS_x_2_2_8_3 <= 147.727272727

_C59: 64 OCM_x_1_2_10_3 + 113 OCM_x_1_2_11_3 + 64 OCM_x_1_2_12_3
+ 74 OCM_x_1_2_13_3 + 38 OCM_x_1_2_14_3 + 16 OCM_x_1_2_17_3
+ 93 OCM_x_1_2_18_3 + 92 OCM_x_1_2_19_3 + 54 OCM_x_1_2_1_3 + 54 OCM_x_1_2_2_3
+ 91 OCM_x_1_2_3_3 + 51 OCM_x_1_2_4_3 + 67 OCM_x_1_2_5_3 + 80 OCM_x_1_2_6_3
+ 79 OCM_x_1_2_7_3 + 34 OCM_x_1_2_8_3 + 33 OCM_x_1_2_9_3 + 5 OCS_x_2_2_12_3
+ 5 OCS_x_2_2_13_3 + 5 OCS_x_2_2_14_3 + 4 OCS_x_2_2_15_3 + 4 OCS_x_2_2_16_3
+ 4 OCS_x_2_2_17_3 + 78 OCS_x_2_2_1_3 + 45 OCS_x_2_2_23_3 + 20 OCS_x_2_2_25_3
+ 30 OCS_x_2_2_26_3 + 56 OCS_x_2_2_27_3 + 37 OCS_x_2_2_28_3
+ 70 OCS_x_2_2_2_3 + 31 OCS_x_2_2_31_3 + 31 OCS_x_2_2_32_3
+ 31 OCS_x_2_2_33_3 + 32 OCS_x_2_2_34_3 + 62 OCS_x_2_2_3_3 + 17 OCS_x_2_2_7_3
+ 17 OCS_x_2_2_8_3 >= 102.272727273

_C60: 13 OCM_x_1_2_10_1 + 20 OCM_x_1_2_11_1 + 11 OCM_x_1_2_12_1
+ 14 OCM_x_1_2_13_1 + 3 OCM_x_1_2_14_1 + 4 OCM_x_1_2_17_1 + 6 OCM_x_1_2_18_1
+ 6 OCM_x_1_2_19_1 + 7 OCM_x_1_2_1_1 + 7 OCM_x_1_2_2_1 + 14 OCM_x_1_2_3_1
+ 6 OCM_x_1_2_4_1 + 3 OCM_x_1_2_5_1 + 7 OCM_x_1_2_6_1 + 6 OCM_x_1_2_7_1
+ 9 OCM_x_1_2_8_1 + 5 OCM_x_1_2_9_1 + 4 OCS_x_2_2_12_1 + 5 OCS_x_2_2_13_1
+ 5 OCS_x_2_2_14_1 + 2 OCS_x_2_2_15_1 + 3 OCS_x_2_2_16_1 + 4 OCS_x_2_2_17_1
+ 3 OCS_x_2_2_1_1 + 9 OCS_x_2_2_23_1 + OCS_x_2_2_25_1 + 4 OCS_x_2_2_26_1
+ 3 OCS_x_2_2_27_1 + 3 OCS_x_2_2_28_1 + 6 OCS_x_2_2_2_1 + 3 OCS_x_2_2_31_1
+ OCS_x_2_2_32_1 + 3 OCS_x_2_2_33_1 + 3 OCS_x_2_2_34_1 + 4 OCS_x_2_2_3_1
+ 4 OCS_x_2_2_7_1 + 3 OCS_x_2_2_8_1 >= 9.54545454545

_C61: 13 OCM_x_1_2_10_2 + 20 OCM_x_1_2_11_2 + 11 OCM_x_1_2_12_2
+ 14 OCM_x_1_2_13_2 + 3 OCM_x_1_2_14_2 + 4 OCM_x_1_2_17_2 + 6 OCM_x_1_2_18_2

+ 6 OCM_x_1_2_19_2 + 7 OCM_x_1_2_1_2 + 7 OCM_x_1_2_2_2 + 14 OCM_x_1_2_3_2
+ 6 OCM_x_1_2_4_2 + 3 OCM_x_1_2_5_2 + 7 OCM_x_1_2_6_2 + 6 OCM_x_1_2_7_2
+ 9 OCM_x_1_2_8_2 + 5 OCM_x_1_2_9_2 + 4 OCS_x_2_2_12_2 + 5 OCS_x_2_2_13_2
+ 5 OCS_x_2_2_14_2 + 2 OCS_x_2_2_15_2 + 3 OCS_x_2_2_16_2 + 4 OCS_x_2_2_17_2
+ 3 OCS_x_2_2_1_2 + 9 OCS_x_2_2_23_2 + OCS_x_2_2_25_2 + 4 OCS_x_2_2_26_2
+ 3 OCS_x_2_2_27_2 + 3 OCS_x_2_2_28_2 + 6 OCS_x_2_2_2_2 + 3 OCS_x_2_2_31_2
+ OCS_x_2_2_32_2 + 3 OCS_x_2_2_33_2 + 3 OCS_x_2_2_34_2 + 4 OCS_x_2_2_3_2
+ 4 OCS_x_2_2_7_2 + 3 OCS_x_2_2_8_2 >= 9.54545454545

_C62: 13 OCM_x_1_2_10_3 + 20 OCM_x_1_2_11_3 + 11 OCM_x_1_2_12_3
+ 14 OCM_x_1_2_13_3 + 3 OCM_x_1_2_14_3 + 4 OCM_x_1_2_17_3 + 6 OCM_x_1_2_18_3
+ 6 OCM_x_1_2_19_3 + 7 OCM_x_1_2_1_3 + 7 OCM_x_1_2_2_3 + 14 OCM_x_1_2_3_3
+ 6 OCM_x_1_2_4_3 + 3 OCM_x_1_2_5_3 + 7 OCM_x_1_2_6_3 + 6 OCM_x_1_2_7_3
+ 9 OCM_x_1_2_8_3 + 5 OCM_x_1_2_9_3 + 4 OCS_x_2_2_12_3 + 5 OCS_x_2_2_13_3
+ 5 OCS_x_2_2_14_3 + 2 OCS_x_2_2_15_3 + 3 OCS_x_2_2_16_3 + 4 OCS_x_2_2_17_3
+ 3 OCS_x_2_2_1_3 + 9 OCS_x_2_2_23_3 + OCS_x_2_2_25_3 + 4 OCS_x_2_2_26_3
+ 3 OCS_x_2_2_27_3 + 3 OCS_x_2_2_28_3 + 6 OCS_x_2_2_2_3 + 3 OCS_x_2_2_31_3
+ OCS_x_2_2_32_3 + 3 OCS_x_2_2_33_3 + 3 OCS_x_2_2_34_3 + 4 OCS_x_2_2_3_3
+ 4 OCS_x_2_2_7_3 + 3 OCS_x_2_2_8_3 >= 9.54545454545

_C63: 16 OCM_x_1_2_10_1 + 20 OCM_x_1_2_11_1 + 7 OCM_x_1_2_12_1
+ 17 OCM_x_1_2_13_1 + 11 OCM_x_1_2_14_1 + 89 OCM_x_1_2_17_1
+ 5 OCM_x_1_2_18_1 + 4 OCM_x_1_2_19_1 + 7 OCM_x_1_2_1_1 + 7 OCM_x_1_2_2_1
+ 12 OCM_x_1_2_3_1 + 6 OCM_x_1_2_4_1 + 3 OCM_x_1_2_5_1 + 11 OCM_x_1_2_6_1
+ 7 OCM_x_1_2_8_1 + 3 OCM_x_1_2_9_1 + 4 OCS_x_2_2_12_1 + 2 OCS_x_2_2_13_1
+ 3 OCS_x_2_2_14_1 + OCS_x_2_2_15_1 + OCS_x_2_2_16_1 + OCS_x_2_2_17_1
+ 29 OCS_x_2_2_1_1 + 3 OCS_x_2_2_23_1 + 9 OCS_x_2_2_25_1 + 2 OCS_x_2_2_26_1
+ OCS_x_2_2_27_1 + 2 OCS_x_2_2_28_1 + OCS_x_2_2_34_1 + 19 OCS_x_2_2_3_1
+ 4 OCS_x_2_2_7_1 + 2 OCS_x_2_2_8_1 <= 34.0909090909

_C64: 16 OCM_x_1_2_10_1 + 20 OCM_x_1_2_11_1 + 7 OCM_x_1_2_12_1
+ 17 OCM_x_1_2_13_1 + 11 OCM_x_1_2_14_1 + 89 OCM_x_1_2_17_1
+ 5 OCM_x_1_2_18_1 + 4 OCM_x_1_2_19_1 + 7 OCM_x_1_2_1_1 + 7 OCM_x_1_2_2_1
+ 12 OCM_x_1_2_3_1 + 6 OCM_x_1_2_4_1 + 3 OCM_x_1_2_5_1 + 11 OCM_x_1_2_6_1
+ 7 OCM_x_1_2_8_1 + 3 OCM_x_1_2_9_1 + 4 OCS_x_2_2_12_1 + 2 OCS_x_2_2_13_1
+ 3 OCS_x_2_2_14_1 + OCS_x_2_2_15_1 + OCS_x_2_2_16_1 + OCS_x_2_2_17_1
+ 29 OCS_x_2_2_1_1 + 3 OCS_x_2_2_23_1 + 9 OCS_x_2_2_25_1 + 2 OCS_x_2_2_26_1
+ OCS_x_2_2_27_1 + 2 OCS_x_2_2_28_1 + OCS_x_2_2_34_1 + 19 OCS_x_2_2_3_1
+ 4 OCS_x_2_2_7_1 + 2 OCS_x_2_2_8_1 >= 0

_C65: 16 OCM_x_1_2_10_2 + 20 OCM_x_1_2_11_2 + 7 OCM_x_1_2_12_2
+ 17 OCM_x_1_2_13_2 + 11 OCM_x_1_2_14_2 + 89 OCM_x_1_2_17_2
+ 5 OCM_x_1_2_18_2 + 4 OCM_x_1_2_19_2 + 7 OCM_x_1_2_1_2 + 7 OCM_x_1_2_2_2
+ 12 OCM_x_1_2_3_2 + 6 OCM_x_1_2_4_2 + 3 OCM_x_1_2_5_2 + 11 OCM_x_1_2_6_2
+ 7 OCM_x_1_2_8_2 + 3 OCM_x_1_2_9_2 + 4 OCS_x_2_2_12_2 + 2 OCS_x_2_2_13_2
+ 3 OCS_x_2_2_14_2 + OCS_x_2_2_15_2 + OCS_x_2_2_16_2 + OCS_x_2_2_17_2
+ 29 OCS_x_2_2_1_2 + 3 OCS_x_2_2_23_2 + 9 OCS_x_2_2_25_2 + 2 OCS_x_2_2_26_2

$$+ \text{OCS_x_2_2_27_2} + 2 \text{OCS_x_2_2_28_2} + \text{OCS_x_2_2_34_2} + 19 \text{OCS_x_2_2_3_2} \\ + 4 \text{OCS_x_2_2_7_2} + 2 \text{OCS_x_2_2_8_2} \leq 34.0909090909$$

$$_C66: 16 \text{OCM_x_1_2_10_2} + 20 \text{OCM_x_1_2_11_2} + 7 \text{OCM_x_1_2_12_2} \\ + 17 \text{OCM_x_1_2_13_2} + 11 \text{OCM_x_1_2_14_2} + 89 \text{OCM_x_1_2_17_2} \\ + 5 \text{OCM_x_1_2_18_2} + 4 \text{OCM_x_1_2_19_2} + 7 \text{OCM_x_1_2_1_2} + 7 \text{OCM_x_1_2_2_2} \\ + 12 \text{OCM_x_1_2_3_2} + 6 \text{OCM_x_1_2_4_2} + 3 \text{OCM_x_1_2_5_2} + 11 \text{OCM_x_1_2_6_2} \\ + 7 \text{OCM_x_1_2_8_2} + 3 \text{OCM_x_1_2_9_2} + 4 \text{OCS_x_2_2_12_2} + 2 \text{OCS_x_2_2_13_2} \\ + 3 \text{OCS_x_2_2_14_2} + \text{OCS_x_2_2_15_2} + \text{OCS_x_2_2_16_2} + \text{OCS_x_2_2_17_2} \\ + 29 \text{OCS_x_2_2_1_2} + 3 \text{OCS_x_2_2_23_2} + 9 \text{OCS_x_2_2_25_2} + 2 \text{OCS_x_2_2_26_2} \\ + \text{OCS_x_2_2_27_2} + 2 \text{OCS_x_2_2_28_2} + \text{OCS_x_2_2_34_2} + 19 \text{OCS_x_2_2_3_2} \\ + 4 \text{OCS_x_2_2_7_2} + 2 \text{OCS_x_2_2_8_2} \geq 0$$

$$_C67: 16 \text{OCM_x_1_2_10_3} + 20 \text{OCM_x_1_2_11_3} + 7 \text{OCM_x_1_2_12_3} \\ + 17 \text{OCM_x_1_2_13_3} + 11 \text{OCM_x_1_2_14_3} + 89 \text{OCM_x_1_2_17_3} \\ + 5 \text{OCM_x_1_2_18_3} + 4 \text{OCM_x_1_2_19_3} + 7 \text{OCM_x_1_2_1_3} + 7 \text{OCM_x_1_2_2_3} \\ + 12 \text{OCM_x_1_2_3_3} + 6 \text{OCM_x_1_2_4_3} + 3 \text{OCM_x_1_2_5_3} + 11 \text{OCM_x_1_2_6_3} \\ + 7 \text{OCM_x_1_2_8_3} + 3 \text{OCM_x_1_2_9_3} + 4 \text{OCS_x_2_2_12_3} + 2 \text{OCS_x_2_2_13_3} \\ + 3 \text{OCS_x_2_2_14_3} + \text{OCS_x_2_2_15_3} + \text{OCS_x_2_2_16_3} + \text{OCS_x_2_2_17_3} \\ + 29 \text{OCS_x_2_2_1_3} + 3 \text{OCS_x_2_2_23_3} + 9 \text{OCS_x_2_2_25_3} + 2 \text{OCS_x_2_2_26_3} \\ + \text{OCS_x_2_2_27_3} + 2 \text{OCS_x_2_2_28_3} + \text{OCS_x_2_2_34_3} + 19 \text{OCS_x_2_2_3_3} \\ + 4 \text{OCS_x_2_2_7_3} + 2 \text{OCS_x_2_2_8_3} \leq 34.0909090909$$

$$_C68: 16 \text{OCM_x_1_2_10_3} + 20 \text{OCM_x_1_2_11_3} + 7 \text{OCM_x_1_2_12_3} \\ + 17 \text{OCM_x_1_2_13_3} + 11 \text{OCM_x_1_2_14_3} + 89 \text{OCM_x_1_2_17_3} \\ + 5 \text{OCM_x_1_2_18_3} + 4 \text{OCM_x_1_2_19_3} + 7 \text{OCM_x_1_2_1_3} + 7 \text{OCM_x_1_2_2_3} \\ + 12 \text{OCM_x_1_2_3_3} + 6 \text{OCM_x_1_2_4_3} + 3 \text{OCM_x_1_2_5_3} + 11 \text{OCM_x_1_2_6_3} \\ + 7 \text{OCM_x_1_2_8_3} + 3 \text{OCM_x_1_2_9_3} + 4 \text{OCS_x_2_2_12_3} + 2 \text{OCS_x_2_2_13_3} \\ + 3 \text{OCS_x_2_2_14_3} + \text{OCS_x_2_2_15_3} + \text{OCS_x_2_2_16_3} + \text{OCS_x_2_2_17_3} \\ + 29 \text{OCS_x_2_2_1_3} + 3 \text{OCS_x_2_2_23_3} + 9 \text{OCS_x_2_2_25_3} + 2 \text{OCS_x_2_2_26_3} \\ + \text{OCS_x_2_2_27_3} + 2 \text{OCS_x_2_2_28_3} + \text{OCS_x_2_2_34_3} + 19 \text{OCS_x_2_2_3_3} \\ + 4 \text{OCS_x_2_2_7_3} + 2 \text{OCS_x_2_2_8_3} \geq 0$$

$$_C69: 11 \text{OCM_x_1_2_10_1} + 24 \text{OCM_x_1_2_11_1} + 18 \text{OCM_x_1_2_12_1} \\ + 15 \text{OCM_x_1_2_13_1} + 11 \text{OCM_x_1_2_14_1} + 16 \text{OCM_x_1_2_17_1} \\ + 39 \text{OCM_x_1_2_18_1} + 35 \text{OCM_x_1_2_19_1} + 25 \text{OCM_x_1_2_1_1} + 28 \text{OCM_x_1_2_2_1} \\ + 20 \text{OCM_x_1_2_3_1} + 38 \text{OCM_x_1_2_4_1} + 25 \text{OCM_x_1_2_5_1} + 24 \text{OCM_x_1_2_6_1} \\ + 24 \text{OCM_x_1_2_7_1} + 17 \text{OCM_x_1_2_8_1} + 15 \text{OCM_x_1_2_9_1} + 12 \text{OCS_x_2_2_12_1} \\ + 11 \text{OCS_x_2_2_13_1} + 11 \text{OCS_x_2_2_14_1} + 4 \text{OCS_x_2_2_15_1} + 6 \text{OCS_x_2_2_16_1} \\ + 9 \text{OCS_x_2_2_17_1} + 36 \text{OCS_x_2_2_1_1} + 10 \text{OCS_x_2_2_23_1} + 16 \text{OCS_x_2_2_25_1} \\ + 5 \text{OCS_x_2_2_26_1} + 6 \text{OCS_x_2_2_27_1} + 4 \text{OCS_x_2_2_28_1} + 6 \text{OCS_x_2_2_2_1} \\ + 5 \text{OCS_x_2_2_31_1} + 4 \text{OCS_x_2_2_32_1} + 5 \text{OCS_x_2_2_33_1} + 4 \text{OCS_x_2_2_34_1} \\ + 3 \text{OCS_x_2_2_3_1} + 3 \text{OCS_x_2_2_5_1} + 9 \text{OCS_x_2_2_7_1} + 7 \text{OCS_x_2_2_8_1} \\ \leq 119.318181818$$

$$_C70: 11 \text{OCM_x_1_2_10_1} + 24 \text{OCM_x_1_2_11_1} + 18 \text{OCM_x_1_2_12_1} \\ + 15 \text{OCM_x_1_2_13_1} + 11 \text{OCM_x_1_2_14_1} + 16 \text{OCM_x_1_2_17_1}$$

+ 39 OCM_x_1_2_18_1 + 35 OCM_x_1_2_19_1 + 25 OCM_x_1_2_1_1 + 28 OCM_x_1_2_2_1
+ 20 OCM_x_1_2_3_1 + 38 OCM_x_1_2_4_1 + 25 OCM_x_1_2_5_1 + 24 OCM_x_1_2_6_1
+ 24 OCM_x_1_2_7_1 + 17 OCM_x_1_2_8_1 + 15 OCM_x_1_2_9_1 + 12 OCS_x_2_2_12_1
+ 11 OCS_x_2_2_13_1 + 11 OCS_x_2_2_14_1 + 4 OCS_x_2_2_15_1 + 6 OCS_x_2_2_16_1
+ 9 OCS_x_2_2_17_1 + 36 OCS_x_2_2_1_1 + 10 OCS_x_2_2_23_1 + 16 OCS_x_2_2_25_1
+ 5 OCS_x_2_2_26_1 + 6 OCS_x_2_2_27_1 + 4 OCS_x_2_2_28_1 + 6 OCS_x_2_2_2_1
+ 5 OCS_x_2_2_31_1 + 4 OCS_x_2_2_32_1 + 5 OCS_x_2_2_33_1 + 4 OCS_x_2_2_34_1
+ 3 OCS_x_2_2_3_1 + 3 OCS_x_2_2_5_1 + 9 OCS_x_2_2_7_1 + 7 OCS_x_2_2_8_1
>= 14.2045454545

_C71: 11 OCM_x_1_2_10_2 + 24 OCM_x_1_2_11_2 + 18 OCM_x_1_2_12_2
+ 15 OCM_x_1_2_13_2 + 11 OCM_x_1_2_14_2 + 16 OCM_x_1_2_17_2
+ 39 OCM_x_1_2_18_2 + 35 OCM_x_1_2_19_2 + 25 OCM_x_1_2_1_2 + 28 OCM_x_1_2_2_2
+ 20 OCM_x_1_2_3_2 + 38 OCM_x_1_2_4_2 + 25 OCM_x_1_2_5_2 + 24 OCM_x_1_2_6_2
+ 24 OCM_x_1_2_7_2 + 17 OCM_x_1_2_8_2 + 15 OCM_x_1_2_9_2 + 12 OCS_x_2_2_12_2
+ 11 OCS_x_2_2_13_2 + 11 OCS_x_2_2_14_2 + 4 OCS_x_2_2_15_2 + 6 OCS_x_2_2_16_2
+ 9 OCS_x_2_2_17_2 + 36 OCS_x_2_2_1_2 + 10 OCS_x_2_2_23_2 + 16 OCS_x_2_2_25_2
+ 5 OCS_x_2_2_26_2 + 6 OCS_x_2_2_27_2 + 4 OCS_x_2_2_28_2 + 6 OCS_x_2_2_2_2
+ 5 OCS_x_2_2_31_2 + 4 OCS_x_2_2_32_2 + 5 OCS_x_2_2_33_2 + 4 OCS_x_2_2_34_2
+ 3 OCS_x_2_2_3_2 + 3 OCS_x_2_2_5_2 + 9 OCS_x_2_2_7_2 + 7 OCS_x_2_2_8_2
<= 119.318181818

_C72: 11 OCM_x_1_2_10_2 + 24 OCM_x_1_2_11_2 + 18 OCM_x_1_2_12_2
+ 15 OCM_x_1_2_13_2 + 11 OCM_x_1_2_14_2 + 16 OCM_x_1_2_17_2
+ 39 OCM_x_1_2_18_2 + 35 OCM_x_1_2_19_2 + 25 OCM_x_1_2_1_2 + 28 OCM_x_1_2_2_2
+ 20 OCM_x_1_2_3_2 + 38 OCM_x_1_2_4_2 + 25 OCM_x_1_2_5_2 + 24 OCM_x_1_2_6_2
+ 24 OCM_x_1_2_7_2 + 17 OCM_x_1_2_8_2 + 15 OCM_x_1_2_9_2 + 12 OCS_x_2_2_12_2
+ 11 OCS_x_2_2_13_2 + 11 OCS_x_2_2_14_2 + 4 OCS_x_2_2_15_2 + 6 OCS_x_2_2_16_2
+ 9 OCS_x_2_2_17_2 + 36 OCS_x_2_2_1_2 + 10 OCS_x_2_2_23_2 + 16 OCS_x_2_2_25_2
+ 5 OCS_x_2_2_26_2 + 6 OCS_x_2_2_27_2 + 4 OCS_x_2_2_28_2 + 6 OCS_x_2_2_2_2
+ 5 OCS_x_2_2_31_2 + 4 OCS_x_2_2_32_2 + 5 OCS_x_2_2_33_2 + 4 OCS_x_2_2_34_2
+ 3 OCS_x_2_2_3_2 + 3 OCS_x_2_2_5_2 + 9 OCS_x_2_2_7_2 + 7 OCS_x_2_2_8_2
>= 14.2045454545

_C73: 11 OCM_x_1_2_10_3 + 24 OCM_x_1_2_11_3 + 18 OCM_x_1_2_12_3
+ 15 OCM_x_1_2_13_3 + 11 OCM_x_1_2_14_3 + 16 OCM_x_1_2_17_3
+ 39 OCM_x_1_2_18_3 + 35 OCM_x_1_2_19_3 + 25 OCM_x_1_2_1_3 + 28 OCM_x_1_2_2_3
+ 20 OCM_x_1_2_3_3 + 38 OCM_x_1_2_4_3 + 25 OCM_x_1_2_5_3 + 24 OCM_x_1_2_6_3
+ 24 OCM_x_1_2_7_3 + 17 OCM_x_1_2_8_3 + 15 OCM_x_1_2_9_3 + 12 OCS_x_2_2_12_3
+ 11 OCS_x_2_2_13_3 + 11 OCS_x_2_2_14_3 + 4 OCS_x_2_2_15_3 + 6 OCS_x_2_2_16_3
+ 9 OCS_x_2_2_17_3 + 36 OCS_x_2_2_1_3 + 10 OCS_x_2_2_23_3 + 16 OCS_x_2_2_25_3
+ 5 OCS_x_2_2_26_3 + 6 OCS_x_2_2_27_3 + 4 OCS_x_2_2_28_3 + 6 OCS_x_2_2_2_3
+ 5 OCS_x_2_2_31_3 + 4 OCS_x_2_2_32_3 + 5 OCS_x_2_2_33_3 + 4 OCS_x_2_2_34_3
+ 3 OCS_x_2_2_3_3 + 3 OCS_x_2_2_5_3 + 9 OCS_x_2_2_7_3 + 7 OCS_x_2_2_8_3
<= 119.318181818

_C74: 11 OCM_x_1_2_10_3 + 24 OCM_x_1_2_11_3 + 18 OCM_x_1_2_12_3

```

+ 15 OCM_x_1_2_13_3 + 11 OCM_x_1_2_14_3 + 16 OCM_x_1_2_17_3
+ 39 OCM_x_1_2_18_3 + 35 OCM_x_1_2_19_3 + 25 OCM_x_1_2_1_3 + 28 OCM_x_1_2_2_3
+ 20 OCM_x_1_2_3_3 + 38 OCM_x_1_2_4_3 + 25 OCM_x_1_2_5_3 + 24 OCM_x_1_2_6_3
+ 24 OCM_x_1_2_7_3 + 17 OCM_x_1_2_8_3 + 15 OCM_x_1_2_9_3 + 12 OCS_x_2_2_12_3
+ 11 OCS_x_2_2_13_3 + 11 OCS_x_2_2_14_3 + 4 OCS_x_2_2_15_3 + 6 OCS_x_2_2_16_3
+ 9 OCS_x_2_2_17_3 + 36 OCS_x_2_2_1_3 + 10 OCS_x_2_2_23_3 + 16 OCS_x_2_2_25_3
+ 5 OCS_x_2_2_26_3 + 6 OCS_x_2_2_27_3 + 4 OCS_x_2_2_28_3 + 6 OCS_x_2_2_2_3
+ 5 OCS_x_2_2_31_3 + 4 OCS_x_2_2_32_3 + 5 OCS_x_2_2_33_3 + 4 OCS_x_2_2_34_3
+ 3 OCS_x_2_2_3_3 + 3 OCS_x_2_2_5_3 + 9 OCS_x_2_2_7_3 + 7 OCS_x_2_2_8_3
>= 14.2045454545

```

VARIABLES

```

0 <= OCM_x_1_2_10_1 <= 1 Integer
0 <= OCM_x_1_2_10_2 <= 1 Integer
0 <= OCM_x_1_2_10_3 <= 1 Integer
0 <= OCM_x_1_2_11_1 <= 1 Integer
0 <= OCM_x_1_2_11_2 <= 1 Integer
0 <= OCM_x_1_2_11_3 <= 1 Integer
0 <= OCM_x_1_2_12_1 <= 1 Integer
0 <= OCM_x_1_2_12_2 <= 1 Integer
0 <= OCM_x_1_2_12_3 <= 1 Integer
0 <= OCM_x_1_2_13_1 <= 1 Integer
0 <= OCM_x_1_2_13_2 <= 1 Integer
0 <= OCM_x_1_2_13_3 <= 1 Integer
0 <= OCM_x_1_2_14_1 <= 1 Integer
0 <= OCM_x_1_2_14_2 <= 1 Integer
0 <= OCM_x_1_2_14_3 <= 1 Integer
0 <= OCM_x_1_2_17_1 <= 1 Integer
0 <= OCM_x_1_2_17_2 <= 1 Integer
0 <= OCM_x_1_2_17_3 <= 1 Integer
0 <= OCM_x_1_2_18_1 <= 1 Integer
0 <= OCM_x_1_2_18_2 <= 1 Integer
0 <= OCM_x_1_2_18_3 <= 1 Integer
0 <= OCM_x_1_2_19_1 <= 1 Integer
0 <= OCM_x_1_2_19_2 <= 1 Integer
0 <= OCM_x_1_2_19_3 <= 1 Integer
0 <= OCM_x_1_2_1_1 <= 1 Integer
0 <= OCM_x_1_2_1_2 <= 1 Integer
0 <= OCM_x_1_2_1_3 <= 1 Integer
0 <= OCM_x_1_2_2_1 <= 1 Integer
0 <= OCM_x_1_2_2_2 <= 1 Integer
0 <= OCM_x_1_2_2_3 <= 1 Integer
0 <= OCM_x_1_2_3_1 <= 1 Integer
0 <= OCM_x_1_2_3_2 <= 1 Integer
0 <= OCM_x_1_2_3_3 <= 1 Integer
0 <= OCM_x_1_2_4_1 <= 1 Integer
0 <= OCM_x_1_2_4_2 <= 1 Integer

```

```

0 <= OCM_x_1_2_4_3 <= 1 Integer
0 <= OCM_x_1_2_5_1 <= 1 Integer
0 <= OCM_x_1_2_5_2 <= 1 Integer
0 <= OCM_x_1_2_5_3 <= 1 Integer
0 <= OCM_x_1_2_6_1 <= 1 Integer
0 <= OCM_x_1_2_6_2 <= 1 Integer
0 <= OCM_x_1_2_6_3 <= 1 Integer
0 <= OCM_x_1_2_7_1 <= 1 Integer
0 <= OCM_x_1_2_7_2 <= 1 Integer
0 <= OCM_x_1_2_7_3 <= 1 Integer
0 <= OCM_x_1_2_8_1 <= 1 Integer
0 <= OCM_x_1_2_8_2 <= 1 Integer
0 <= OCM_x_1_2_8_3 <= 1 Integer
0 <= OCM_x_1_2_9_1 <= 1 Integer
0 <= OCM_x_1_2_9_2 <= 1 Integer
0 <= OCM_x_1_2_9_3 <= 1 Integer
0 <= OCS_x_2_2_12_1 <= 1 Integer
0 <= OCS_x_2_2_12_2 <= 1 Integer
0 <= OCS_x_2_2_12_3 <= 1 Integer
0 <= OCS_x_2_2_13_1 <= 1 Integer
0 <= OCS_x_2_2_13_2 <= 1 Integer
0 <= OCS_x_2_2_13_3 <= 1 Integer
0 <= OCS_x_2_2_14_1 <= 1 Integer
0 <= OCS_x_2_2_14_2 <= 1 Integer
0 <= OCS_x_2_2_14_3 <= 1 Integer
0 <= OCS_x_2_2_15_1 <= 1 Integer
0 <= OCS_x_2_2_15_2 <= 1 Integer
0 <= OCS_x_2_2_15_3 <= 1 Integer
0 <= OCS_x_2_2_16_1 <= 1 Integer
0 <= OCS_x_2_2_16_2 <= 1 Integer
0 <= OCS_x_2_2_16_3 <= 1 Integer
0 <= OCS_x_2_2_17_1 <= 1 Integer
0 <= OCS_x_2_2_17_2 <= 1 Integer
0 <= OCS_x_2_2_17_3 <= 1 Integer
0 <= OCS_x_2_2_1_1 <= 1 Integer
0 <= OCS_x_2_2_1_2 <= 1 Integer
0 <= OCS_x_2_2_1_3 <= 1 Integer
0 <= OCS_x_2_2_23_1 <= 1 Integer
0 <= OCS_x_2_2_23_2 <= 1 Integer
0 <= OCS_x_2_2_23_3 <= 1 Integer
0 <= OCS_x_2_2_25_1 <= 1 Integer
0 <= OCS_x_2_2_25_2 <= 1 Integer
0 <= OCS_x_2_2_25_3 <= 1 Integer
0 <= OCS_x_2_2_26_1 <= 1 Integer
0 <= OCS_x_2_2_26_2 <= 1 Integer
0 <= OCS_x_2_2_26_3 <= 1 Integer
0 <= OCS_x_2_2_27_1 <= 1 Integer

```

```

0 <= OCS_x_2_2_27_2 <= 1 Integer
0 <= OCS_x_2_2_27_3 <= 1 Integer
0 <= OCS_x_2_2_28_1 <= 1 Integer
0 <= OCS_x_2_2_28_2 <= 1 Integer
0 <= OCS_x_2_2_28_3 <= 1 Integer
0 <= OCS_x_2_2_2_1 <= 1 Integer
0 <= OCS_x_2_2_2_2 <= 1 Integer
0 <= OCS_x_2_2_2_3 <= 1 Integer
0 <= OCS_x_2_2_31_1 <= 1 Integer
0 <= OCS_x_2_2_31_2 <= 1 Integer
0 <= OCS_x_2_2_31_3 <= 1 Integer
0 <= OCS_x_2_2_32_1 <= 1 Integer
0 <= OCS_x_2_2_32_2 <= 1 Integer
0 <= OCS_x_2_2_32_3 <= 1 Integer
0 <= OCS_x_2_2_33_1 <= 1 Integer
0 <= OCS_x_2_2_33_2 <= 1 Integer
0 <= OCS_x_2_2_33_3 <= 1 Integer
0 <= OCS_x_2_2_34_1 <= 1 Integer
0 <= OCS_x_2_2_34_2 <= 1 Integer
0 <= OCS_x_2_2_34_3 <= 1 Integer
0 <= OCS_x_2_2_3_1 <= 1 Integer
0 <= OCS_x_2_2_3_2 <= 1 Integer
0 <= OCS_x_2_2_3_3 <= 1 Integer
0 <= OCS_x_2_2_5_1 <= 1 Integer
0 <= OCS_x_2_2_5_2 <= 1 Integer
0 <= OCS_x_2_2_5_3 <= 1 Integer
0 <= OCS_x_2_2_7_1 <= 1 Integer
0 <= OCS_x_2_2_7_2 <= 1 Integer
0 <= OCS_x_2_2_7_3 <= 1 Integer
0 <= OCS_x_2_2_8_1 <= 1 Integer
0 <= OCS_x_2_2_8_2 <= 1 Integer
0 <= OCS_x_2_2_8_3 <= 1 Integer

```

[40]: LP_PV

[40]: Maximum_three_day_meals_in_PV:

```

MAXIMIZE
1.1244180788747875*PVM_x_1_3_10_1 + 1.1244180788747875*PVM_x_1_3_10_2 +
1.1244180788747875*PVM_x_1_3_10_3 + 1.1819573476289296*PVM_x_1_3_11_1 +
1.1819573476289296*PVM_x_1_3_11_2 + 1.1819573476289296*PVM_x_1_3_11_3 +
1.1958705220887178*PVM_x_1_3_12_1 + 1.1958705220887178*PVM_x_1_3_12_2 +
1.1958705220887178*PVM_x_1_3_12_3 + 1.0361092196342743*PVM_x_1_3_13_1 +
1.0361092196342743*PVM_x_1_3_13_2 + 1.0361092196342743*PVM_x_1_3_13_3 +
0.6719256510655073*PVM_x_1_3_14_1 + 0.6719256510655073*PVM_x_1_3_14_2 +
0.6719256510655073*PVM_x_1_3_14_3 + 1.08331109981086*PVM_x_1_3_15_1 +
1.08331109981086*PVM_x_1_3_15_2 + 1.08331109981086*PVM_x_1_3_15_3 +
1.247603901732763*PVM_x_1_3_16_1 + 1.247603901732763*PVM_x_1_3_16_2 +

```

1.247603901732763*PVM_x_1_3_16_3 + 1.155309858603848*PVM_x_1_3_17_1 +
 1.155309858603848*PVM_x_1_3_17_2 + 1.155309858603848*PVM_x_1_3_17_3 +
 0.6444575768766132*PVM_x_1_3_18_1 + 0.6444575768766132*PVM_x_1_3_18_2 +
 0.6444575768766132*PVM_x_1_3_18_3 + 1.7090331545828272*PVM_x_1_3_19_1 +
 1.7090331545828272*PVM_x_1_3_19_2 + 1.7090331545828272*PVM_x_1_3_19_3 +
 1.0780256611894112*PVM_x_1_3_1_1 + 1.0780256611894112*PVM_x_1_3_1_2 +
 1.0780256611894112*PVM_x_1_3_1_3 + 0.8310317906577283*PVM_x_1_3_2_1 +
 0.8310317906577283*PVM_x_1_3_2_2 + 0.8310317906577283*PVM_x_1_3_2_3 +
 0.6199079798545878*PVM_x_1_3_3_1 + 0.6199079798545878*PVM_x_1_3_3_2 +
 0.6199079798545878*PVM_x_1_3_3_3 + 0.6401932633788961*PVM_x_1_3_4_1 +
 0.6401932633788961*PVM_x_1_3_4_2 + 0.6401932633788961*PVM_x_1_3_4_3 +
 0.8408366238714162*PVM_x_1_3_5_1 + 0.8408366238714162*PVM_x_1_3_5_2 +
 0.8408366238714162*PVM_x_1_3_5_3 + 0.9611298664862781*PVM_x_1_3_6_1 +
 0.9611298664862781*PVM_x_1_3_6_2 + 0.9611298664862781*PVM_x_1_3_6_3 +
 1.0805640431858325*PVM_x_1_3_7_1 + 1.0805640431858325*PVM_x_1_3_7_2 +
 1.0805640431858325*PVM_x_1_3_7_3 + 1.2438497910652744*PVM_x_1_3_8_1 +
 1.2438497910652744*PVM_x_1_3_8_2 + 1.2438497910652744*PVM_x_1_3_8_3 +
 1.177468521590635*PVM_x_1_3_9_1 + 1.177468521590635*PVM_x_1_3_9_2 +
 1.177468521590635*PVM_x_1_3_9_3 + 2.8336200807475973*PVS_x_2_3_10_1 +
 2.8336200807475973*PVS_x_2_3_10_2 + 2.8336200807475973*PVS_x_2_3_10_3 +
 2.1104202524620934*PVS_x_2_3_11_1 + 2.1104202524620934*PVS_x_2_3_11_2 +
 2.1104202524620934*PVS_x_2_3_11_3 + 3.246971808180863*PVS_x_2_3_12_1 +
 3.246971808180863*PVS_x_2_3_12_2 + 3.246971808180863*PVS_x_2_3_12_3 +
 2.8739225610710375*PVS_x_2_3_13_1 + 2.8739225610710375*PVS_x_2_3_13_2 +
 2.8739225610710375*PVS_x_2_3_13_3 + 1.3799729615646021*PVS_x_2_3_1_1 +
 1.3799729615646021*PVS_x_2_3_1_2 + 1.3799729615646021*PVS_x_2_3_1_3 +
 0.8812421910373504*PVS_x_2_3_2_1 + 0.8812421910373504*PVS_x_2_3_2_2 +
 0.8812421910373504*PVS_x_2_3_2_3 + 1.8625942311808574*PVS_x_2_3_3_1 +
 1.8625942311808574*PVS_x_2_3_3_2 + 1.8625942311808574*PVS_x_2_3_3_3 +
 0.7331642915389588*PVS_x_2_3_4_1 + 0.7331642915389588*PVS_x_2_3_4_2 +
 0.7331642915389588*PVS_x_2_3_4_3 + 1.420541497364228*PVS_x_2_3_5_1 +
 1.420541497364228*PVS_x_2_3_5_2 + 1.420541497364228*PVS_x_2_3_5_3 +
 3.9815477976143487*PVS_x_2_3_6_1 + 3.9815477976143487*PVS_x_2_3_6_2 +
 3.9815477976143487*PVS_x_2_3_6_3 + 6.433106441628679*PVS_x_2_3_7_1 +
 6.433106441628679*PVS_x_2_3_7_2 + 6.433106441628679*PVS_x_2_3_7_3 +
 2.5536061353554533*PVS_x_2_3_8_1 + 2.5536061353554533*PVS_x_2_3_8_2 +
 2.5536061353554533*PVS_x_2_3_8_3 + 2.273722333145784*PVS_x_2_3_9_1 +
 2.273722333145784*PVS_x_2_3_9_2 + 2.273722333145784*PVS_x_2_3_9_3 + 0.0

SUBJECT TO

Price_constraints_for_PV: 6.7425 PVM_x_1_3_10_1 + 6.7425 PVM_x_1_3_10_2
 + 6.7425 PVM_x_1_3_10_3 + 6.7425 PVM_x_1_3_11_1 + 6.7425 PVM_x_1_3_11_2
 + 6.7425 PVM_x_1_3_11_3 + 5.9925 PVM_x_1_3_12_1 + 5.9925 PVM_x_1_3_12_2
 + 5.9925 PVM_x_1_3_12_3 + 6.7425 PVM_x_1_3_13_1 + 6.7425 PVM_x_1_3_13_2
 + 6.7425 PVM_x_1_3_13_3 + 9.7425 PVM_x_1_3_14_1 + 9.7425 PVM_x_1_3_14_2
 + 9.7425 PVM_x_1_3_14_3 + 6.7425 PVM_x_1_3_15_1 + 6.7425 PVM_x_1_3_15_2
 + 6.7425 PVM_x_1_3_15_3 + 5.9925 PVM_x_1_3_16_1 + 5.9925 PVM_x_1_3_16_2
 + 5.9925 PVM_x_1_3_16_3 + 5.9925 PVM_x_1_3_17_1 + 5.9925 PVM_x_1_3_17_2

+ 5.9925 PVM_x_1_3_17_3 + 6.7425 PVM_x_1_3_18_1 + 6.7425 PVM_x_1_3_18_2
 + 6.7425 PVM_x_1_3_18_3 + 3.7425 PVM_x_1_3_19_1 + 3.7425 PVM_x_1_3_19_2
 + 3.7425 PVM_x_1_3_19_3 + 6.2175 PVM_x_1_3_1_1 + 6.2175 PVM_x_1_3_1_2
 + 6.2175 PVM_x_1_3_1_3 + 5.9925 PVM_x_1_3_2_1 + 5.9925 PVM_x_1_3_2_2
 + 5.9925 PVM_x_1_3_2_3 + 8.9925 PVM_x_1_3_3_1 + 8.9925 PVM_x_1_3_3_2
 + 8.9925 PVM_x_1_3_3_3 + 9.7425 PVM_x_1_3_4_1 + 9.7425 PVM_x_1_3_4_2
 + 9.7425 PVM_x_1_3_4_3 + 8.2425 PVM_x_1_3_5_1 + 8.2425 PVM_x_1_3_5_2
 + 8.2425 PVM_x_1_3_5_3 + 7.4925 PVM_x_1_3_6_1 + 7.4925 PVM_x_1_3_6_2
 + 7.4925 PVM_x_1_3_6_3 + 5.9925 PVM_x_1_3_7_1 + 5.9925 PVM_x_1_3_7_2
 + 5.9925 PVM_x_1_3_7_3 + 5.9925 PVM_x_1_3_8_1 + 5.9925 PVM_x_1_3_8_2
 + 5.9925 PVM_x_1_3_8_3 + 6.7425 PVM_x_1_3_9_1 + 6.7425 PVM_x_1_3_9_2
 + 6.7425 PVM_x_1_3_9_3 + 2.2425 PVS_x_2_3_10_1 + 2.2425 PVS_x_2_3_10_2
 + 2.2425 PVS_x_2_3_10_3 + 2.9925 PVS_x_2_3_11_1 + 2.9925 PVS_x_2_3_11_2
 + 2.9925 PVS_x_2_3_11_3 + 1.8675 PVS_x_2_3_12_1 + 1.8675 PVS_x_2_3_12_2
 + 1.8675 PVS_x_2_3_12_3 + 1.8675 PVS_x_2_3_13_1 + 1.8675 PVS_x_2_3_13_2
 + 1.8675 PVS_x_2_3_13_3 + 4.4925 PVS_x_2_3_1_1 + 4.4925 PVS_x_2_3_1_2
 + 4.4925 PVS_x_2_3_1_3 + 6.2175 PVS_x_2_3_2_1 + 6.2175 PVS_x_2_3_2_2
 + 6.2175 PVS_x_2_3_2_3 + 3.5175 PVS_x_2_3_3_1 + 3.5175 PVS_x_2_3_3_2
 + 3.5175 PVS_x_2_3_3_3 + 6.9675 PVS_x_2_3_4_1 + 6.9675 PVS_x_2_3_4_2
 + 6.9675 PVS_x_2_3_4_3 + 3.9675 PVS_x_2_3_5_1 + 3.9675 PVS_x_2_3_5_2
 + 3.9675 PVS_x_2_3_5_3 + 1.4925 PVS_x_2_3_6_1 + 1.4925 PVS_x_2_3_6_2
 + 1.4925 PVS_x_2_3_6_3 + 0.8925 PVS_x_2_3_7_1 + 0.8925 PVS_x_2_3_7_2
 + 0.8925 PVS_x_2_3_7_3 + 2.2425 PVS_x_2_3_8_1 + 2.2425 PVS_x_2_3_8_2
 + 2.2425 PVS_x_2_3_8_3 + 2.6175 PVS_x_2_3_9_1 + 2.6175 PVS_x_2_3_9_2
 + 2.6175 PVS_x_2_3_9_3 <= 32.04

_C1: PVM_x_1_3_1_1 + PVM_x_1_3_1_2 + PVM_x_1_3_1_3 <= 1

_C2: PVM_x_1_3_2_1 + PVM_x_1_3_2_2 + PVM_x_1_3_2_3 <= 1

_C3: PVM_x_1_3_3_1 + PVM_x_1_3_3_2 + PVM_x_1_3_3_3 <= 1

_C4: PVM_x_1_3_4_1 + PVM_x_1_3_4_2 + PVM_x_1_3_4_3 <= 1

_C5: PVM_x_1_3_5_1 + PVM_x_1_3_5_2 + PVM_x_1_3_5_3 <= 1

_C6: PVM_x_1_3_6_1 + PVM_x_1_3_6_2 + PVM_x_1_3_6_3 <= 1

_C7: PVM_x_1_3_7_1 + PVM_x_1_3_7_2 + PVM_x_1_3_7_3 <= 1

_C8: PVM_x_1_3_8_1 + PVM_x_1_3_8_2 + PVM_x_1_3_8_3 <= 1

_C9: PVM_x_1_3_9_1 + PVM_x_1_3_9_2 + PVM_x_1_3_9_3 <= 1

_C10: PVM_x_1_3_10_1 + PVM_x_1_3_10_2 + PVM_x_1_3_10_3 <= 1

_C11: PVM_x_1_3_11_1 + PVM_x_1_3_11_2 + PVM_x_1_3_11_3 <= 1

$$_C12: PVM_x_1_3_12_1 + PVM_x_1_3_12_2 + PVM_x_1_3_12_3 \leq 1$$

$$_C13: PVM_x_1_3_13_1 + PVM_x_1_3_13_2 + PVM_x_1_3_13_3 \leq 1$$

$$_C14: PVM_x_1_3_14_1 + PVM_x_1_3_14_2 + PVM_x_1_3_14_3 \leq 1$$

$$_C15: PVM_x_1_3_15_1 + PVM_x_1_3_15_2 + PVM_x_1_3_15_3 \leq 1$$

$$_C16: PVM_x_1_3_16_1 + PVM_x_1_3_16_2 + PVM_x_1_3_16_3 \leq 1$$

$$_C17: PVM_x_1_3_17_1 + PVM_x_1_3_17_2 + PVM_x_1_3_17_3 \leq 1$$

$$_C18: PVM_x_1_3_18_1 + PVM_x_1_3_18_2 + PVM_x_1_3_18_3 \leq 1$$

$$_C19: PVM_x_1_3_19_1 + PVM_x_1_3_19_2 + PVM_x_1_3_19_3 \leq 1$$

$$\begin{aligned} PV_one_main_in_first_day: & PVM_x_1_3_10_1 + PVM_x_1_3_11_1 + PVM_x_1_3_12_1 \\ & + PVM_x_1_3_13_1 + PVM_x_1_3_14_1 + PVM_x_1_3_15_1 + PVM_x_1_3_16_1 \\ & + PVM_x_1_3_17_1 + PVM_x_1_3_18_1 + PVM_x_1_3_19_1 + PVM_x_1_3_1_1 \\ & + PVM_x_1_3_2_1 + PVM_x_1_3_3_1 + PVM_x_1_3_4_1 + PVM_x_1_3_5_1 \\ & + PVM_x_1_3_6_1 + PVM_x_1_3_7_1 + PVM_x_1_3_8_1 + PVM_x_1_3_9_1 = 1 \end{aligned}$$

$$\begin{aligned} PV_one_side_in_first_day: & PVS_x_2_3_10_1 + PVS_x_2_3_11_1 + PVS_x_2_3_12_1 \\ & + PVS_x_2_3_13_1 + PVS_x_2_3_1_1 + PVS_x_2_3_2_1 + PVS_x_2_3_3_1 \\ & + PVS_x_2_3_4_1 + PVS_x_2_3_5_1 + PVS_x_2_3_6_1 + PVS_x_2_3_7_1 \\ & + PVS_x_2_3_8_1 + PVS_x_2_3_9_1 = 1 \end{aligned}$$

$$\begin{aligned} PV_one_main_in_second_day: & PVM_x_1_3_10_2 + PVM_x_1_3_11_2 + PVM_x_1_3_12_2 \\ & + PVM_x_1_3_13_2 + PVM_x_1_3_14_2 + PVM_x_1_3_15_2 + PVM_x_1_3_16_2 \\ & + PVM_x_1_3_17_2 + PVM_x_1_3_18_2 + PVM_x_1_3_19_2 + PVM_x_1_3_1_2 \\ & + PVM_x_1_3_2_2 + PVM_x_1_3_3_2 + PVM_x_1_3_4_2 + PVM_x_1_3_5_2 \\ & + PVM_x_1_3_6_2 + PVM_x_1_3_7_2 + PVM_x_1_3_8_2 + PVM_x_1_3_9_2 = 1 \end{aligned}$$

$$\begin{aligned} PV_one_side_in_second_day: & PVS_x_2_3_10_2 + PVS_x_2_3_11_2 + PVS_x_2_3_12_2 \\ & + PVS_x_2_3_13_2 + PVS_x_2_3_1_2 + PVS_x_2_3_2_2 + PVS_x_2_3_3_2 \\ & + PVS_x_2_3_4_2 + PVS_x_2_3_5_2 + PVS_x_2_3_6_2 + PVS_x_2_3_7_2 \\ & + PVS_x_2_3_8_2 + PVS_x_2_3_9_2 = 1 \end{aligned}$$

$$\begin{aligned} PV_one_main_in_third_day: & PVM_x_1_3_10_3 + PVM_x_1_3_11_3 + PVM_x_1_3_12_3 \\ & + PVM_x_1_3_13_3 + PVM_x_1_3_14_3 + PVM_x_1_3_15_3 + PVM_x_1_3_16_3 \\ & + PVM_x_1_3_17_3 + PVM_x_1_3_18_3 + PVM_x_1_3_19_3 + PVM_x_1_3_1_3 \\ & + PVM_x_1_3_2_3 + PVM_x_1_3_3_3 + PVM_x_1_3_4_3 + PVM_x_1_3_5_3 \\ & + PVM_x_1_3_6_3 + PVM_x_1_3_7_3 + PVM_x_1_3_8_3 + PVM_x_1_3_9_3 = 1 \end{aligned}$$

$$\begin{aligned} PV_one_side_in_third_day: & PVS_x_2_3_10_3 + PVS_x_2_3_11_3 + PVS_x_2_3_12_3 \\ & + PVS_x_2_3_13_3 + PVS_x_2_3_1_3 + PVS_x_2_3_2_3 + PVS_x_2_3_3_3 \end{aligned}$$

$$+ PVS_x_2_3_4_3 + PVS_x_2_3_5_3 + PVS_x_2_3_6_3 + PVS_x_2_3_7_3 \\ + PVS_x_2_3_8_3 + PVS_x_2_3_9_3 = 1$$

$$\begin{aligned} _C20: & 960 PVM_x_1_3_10_1 + 740 PVM_x_1_3_11_1 + 680 PVM_x_1_3_12_1 \\ & + 490 PVM_x_1_3_13_1 + 660 PVM_x_1_3_14_1 + 660 PVM_x_1_3_15_1 \\ & + 670 PVM_x_1_3_16_1 + 630 PVM_x_1_3_17_1 + 1360 PVM_x_1_3_18_1 \\ & + 760 PVM_x_1_3_19_1 + 590 PVM_x_1_3_1_1 + 570 PVM_x_1_3_2_1 \\ & + 840 PVM_x_1_3_3_1 + 500 PVM_x_1_3_4_1 + 700 PVM_x_1_3_5_1 \\ & + 640 PVM_x_1_3_6_1 + 740 PVM_x_1_3_7_1 + 690 PVM_x_1_3_8_1 \\ & + 1000 PVM_x_1_3_9_1 + 270 PVS_x_2_3_10_1 + 310 PVS_x_2_3_11_1 \\ & + 130 PVS_x_2_3_12_1 + 80 PVS_x_2_3_13_1 + 120 PVS_x_2_3_1_1 \\ & + 940 PVS_x_2_3_2_1 + 540 PVS_x_2_3_3_1 + 1280 PVS_x_2_3_4_1 \\ & + 830 PVS_x_2_3_5_1 + 340 PVS_x_2_3_6_1 + 60 PVS_x_2_3_7_1 + 70 PVS_x_2_3_8_1 \\ & + 240 PVS_x_2_3_9_1 \leq 1363.63636364 \end{aligned}$$

$$\begin{aligned} _C21: & 960 PVM_x_1_3_10_1 + 740 PVM_x_1_3_11_1 + 680 PVM_x_1_3_12_1 \\ & + 490 PVM_x_1_3_13_1 + 660 PVM_x_1_3_14_1 + 660 PVM_x_1_3_15_1 \\ & + 670 PVM_x_1_3_16_1 + 630 PVM_x_1_3_17_1 + 1360 PVM_x_1_3_18_1 \\ & + 760 PVM_x_1_3_19_1 + 590 PVM_x_1_3_1_1 + 570 PVM_x_1_3_2_1 \\ & + 840 PVM_x_1_3_3_1 + 500 PVM_x_1_3_4_1 + 700 PVM_x_1_3_5_1 \\ & + 640 PVM_x_1_3_6_1 + 740 PVM_x_1_3_7_1 + 690 PVM_x_1_3_8_1 \\ & + 1000 PVM_x_1_3_9_1 + 270 PVS_x_2_3_10_1 + 310 PVS_x_2_3_11_1 \\ & + 130 PVS_x_2_3_12_1 + 80 PVS_x_2_3_13_1 + 120 PVS_x_2_3_1_1 \\ & + 940 PVS_x_2_3_2_1 + 540 PVS_x_2_3_3_1 + 1280 PVS_x_2_3_4_1 \\ & + 830 PVS_x_2_3_5_1 + 340 PVS_x_2_3_6_1 + 60 PVS_x_2_3_7_1 + 70 PVS_x_2_3_8_1 \\ & + 240 PVS_x_2_3_9_1 \geq 568.181818182 \end{aligned}$$

$$\begin{aligned} _C22: & 960 PVM_x_1_3_10_2 + 740 PVM_x_1_3_11_2 + 680 PVM_x_1_3_12_2 \\ & + 490 PVM_x_1_3_13_2 + 660 PVM_x_1_3_14_2 + 660 PVM_x_1_3_15_2 \\ & + 670 PVM_x_1_3_16_2 + 630 PVM_x_1_3_17_2 + 1360 PVM_x_1_3_18_2 \\ & + 760 PVM_x_1_3_19_2 + 590 PVM_x_1_3_1_2 + 570 PVM_x_1_3_2_2 \\ & + 840 PVM_x_1_3_3_2 + 500 PVM_x_1_3_4_2 + 700 PVM_x_1_3_5_2 \\ & + 640 PVM_x_1_3_6_2 + 740 PVM_x_1_3_7_2 + 690 PVM_x_1_3_8_2 \\ & + 1000 PVM_x_1_3_9_2 + 270 PVS_x_2_3_10_2 + 310 PVS_x_2_3_11_2 \\ & + 130 PVS_x_2_3_12_2 + 80 PVS_x_2_3_13_2 + 120 PVS_x_2_3_1_2 \\ & + 940 PVS_x_2_3_2_2 + 540 PVS_x_2_3_3_2 + 1280 PVS_x_2_3_4_2 \\ & + 830 PVS_x_2_3_5_2 + 340 PVS_x_2_3_6_2 + 60 PVS_x_2_3_7_2 + 70 PVS_x_2_3_8_2 \\ & + 240 PVS_x_2_3_9_2 \leq 1363.63636364 \end{aligned}$$

$$\begin{aligned} _C23: & 960 PVM_x_1_3_10_2 + 740 PVM_x_1_3_11_2 + 680 PVM_x_1_3_12_2 \\ & + 490 PVM_x_1_3_13_2 + 660 PVM_x_1_3_14_2 + 660 PVM_x_1_3_15_2 \\ & + 670 PVM_x_1_3_16_2 + 630 PVM_x_1_3_17_2 + 1360 PVM_x_1_3_18_2 \\ & + 760 PVM_x_1_3_19_2 + 590 PVM_x_1_3_1_2 + 570 PVM_x_1_3_2_2 \\ & + 840 PVM_x_1_3_3_2 + 500 PVM_x_1_3_4_2 + 700 PVM_x_1_3_5_2 \\ & + 640 PVM_x_1_3_6_2 + 740 PVM_x_1_3_7_2 + 690 PVM_x_1_3_8_2 \\ & + 1000 PVM_x_1_3_9_2 + 270 PVS_x_2_3_10_2 + 310 PVS_x_2_3_11_2 \\ & + 130 PVS_x_2_3_12_2 + 80 PVS_x_2_3_13_2 + 120 PVS_x_2_3_1_2 \end{aligned}$$

+ 940 PVS_x_2_3_2_2 + 540 PVS_x_2_3_3_2 + 1280 PVS_x_2_3_4_2
+ 830 PVS_x_2_3_5_2 + 340 PVS_x_2_3_6_2 + 60 PVS_x_2_3_7_2 + 70 PVS_x_2_3_8_2
+ 240 PVS_x_2_3_9_2 >= 568.181818182

_C24: 960 PVM_x_1_3_10_3 + 740 PVM_x_1_3_11_3 + 680 PVM_x_1_3_12_3
+ 490 PVM_x_1_3_13_3 + 660 PVM_x_1_3_14_3 + 660 PVM_x_1_3_15_3
+ 670 PVM_x_1_3_16_3 + 630 PVM_x_1_3_17_3 + 1360 PVM_x_1_3_18_3
+ 760 PVM_x_1_3_19_3 + 590 PVM_x_1_3_1_3 + 570 PVM_x_1_3_2_3
+ 840 PVM_x_1_3_3_3 + 500 PVM_x_1_3_4_3 + 700 PVM_x_1_3_5_3
+ 640 PVM_x_1_3_6_3 + 740 PVM_x_1_3_7_3 + 690 PVM_x_1_3_8_3
+ 1000 PVM_x_1_3_9_3 + 270 PVS_x_2_3_10_3 + 310 PVS_x_2_3_11_3
+ 130 PVS_x_2_3_12_3 + 80 PVS_x_2_3_13_3 + 120 PVS_x_2_3_1_3
+ 940 PVS_x_2_3_2_3 + 540 PVS_x_2_3_3_3 + 1280 PVS_x_2_3_4_3
+ 830 PVS_x_2_3_5_3 + 340 PVS_x_2_3_6_3 + 60 PVS_x_2_3_7_3 + 70 PVS_x_2_3_8_3
+ 240 PVS_x_2_3_9_3 <= 1363.63636364

_C25: 960 PVM_x_1_3_10_3 + 740 PVM_x_1_3_11_3 + 680 PVM_x_1_3_12_3
+ 490 PVM_x_1_3_13_3 + 660 PVM_x_1_3_14_3 + 660 PVM_x_1_3_15_3
+ 670 PVM_x_1_3_16_3 + 630 PVM_x_1_3_17_3 + 1360 PVM_x_1_3_18_3
+ 760 PVM_x_1_3_19_3 + 590 PVM_x_1_3_1_3 + 570 PVM_x_1_3_2_3
+ 840 PVM_x_1_3_3_3 + 500 PVM_x_1_3_4_3 + 700 PVM_x_1_3_5_3
+ 640 PVM_x_1_3_6_3 + 740 PVM_x_1_3_7_3 + 690 PVM_x_1_3_8_3
+ 1000 PVM_x_1_3_9_3 + 270 PVS_x_2_3_10_3 + 310 PVS_x_2_3_11_3
+ 130 PVS_x_2_3_12_3 + 80 PVS_x_2_3_13_3 + 120 PVS_x_2_3_1_3
+ 940 PVS_x_2_3_2_3 + 540 PVS_x_2_3_3_3 + 1280 PVS_x_2_3_4_3
+ 830 PVS_x_2_3_5_3 + 340 PVS_x_2_3_6_3 + 60 PVS_x_2_3_7_3 + 70 PVS_x_2_3_8_3
+ 240 PVS_x_2_3_9_3 >= 568.181818182

_C26: 52 PVM_x_1_3_10_1 + 21 PVM_x_1_3_11_1 + 36 PVM_x_1_3_12_1
+ 12 PVM_x_1_3_13_1 + 13 PVM_x_1_3_14_1 + 25 PVM_x_1_3_15_1
+ 30 PVM_x_1_3_16_1 + 27 PVM_x_1_3_17_1 + 137 PVM_x_1_3_18_1
+ 69 PVM_x_1_3_19_1 + 32 PVM_x_1_3_1_1 + 55 PVM_x_1_3_2_1 + 52 PVM_x_1_3_3_1
+ 9 PVM_x_1_3_4_1 + 37 PVM_x_1_3_5_1 + 28 PVM_x_1_3_6_1 + 49 PVM_x_1_3_7_1
+ 26 PVM_x_1_3_8_1 + 32 PVM_x_1_3_9_1 + 3 PVS_x_2_3_10_1 + 9 PVS_x_2_3_11_1
+ 1.5 PVS_x_2_3_12_1 + 2 PVS_x_2_3_13_1 + 9 PVS_x_2_3_1_1 + 57 PVS_x_2_3_2_1
+ 26 PVS_x_2_3_3_1 + 96 PVS_x_2_3_4_1 + 63 PVS_x_2_3_5_1 + 32 PVS_x_2_3_6_1
+ 5 PVS_x_2_3_7_1 + 3 PVS_x_2_3_8_1 + 7 PVS_x_2_3_9_1 <= 53.0303030303

_C27: 52 PVM_x_1_3_10_1 + 21 PVM_x_1_3_11_1 + 36 PVM_x_1_3_12_1
+ 12 PVM_x_1_3_13_1 + 13 PVM_x_1_3_14_1 + 25 PVM_x_1_3_15_1
+ 30 PVM_x_1_3_16_1 + 27 PVM_x_1_3_17_1 + 137 PVM_x_1_3_18_1
+ 69 PVM_x_1_3_19_1 + 32 PVM_x_1_3_1_1 + 55 PVM_x_1_3_2_1 + 52 PVM_x_1_3_3_1
+ 9 PVM_x_1_3_4_1 + 37 PVM_x_1_3_5_1 + 28 PVM_x_1_3_6_1 + 49 PVM_x_1_3_7_1
+ 26 PVM_x_1_3_8_1 + 32 PVM_x_1_3_9_1 + 3 PVS_x_2_3_10_1 + 9 PVS_x_2_3_11_1
+ 1.5 PVS_x_2_3_12_1 + 2 PVS_x_2_3_13_1 + 9 PVS_x_2_3_1_1 + 57 PVS_x_2_3_2_1
+ 26 PVS_x_2_3_3_1 + 96 PVS_x_2_3_4_1 + 63 PVS_x_2_3_5_1 + 32 PVS_x_2_3_6_1
+ 5 PVS_x_2_3_7_1 + 3 PVS_x_2_3_8_1 + 7 PVS_x_2_3_9_1 >= 12.6262626263

_C28: 52 PVM_x_1_3_10_2 + 21 PVM_x_1_3_11_2 + 36 PVM_x_1_3_12_2
+ 12 PVM_x_1_3_13_2 + 13 PVM_x_1_3_14_2 + 25 PVM_x_1_3_15_2
+ 30 PVM_x_1_3_16_2 + 27 PVM_x_1_3_17_2 + 137 PVM_x_1_3_18_2
+ 69 PVM_x_1_3_19_2 + 32 PVM_x_1_3_1_2 + 55 PVM_x_1_3_2_2 + 52 PVM_x_1_3_3_2
+ 9 PVM_x_1_3_4_2 + 37 PVM_x_1_3_5_2 + 28 PVM_x_1_3_6_2 + 49 PVM_x_1_3_7_2
+ 26 PVM_x_1_3_8_2 + 32 PVM_x_1_3_9_2 + 3 PVS_x_2_3_10_2 + 9 PVS_x_2_3_11_2
+ 1.5 PVS_x_2_3_12_2 + 2 PVS_x_2_3_13_2 + 9 PVS_x_2_3_1_2 + 57 PVS_x_2_3_2_2
+ 26 PVS_x_2_3_3_2 + 96 PVS_x_2_3_4_2 + 63 PVS_x_2_3_5_2 + 32 PVS_x_2_3_6_2
+ 5 PVS_x_2_3_7_2 + 3 PVS_x_2_3_8_2 + 7 PVS_x_2_3_9_2 <= 53.0303030303

_C29: 52 PVM_x_1_3_10_2 + 21 PVM_x_1_3_11_2 + 36 PVM_x_1_3_12_2
+ 12 PVM_x_1_3_13_2 + 13 PVM_x_1_3_14_2 + 25 PVM_x_1_3_15_2
+ 30 PVM_x_1_3_16_2 + 27 PVM_x_1_3_17_2 + 137 PVM_x_1_3_18_2
+ 69 PVM_x_1_3_19_2 + 32 PVM_x_1_3_1_2 + 55 PVM_x_1_3_2_2 + 52 PVM_x_1_3_3_2
+ 9 PVM_x_1_3_4_2 + 37 PVM_x_1_3_5_2 + 28 PVM_x_1_3_6_2 + 49 PVM_x_1_3_7_2
+ 26 PVM_x_1_3_8_2 + 32 PVM_x_1_3_9_2 + 3 PVS_x_2_3_10_2 + 9 PVS_x_2_3_11_2
+ 1.5 PVS_x_2_3_12_2 + 2 PVS_x_2_3_13_2 + 9 PVS_x_2_3_1_2 + 57 PVS_x_2_3_2_2
+ 26 PVS_x_2_3_3_2 + 96 PVS_x_2_3_4_2 + 63 PVS_x_2_3_5_2 + 32 PVS_x_2_3_6_2
+ 5 PVS_x_2_3_7_2 + 3 PVS_x_2_3_8_2 + 7 PVS_x_2_3_9_2 >= 12.6262626263

_C30: 52 PVM_x_1_3_10_3 + 21 PVM_x_1_3_11_3 + 36 PVM_x_1_3_12_3
+ 12 PVM_x_1_3_13_3 + 13 PVM_x_1_3_14_3 + 25 PVM_x_1_3_15_3
+ 30 PVM_x_1_3_16_3 + 27 PVM_x_1_3_17_3 + 137 PVM_x_1_3_18_3
+ 69 PVM_x_1_3_19_3 + 32 PVM_x_1_3_1_3 + 55 PVM_x_1_3_2_3 + 52 PVM_x_1_3_3_3
+ 9 PVM_x_1_3_4_3 + 37 PVM_x_1_3_5_3 + 28 PVM_x_1_3_6_3 + 49 PVM_x_1_3_7_3
+ 26 PVM_x_1_3_8_3 + 32 PVM_x_1_3_9_3 + 3 PVS_x_2_3_10_3 + 9 PVS_x_2_3_11_3
+ 1.5 PVS_x_2_3_12_3 + 2 PVS_x_2_3_13_3 + 9 PVS_x_2_3_1_3 + 57 PVS_x_2_3_2_3
+ 26 PVS_x_2_3_3_3 + 96 PVS_x_2_3_4_3 + 63 PVS_x_2_3_5_3 + 32 PVS_x_2_3_6_3
+ 5 PVS_x_2_3_7_3 + 3 PVS_x_2_3_8_3 + 7 PVS_x_2_3_9_3 <= 53.0303030303

_C31: 52 PVM_x_1_3_10_3 + 21 PVM_x_1_3_11_3 + 36 PVM_x_1_3_12_3
+ 12 PVM_x_1_3_13_3 + 13 PVM_x_1_3_14_3 + 25 PVM_x_1_3_15_3
+ 30 PVM_x_1_3_16_3 + 27 PVM_x_1_3_17_3 + 137 PVM_x_1_3_18_3
+ 69 PVM_x_1_3_19_3 + 32 PVM_x_1_3_1_3 + 55 PVM_x_1_3_2_3 + 52 PVM_x_1_3_3_3
+ 9 PVM_x_1_3_4_3 + 37 PVM_x_1_3_5_3 + 28 PVM_x_1_3_6_3 + 49 PVM_x_1_3_7_3
+ 26 PVM_x_1_3_8_3 + 32 PVM_x_1_3_9_3 + 3 PVS_x_2_3_10_3 + 9 PVS_x_2_3_11_3
+ 1.5 PVS_x_2_3_12_3 + 2 PVS_x_2_3_13_3 + 9 PVS_x_2_3_1_3 + 57 PVS_x_2_3_2_3
+ 26 PVS_x_2_3_3_3 + 96 PVS_x_2_3_4_3 + 63 PVS_x_2_3_5_3 + 32 PVS_x_2_3_6_3
+ 5 PVS_x_2_3_7_3 + 3 PVS_x_2_3_8_3 + 7 PVS_x_2_3_9_3 >= 12.6262626263

_C32: 6 PVM_x_1_3_10_1 + 1.5 PVM_x_1_3_11_1 + 3.5 PVM_x_1_3_12_1
+ 2 PVM_x_1_3_13_1 + 2 PVM_x_1_3_14_1 + 6 PVM_x_1_3_15_1 + 6 PVM_x_1_3_16_1
+ 4 PVM_x_1_3_17_1 + 36 PVM_x_1_3_18_1 + 6 PVM_x_1_3_19_1 + 8 PVM_x_1_3_1_1
+ 33 PVM_x_1_3_2_1 + 18 PVM_x_1_3_3_1 + PVM_x_1_3_4_1 + 11 PVM_x_1_3_5_1
+ 8 PVM_x_1_3_6_1 + 8 PVM_x_1_3_7_1 + 10 PVM_x_1_3_8_1 + 6 PVM_x_1_3_9_1
+ 0.5 PVS_x_2_3_10_1 + 4 PVS_x_2_3_11_1 + 0.5 PVS_x_2_3_1_1

+ 17 PVS_x_2_3_2_1 + 2 PVS_x_2_3_3_1 + 4.5 PVS_x_2_3_4_1 + 6 PVS_x_2_3_5_1
+ 11 PVS_x_2_3_6_1 + 3 PVS_x_2_3_7_1 + PVS_x_2_3_9_1 <= 15.1515151515

_C33: 6 PVM_x_1_3_10_1 + 1.5 PVM_x_1_3_11_1 + 3.5 PVM_x_1_3_12_1
+ 2 PVM_x_1_3_13_1 + 2 PVM_x_1_3_14_1 + 6 PVM_x_1_3_15_1 + 6 PVM_x_1_3_16_1
+ 4 PVM_x_1_3_17_1 + 36 PVM_x_1_3_18_1 + 6 PVM_x_1_3_19_1 + 8 PVM_x_1_3_1_1
+ 33 PVM_x_1_3_2_1 + 18 PVM_x_1_3_3_1 + PVM_x_1_3_4_1 + 11 PVM_x_1_3_5_1
+ 8 PVM_x_1_3_6_1 + 8 PVM_x_1_3_7_1 + 10 PVM_x_1_3_8_1 + 6 PVM_x_1_3_9_1
+ 0.5 PVS_x_2_3_10_1 + 4 PVS_x_2_3_11_1 + 0.5 PVS_x_2_3_1_1
+ 17 PVS_x_2_3_2_1 + 2 PVS_x_2_3_3_1 + 4.5 PVS_x_2_3_4_1 + 6 PVS_x_2_3_5_1
+ 11 PVS_x_2_3_6_1 + 3 PVS_x_2_3_7_1 + PVS_x_2_3_9_1 >= 0

_C34: 6 PVM_x_1_3_10_2 + 1.5 PVM_x_1_3_11_2 + 3.5 PVM_x_1_3_12_2
+ 2 PVM_x_1_3_13_2 + 2 PVM_x_1_3_14_2 + 6 PVM_x_1_3_15_2 + 6 PVM_x_1_3_16_2
+ 4 PVM_x_1_3_17_2 + 36 PVM_x_1_3_18_2 + 6 PVM_x_1_3_19_2 + 8 PVM_x_1_3_1_2
+ 33 PVM_x_1_3_2_2 + 18 PVM_x_1_3_3_2 + PVM_x_1_3_4_2 + 11 PVM_x_1_3_5_2
+ 8 PVM_x_1_3_6_2 + 8 PVM_x_1_3_7_2 + 10 PVM_x_1_3_8_2 + 6 PVM_x_1_3_9_2
+ 0.5 PVS_x_2_3_10_2 + 4 PVS_x_2_3_11_2 + 0.5 PVS_x_2_3_1_2
+ 17 PVS_x_2_3_2_2 + 2 PVS_x_2_3_3_2 + 4.5 PVS_x_2_3_4_2 + 6 PVS_x_2_3_5_2
+ 11 PVS_x_2_3_6_2 + 3 PVS_x_2_3_7_2 + PVS_x_2_3_9_2 <= 15.1515151515

_C35: 6 PVM_x_1_3_10_2 + 1.5 PVM_x_1_3_11_2 + 3.5 PVM_x_1_3_12_2
+ 2 PVM_x_1_3_13_2 + 2 PVM_x_1_3_14_2 + 6 PVM_x_1_3_15_2 + 6 PVM_x_1_3_16_2
+ 4 PVM_x_1_3_17_2 + 36 PVM_x_1_3_18_2 + 6 PVM_x_1_3_19_2 + 8 PVM_x_1_3_1_2
+ 33 PVM_x_1_3_2_2 + 18 PVM_x_1_3_3_2 + PVM_x_1_3_4_2 + 11 PVM_x_1_3_5_2
+ 8 PVM_x_1_3_6_2 + 8 PVM_x_1_3_7_2 + 10 PVM_x_1_3_8_2 + 6 PVM_x_1_3_9_2
+ 0.5 PVS_x_2_3_10_2 + 4 PVS_x_2_3_11_2 + 0.5 PVS_x_2_3_1_2
+ 17 PVS_x_2_3_2_2 + 2 PVS_x_2_3_3_2 + 4.5 PVS_x_2_3_4_2 + 6 PVS_x_2_3_5_2
+ 11 PVS_x_2_3_6_2 + 3 PVS_x_2_3_7_2 + PVS_x_2_3_9_2 >= 0

_C36: 6 PVM_x_1_3_10_3 + 1.5 PVM_x_1_3_11_3 + 3.5 PVM_x_1_3_12_3
+ 2 PVM_x_1_3_13_3 + 2 PVM_x_1_3_14_3 + 6 PVM_x_1_3_15_3 + 6 PVM_x_1_3_16_3
+ 4 PVM_x_1_3_17_3 + 36 PVM_x_1_3_18_3 + 6 PVM_x_1_3_19_3 + 8 PVM_x_1_3_1_3
+ 33 PVM_x_1_3_2_3 + 18 PVM_x_1_3_3_3 + PVM_x_1_3_4_3 + 11 PVM_x_1_3_5_3
+ 8 PVM_x_1_3_6_3 + 8 PVM_x_1_3_7_3 + 10 PVM_x_1_3_8_3 + 6 PVM_x_1_3_9_3
+ 0.5 PVS_x_2_3_10_3 + 4 PVS_x_2_3_11_3 + 0.5 PVS_x_2_3_1_3
+ 17 PVS_x_2_3_2_3 + 2 PVS_x_2_3_3_3 + 4.5 PVS_x_2_3_4_3 + 6 PVS_x_2_3_5_3
+ 11 PVS_x_2_3_6_3 + 3 PVS_x_2_3_7_3 + PVS_x_2_3_9_3 <= 15.1515151515

_C37: 6 PVM_x_1_3_10_3 + 1.5 PVM_x_1_3_11_3 + 3.5 PVM_x_1_3_12_3
+ 2 PVM_x_1_3_13_3 + 2 PVM_x_1_3_14_3 + 6 PVM_x_1_3_15_3 + 6 PVM_x_1_3_16_3
+ 4 PVM_x_1_3_17_3 + 36 PVM_x_1_3_18_3 + 6 PVM_x_1_3_19_3 + 8 PVM_x_1_3_1_3
+ 33 PVM_x_1_3_2_3 + 18 PVM_x_1_3_3_3 + PVM_x_1_3_4_3 + 11 PVM_x_1_3_5_3
+ 8 PVM_x_1_3_6_3 + 8 PVM_x_1_3_7_3 + 10 PVM_x_1_3_8_3 + 6 PVM_x_1_3_9_3
+ 0.5 PVS_x_2_3_10_3 + 4 PVS_x_2_3_11_3 + 0.5 PVS_x_2_3_1_3
+ 17 PVS_x_2_3_2_3 + 2 PVS_x_2_3_3_3 + 4.5 PVS_x_2_3_4_3 + 6 PVS_x_2_3_5_3
+ 11 PVS_x_2_3_6_3 + 3 PVS_x_2_3_7_3 + PVS_x_2_3_9_3 >= 0

_C38: 0.5 PVM_x_1_3_1_1 + 1.5 PVM_x_1_3_2_1 + 1.5 PVM_x_1_3_3_1
<= 1.51515151515

_C39: 0.5 PVM_x_1_3_1_1 + 1.5 PVM_x_1_3_2_1 + 1.5 PVM_x_1_3_3_1 >= 0

_C40: 0.5 PVM_x_1_3_1_2 + 1.5 PVM_x_1_3_2_2 + 1.5 PVM_x_1_3_3_2
<= 1.51515151515

_C41: 0.5 PVM_x_1_3_1_2 + 1.5 PVM_x_1_3_2_2 + 1.5 PVM_x_1_3_3_2 >= 0

_C42: 0.5 PVM_x_1_3_1_3 + 1.5 PVM_x_1_3_2_3 + 1.5 PVM_x_1_3_3_3
<= 1.51515151515

_C43: 0.5 PVM_x_1_3_1_3 + 1.5 PVM_x_1_3_2_3 + 1.5 PVM_x_1_3_3_3 >= 0

_C44: 5 PVM_x_1_3_12_1 + 45 PVM_x_1_3_14_1 + 110 PVM_x_1_3_15_1
+ 15 PVM_x_1_3_17_1 + 120 PVM_x_1_3_18_1 + 85 PVM_x_1_3_1_1
+ 145 PVM_x_1_3_2_1 + 110 PVM_x_1_3_3_1 + 120 PVM_x_1_3_4_1
+ 25 PVM_x_1_3_5_1 + 15 PVM_x_1_3_6_1 + 30 PVM_x_1_3_7_1 + 10 PVM_x_1_3_9_1
+ 80 PVS_x_2_3_2_1 + 75 PVS_x_2_3_4_1 + 10 PVS_x_2_3_5_1 + 70 PVS_x_2_3_6_1
+ 15 PVS_x_2_3_7_1 + 50 PVS_x_2_3_9_1 <= 136.363636364

_C45: 5 PVM_x_1_3_12_1 + 45 PVM_x_1_3_14_1 + 110 PVM_x_1_3_15_1
+ 15 PVM_x_1_3_17_1 + 120 PVM_x_1_3_18_1 + 85 PVM_x_1_3_1_1
+ 145 PVM_x_1_3_2_1 + 110 PVM_x_1_3_3_1 + 120 PVM_x_1_3_4_1
+ 25 PVM_x_1_3_5_1 + 15 PVM_x_1_3_6_1 + 30 PVM_x_1_3_7_1 + 10 PVM_x_1_3_9_1
+ 80 PVS_x_2_3_2_1 + 75 PVS_x_2_3_4_1 + 10 PVS_x_2_3_5_1 + 70 PVS_x_2_3_6_1
+ 15 PVS_x_2_3_7_1 + 50 PVS_x_2_3_9_1 >= 0

_C46: 5 PVM_x_1_3_12_2 + 45 PVM_x_1_3_14_2 + 110 PVM_x_1_3_15_2
+ 15 PVM_x_1_3_17_2 + 120 PVM_x_1_3_18_2 + 85 PVM_x_1_3_1_2
+ 145 PVM_x_1_3_2_2 + 110 PVM_x_1_3_3_2 + 120 PVM_x_1_3_4_2
+ 25 PVM_x_1_3_5_2 + 15 PVM_x_1_3_6_2 + 30 PVM_x_1_3_7_2 + 10 PVM_x_1_3_9_2
+ 80 PVS_x_2_3_2_2 + 75 PVS_x_2_3_4_2 + 10 PVS_x_2_3_5_2 + 70 PVS_x_2_3_6_2
+ 15 PVS_x_2_3_7_2 + 50 PVS_x_2_3_9_2 <= 136.363636364

_C47: 5 PVM_x_1_3_12_2 + 45 PVM_x_1_3_14_2 + 110 PVM_x_1_3_15_2
+ 15 PVM_x_1_3_17_2 + 120 PVM_x_1_3_18_2 + 85 PVM_x_1_3_1_2
+ 145 PVM_x_1_3_2_2 + 110 PVM_x_1_3_3_2 + 120 PVM_x_1_3_4_2
+ 25 PVM_x_1_3_5_2 + 15 PVM_x_1_3_6_2 + 30 PVM_x_1_3_7_2 + 10 PVM_x_1_3_9_2
+ 80 PVS_x_2_3_2_2 + 75 PVS_x_2_3_4_2 + 10 PVS_x_2_3_5_2 + 70 PVS_x_2_3_6_2
+ 15 PVS_x_2_3_7_2 + 50 PVS_x_2_3_9_2 >= 0

_C48: 5 PVM_x_1_3_12_3 + 45 PVM_x_1_3_14_3 + 110 PVM_x_1_3_15_3
+ 15 PVM_x_1_3_17_3 + 120 PVM_x_1_3_18_3 + 85 PVM_x_1_3_1_3
+ 145 PVM_x_1_3_2_3 + 110 PVM_x_1_3_3_3 + 120 PVM_x_1_3_4_3

+ 25 PVM_x_1_3_5_3 + 15 PVM_x_1_3_6_3 + 30 PVM_x_1_3_7_3 + 10 PVM_x_1_3_9_3
+ 80 PVS_x_2_3_2_3 + 75 PVS_x_2_3_4_3 + 10 PVS_x_2_3_5_3 + 70 PVS_x_2_3_6_3
+ 15 PVS_x_2_3_7_3 + 50 PVS_x_2_3_9_3 <= 136.363636364

_C49: 5 PVM_x_1_3_12_3 + 45 PVM_x_1_3_14_3 + 110 PVM_x_1_3_15_3
+ 15 PVM_x_1_3_17_3 + 120 PVM_x_1_3_18_3 + 85 PVM_x_1_3_1_3
+ 145 PVM_x_1_3_2_3 + 110 PVM_x_1_3_3_3 + 120 PVM_x_1_3_4_3
+ 25 PVM_x_1_3_5_3 + 15 PVM_x_1_3_6_3 + 30 PVM_x_1_3_7_3 + 10 PVM_x_1_3_9_3
+ 80 PVS_x_2_3_2_3 + 75 PVS_x_2_3_4_3 + 10 PVS_x_2_3_5_3 + 70 PVS_x_2_3_6_3
+ 15 PVS_x_2_3_7_3 + 50 PVS_x_2_3_9_3 >= 0

_C50: 440 PVM_x_1_3_10_1 + 980 PVM_x_1_3_11_1 + 630 PVM_x_1_3_12_1
+ 400 PVM_x_1_3_13_1 + 1540 PVM_x_1_3_14_1 + 610 PVM_x_1_3_15_1
+ 400 PVM_x_1_3_16_1 + 1660 PVM_x_1_3_17_1 + 1300 PVM_x_1_3_18_1
+ 280 PVM_x_1_3_19_1 + 1010 PVM_x_1_3_1_1 + 380 PVM_x_1_3_2_1
+ 1880 PVM_x_1_3_3_1 + 920 PVM_x_1_3_4_1 + 1080 PVM_x_1_3_5_1
+ 570 PVM_x_1_3_6_1 + 1470 PVM_x_1_3_7_1 + 410 PVM_x_1_3_8_1
+ 370 PVM_x_1_3_9_1 + 230 PVS_x_2_3_10_1 + 880 PVS_x_2_3_11_1
+ 290 PVS_x_2_3_12_1 + 1100 PVS_x_2_3_13_1 + 45 PVS_x_2_3_1_1
+ 2430 PVS_x_2_3_2_1 + 1350 PVS_x_2_3_3_1 + 1860 PVS_x_2_3_4_1
+ 650 PVS_x_2_3_5_1 + 680 PVS_x_2_3_6_1 + 105 PVS_x_2_3_7_1
+ 570 PVS_x_2_3_8_1 + 380 PVS_x_2_3_9_1 <= 1045.45454545

_C51: 440 PVM_x_1_3_10_1 + 980 PVM_x_1_3_11_1 + 630 PVM_x_1_3_12_1
+ 400 PVM_x_1_3_13_1 + 1540 PVM_x_1_3_14_1 + 610 PVM_x_1_3_15_1
+ 400 PVM_x_1_3_16_1 + 1660 PVM_x_1_3_17_1 + 1300 PVM_x_1_3_18_1
+ 280 PVM_x_1_3_19_1 + 1010 PVM_x_1_3_1_1 + 380 PVM_x_1_3_2_1
+ 1880 PVM_x_1_3_3_1 + 920 PVM_x_1_3_4_1 + 1080 PVM_x_1_3_5_1
+ 570 PVM_x_1_3_6_1 + 1470 PVM_x_1_3_7_1 + 410 PVM_x_1_3_8_1
+ 370 PVM_x_1_3_9_1 + 230 PVS_x_2_3_10_1 + 880 PVS_x_2_3_11_1
+ 290 PVS_x_2_3_12_1 + 1100 PVS_x_2_3_13_1 + 45 PVS_x_2_3_1_1
+ 2430 PVS_x_2_3_2_1 + 1350 PVS_x_2_3_3_1 + 1860 PVS_x_2_3_4_1
+ 650 PVS_x_2_3_5_1 + 680 PVS_x_2_3_6_1 + 105 PVS_x_2_3_7_1
+ 570 PVS_x_2_3_8_1 + 380 PVS_x_2_3_9_1 >= 0

_C52: 440 PVM_x_1_3_10_2 + 980 PVM_x_1_3_11_2 + 630 PVM_x_1_3_12_2
+ 400 PVM_x_1_3_13_2 + 1540 PVM_x_1_3_14_2 + 610 PVM_x_1_3_15_2
+ 400 PVM_x_1_3_16_2 + 1660 PVM_x_1_3_17_2 + 1300 PVM_x_1_3_18_2
+ 280 PVM_x_1_3_19_2 + 1010 PVM_x_1_3_1_2 + 380 PVM_x_1_3_2_2
+ 1880 PVM_x_1_3_3_2 + 920 PVM_x_1_3_4_2 + 1080 PVM_x_1_3_5_2
+ 570 PVM_x_1_3_6_2 + 1470 PVM_x_1_3_7_2 + 410 PVM_x_1_3_8_2
+ 370 PVM_x_1_3_9_2 + 230 PVS_x_2_3_10_2 + 880 PVS_x_2_3_11_2
+ 290 PVS_x_2_3_12_2 + 1100 PVS_x_2_3_13_2 + 45 PVS_x_2_3_1_2
+ 2430 PVS_x_2_3_2_2 + 1350 PVS_x_2_3_3_2 + 1860 PVS_x_2_3_4_2
+ 650 PVS_x_2_3_5_2 + 680 PVS_x_2_3_6_2 + 105 PVS_x_2_3_7_2
+ 570 PVS_x_2_3_8_2 + 380 PVS_x_2_3_9_2 <= 1045.45454545

_C53: 440 PVM_x_1_3_10_2 + 980 PVM_x_1_3_11_2 + 630 PVM_x_1_3_12_2
+ 400 PVM_x_1_3_13_2 + 1540 PVM_x_1_3_14_2 + 610 PVM_x_1_3_15_2
+ 400 PVM_x_1_3_16_2 + 1660 PVM_x_1_3_17_2 + 1300 PVM_x_1_3_18_2
+ 280 PVM_x_1_3_19_2 + 1010 PVM_x_1_3_1_2 + 380 PVM_x_1_3_2_2
+ 1880 PVM_x_1_3_3_2 + 920 PVM_x_1_3_4_2 + 1080 PVM_x_1_3_5_2
+ 570 PVM_x_1_3_6_2 + 1470 PVM_x_1_3_7_2 + 410 PVM_x_1_3_8_2
+ 370 PVM_x_1_3_9_2 + 230 PVS_x_2_3_10_2 + 880 PVS_x_2_3_11_2
+ 290 PVS_x_2_3_12_2 + 1100 PVS_x_2_3_13_2 + 45 PVS_x_2_3_1_2
+ 2430 PVS_x_2_3_2_2 + 1350 PVS_x_2_3_3_2 + 1860 PVS_x_2_3_4_2
+ 650 PVS_x_2_3_5_2 + 680 PVS_x_2_3_6_2 + 105 PVS_x_2_3_7_2
+ 570 PVS_x_2_3_8_2 + 380 PVS_x_2_3_9_2 >= 0

_C54: 440 PVM_x_1_3_10_3 + 980 PVM_x_1_3_11_3 + 630 PVM_x_1_3_12_3
+ 400 PVM_x_1_3_13_3 + 1540 PVM_x_1_3_14_3 + 610 PVM_x_1_3_15_3
+ 400 PVM_x_1_3_16_3 + 1660 PVM_x_1_3_17_3 + 1300 PVM_x_1_3_18_3
+ 280 PVM_x_1_3_19_3 + 1010 PVM_x_1_3_1_3 + 380 PVM_x_1_3_2_3
+ 1880 PVM_x_1_3_3_3 + 920 PVM_x_1_3_4_3 + 1080 PVM_x_1_3_5_3
+ 570 PVM_x_1_3_6_3 + 1470 PVM_x_1_3_7_3 + 410 PVM_x_1_3_8_3
+ 370 PVM_x_1_3_9_3 + 230 PVS_x_2_3_10_3 + 880 PVS_x_2_3_11_3
+ 290 PVS_x_2_3_12_3 + 1100 PVS_x_2_3_13_3 + 45 PVS_x_2_3_1_3
+ 2430 PVS_x_2_3_2_3 + 1350 PVS_x_2_3_3_3 + 1860 PVS_x_2_3_4_3
+ 650 PVS_x_2_3_5_3 + 680 PVS_x_2_3_6_3 + 105 PVS_x_2_3_7_3
+ 570 PVS_x_2_3_8_3 + 380 PVS_x_2_3_9_3 <= 1045.45454545

_C55: 440 PVM_x_1_3_10_3 + 980 PVM_x_1_3_11_3 + 630 PVM_x_1_3_12_3
+ 400 PVM_x_1_3_13_3 + 1540 PVM_x_1_3_14_3 + 610 PVM_x_1_3_15_3
+ 400 PVM_x_1_3_16_3 + 1660 PVM_x_1_3_17_3 + 1300 PVM_x_1_3_18_3
+ 280 PVM_x_1_3_19_3 + 1010 PVM_x_1_3_1_3 + 380 PVM_x_1_3_2_3
+ 1880 PVM_x_1_3_3_3 + 920 PVM_x_1_3_4_3 + 1080 PVM_x_1_3_5_3
+ 570 PVM_x_1_3_6_3 + 1470 PVM_x_1_3_7_3 + 410 PVM_x_1_3_8_3
+ 370 PVM_x_1_3_9_3 + 230 PVS_x_2_3_10_3 + 880 PVS_x_2_3_11_3
+ 290 PVS_x_2_3_12_3 + 1100 PVS_x_2_3_13_3 + 45 PVS_x_2_3_1_3
+ 2430 PVS_x_2_3_2_3 + 1350 PVS_x_2_3_3_3 + 1860 PVS_x_2_3_4_3
+ 650 PVS_x_2_3_5_3 + 680 PVS_x_2_3_6_3 + 105 PVS_x_2_3_7_3
+ 570 PVS_x_2_3_8_3 + 380 PVS_x_2_3_9_3 >= 0

_C56: 106 PVM_x_1_3_10_1 + 121 PVM_x_1_3_11_1 + 72 PVM_x_1_3_12_1
+ 81 PVM_x_1_3_13_1 + 96 PVM_x_1_3_14_1 + 74 PVM_x_1_3_15_1
+ 77 PVM_x_1_3_16_1 + 79 PVM_x_1_3_17_1 + 13 PVM_x_1_3_18_1
+ 36 PVM_x_1_3_19_1 + 52 PVM_x_1_3_1_1 + 7 PVM_x_1_3_2_1 + 58 PVM_x_1_3_3_1
+ 56 PVM_x_1_3_4_1 + 60 PVM_x_1_3_5_1 + 80 PVM_x_1_3_6_1 + 64 PVM_x_1_3_7_1
+ 95 PVM_x_1_3_8_1 + 150 PVM_x_1_3_9_1 + 51 PVS_x_2_3_10_1
+ 47 PVS_x_2_3_11_1 + 27 PVS_x_2_3_12_1 + 10 PVS_x_2_3_13_1
+ 10 PVS_x_2_3_1_1 + 80 PVS_x_2_3_2_1 + 71 PVS_x_2_3_3_1 + 67 PVS_x_2_3_4_1
+ 64 PVS_x_2_3_5_1 + 5 PVS_x_2_3_8_1 + 28 PVS_x_2_3_9_1 <= 147.727272727

_C57: 106 PVM_x_1_3_10_1 + 121 PVM_x_1_3_11_1 + 72 PVM_x_1_3_12_1

+ 81 PVM_x_1_3_13_1 + 96 PVM_x_1_3_14_1 + 74 PVM_x_1_3_15_1
+ 77 PVM_x_1_3_16_1 + 79 PVM_x_1_3_17_1 + 13 PVM_x_1_3_18_1
+ 36 PVM_x_1_3_19_1 + 52 PVM_x_1_3_1_1 + 7 PVM_x_1_3_2_1 + 58 PVM_x_1_3_3_1
+ 56 PVM_x_1_3_4_1 + 60 PVM_x_1_3_5_1 + 80 PVM_x_1_3_6_1 + 64 PVM_x_1_3_7_1
+ 95 PVM_x_1_3_8_1 + 150 PVM_x_1_3_9_1 + 51 PVS_x_2_3_10_1
+ 47 PVS_x_2_3_11_1 + 27 PVS_x_2_3_12_1 + 10 PVS_x_2_3_13_1
+ 10 PVS_x_2_3_1_1 + 80 PVS_x_2_3_2_1 + 71 PVS_x_2_3_3_1 + 67 PVS_x_2_3_4_1
+ 64 PVS_x_2_3_5_1 + 5 PVS_x_2_3_8_1 + 28 PVS_x_2_3_9_1 >= 102.272727273

_C58: 106 PVM_x_1_3_10_2 + 121 PVM_x_1_3_11_2 + 72 PVM_x_1_3_12_2
+ 81 PVM_x_1_3_13_2 + 96 PVM_x_1_3_14_2 + 74 PVM_x_1_3_15_2
+ 77 PVM_x_1_3_16_2 + 79 PVM_x_1_3_17_2 + 13 PVM_x_1_3_18_2
+ 36 PVM_x_1_3_19_2 + 52 PVM_x_1_3_1_2 + 7 PVM_x_1_3_2_2 + 58 PVM_x_1_3_3_2
+ 56 PVM_x_1_3_4_2 + 60 PVM_x_1_3_5_2 + 80 PVM_x_1_3_6_2 + 64 PVM_x_1_3_7_2
+ 95 PVM_x_1_3_8_2 + 150 PVM_x_1_3_9_2 + 51 PVS_x_2_3_10_2
+ 47 PVS_x_2_3_11_2 + 27 PVS_x_2_3_12_2 + 10 PVS_x_2_3_13_2
+ 10 PVS_x_2_3_1_2 + 80 PVS_x_2_3_2_2 + 71 PVS_x_2_3_3_2 + 67 PVS_x_2_3_4_2
+ 64 PVS_x_2_3_5_2 + 5 PVS_x_2_3_8_2 + 28 PVS_x_2_3_9_2 <= 147.727272727

_C59: 106 PVM_x_1_3_10_2 + 121 PVM_x_1_3_11_2 + 72 PVM_x_1_3_12_2
+ 81 PVM_x_1_3_13_2 + 96 PVM_x_1_3_14_2 + 74 PVM_x_1_3_15_2
+ 77 PVM_x_1_3_16_2 + 79 PVM_x_1_3_17_2 + 13 PVM_x_1_3_18_2
+ 36 PVM_x_1_3_19_2 + 52 PVM_x_1_3_1_2 + 7 PVM_x_1_3_2_2 + 58 PVM_x_1_3_3_2
+ 56 PVM_x_1_3_4_2 + 60 PVM_x_1_3_5_2 + 80 PVM_x_1_3_6_2 + 64 PVM_x_1_3_7_2
+ 95 PVM_x_1_3_8_2 + 150 PVM_x_1_3_9_2 + 51 PVS_x_2_3_10_2
+ 47 PVS_x_2_3_11_2 + 27 PVS_x_2_3_12_2 + 10 PVS_x_2_3_13_2
+ 10 PVS_x_2_3_1_2 + 80 PVS_x_2_3_2_2 + 71 PVS_x_2_3_3_2 + 67 PVS_x_2_3_4_2
+ 64 PVS_x_2_3_5_2 + 5 PVS_x_2_3_8_2 + 28 PVS_x_2_3_9_2 >= 102.272727273

_C60: 106 PVM_x_1_3_10_3 + 121 PVM_x_1_3_11_3 + 72 PVM_x_1_3_12_3
+ 81 PVM_x_1_3_13_3 + 96 PVM_x_1_3_14_3 + 74 PVM_x_1_3_15_3
+ 77 PVM_x_1_3_16_3 + 79 PVM_x_1_3_17_3 + 13 PVM_x_1_3_18_3
+ 36 PVM_x_1_3_19_3 + 52 PVM_x_1_3_1_3 + 7 PVM_x_1_3_2_3 + 58 PVM_x_1_3_3_3
+ 56 PVM_x_1_3_4_3 + 60 PVM_x_1_3_5_3 + 80 PVM_x_1_3_6_3 + 64 PVM_x_1_3_7_3
+ 95 PVM_x_1_3_8_3 + 150 PVM_x_1_3_9_3 + 51 PVS_x_2_3_10_3
+ 47 PVS_x_2_3_11_3 + 27 PVS_x_2_3_12_3 + 10 PVS_x_2_3_13_3
+ 10 PVS_x_2_3_1_3 + 80 PVS_x_2_3_2_3 + 71 PVS_x_2_3_3_3 + 67 PVS_x_2_3_4_3
+ 64 PVS_x_2_3_5_3 + 5 PVS_x_2_3_8_3 + 28 PVS_x_2_3_9_3 <= 147.727272727

_C61: 106 PVM_x_1_3_10_3 + 121 PVM_x_1_3_11_3 + 72 PVM_x_1_3_12_3
+ 81 PVM_x_1_3_13_3 + 96 PVM_x_1_3_14_3 + 74 PVM_x_1_3_15_3
+ 77 PVM_x_1_3_16_3 + 79 PVM_x_1_3_17_3 + 13 PVM_x_1_3_18_3
+ 36 PVM_x_1_3_19_3 + 52 PVM_x_1_3_1_3 + 7 PVM_x_1_3_2_3 + 58 PVM_x_1_3_3_3
+ 56 PVM_x_1_3_4_3 + 60 PVM_x_1_3_5_3 + 80 PVM_x_1_3_6_3 + 64 PVM_x_1_3_7_3
+ 95 PVM_x_1_3_8_3 + 150 PVM_x_1_3_9_3 + 51 PVS_x_2_3_10_3
+ 47 PVS_x_2_3_11_3 + 27 PVS_x_2_3_12_3 + 10 PVS_x_2_3_13_3
+ 10 PVS_x_2_3_1_3 + 80 PVS_x_2_3_2_3 + 71 PVS_x_2_3_3_3 + 67 PVS_x_2_3_4_3

$$+ 64 \text{ PVS_x_2_3_5_3} + 5 \text{ PVS_x_2_3_8_3} + 28 \text{ PVS_x_2_3_9_3} \geq 102.272727273$$

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_C62: 17 PVM_x_1_3_10_1 + 14 PVM_x_1_3_11_1 + 8 PVM_x_1_3_12_1
+ 9 PVM_x_1_3_13_1 + 6 PVM_x_1_3_14_1 + 12 PVM_x_1_3_15_1 + 14 PVM_x_1_3_16_1
+ 14 PVM_x_1_3_17_1 + 3 PVM_x_1_3_18_1 + 11 PVM_x_1_3_19_1 + 7 PVM_x_1_3_1_1
+ PVM_x_1_3_2_1 + 6 PVM_x_1_3_3_1 + 4 PVM_x_1_3_4_1 + 9 PVM_x_1_3_5_1
+ 15 PVM_x_1_3_6_1 + 11 PVM_x_1_3_7_1 + 12 PVM_x_1_3_8_1 + 24 PVM_x_1_3_9_1
+ 6 PVS_x_2_3_10_1 + 7 PVS_x_2_3_11_1 + 4 PVS_x_2_3_12_1 + 3 PVS_x_2_3_1_1
+ 6 PVS_x_2_3_2_1 + 6 PVS_x_2_3_3_1 + 3 PVS_x_2_3_4_1 + 4 PVS_x_2_3_5_1
+ PVS_x_2_3_8_1 + 2 PVS_x_2_3_9_1 >= 9.54545454545

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_C63: 17 PVM_x_1_3_10_2 + 14 PVM_x_1_3_11_2 + 8 PVM_x_1_3_12_2
+ 9 PVM_x_1_3_13_2 + 6 PVM_x_1_3_14_2 + 12 PVM_x_1_3_15_2 + 14 PVM_x_1_3_16_2
+ 14 PVM_x_1_3_17_2 + 3 PVM_x_1_3_18_2 + 11 PVM_x_1_3_19_2 + 7 PVM_x_1_3_1_2
+ PVM_x_1_3_2_2 + 6 PVM_x_1_3_3_2 + 4 PVM_x_1_3_4_2 + 9 PVM_x_1_3_5_2
+ 15 PVM_x_1_3_6_2 + 11 PVM_x_1_3_7_2 + 12 PVM_x_1_3_8_2 + 24 PVM_x_1_3_9_2
+ 6 PVS_x_2_3_10_2 + 7 PVS_x_2_3_11_2 + 4 PVS_x_2_3_12_2 + 3 PVS_x_2_3_1_2
+ 6 PVS_x_2_3_2_2 + 6 PVS_x_2_3_3_2 + 3 PVS_x_2_3_4_2 + 4 PVS_x_2_3_5_2
+ PVS_x_2_3_8_2 + 2 PVS_x_2_3_9_2 >= 9.54545454545

```

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_C64: 17 PVM_x_1_3_10_3 + 14 PVM_x_1_3_11_3 + 8 PVM_x_1_3_12_3
+ 9 PVM_x_1_3_13_3 + 6 PVM_x_1_3_14_3 + 12 PVM_x_1_3_15_3 + 14 PVM_x_1_3_16_3
+ 14 PVM_x_1_3_17_3 + 3 PVM_x_1_3_18_3 + 11 PVM_x_1_3_19_3 + 7 PVM_x_1_3_1_3
+ PVM_x_1_3_2_3 + 6 PVM_x_1_3_3_3 + 4 PVM_x_1_3_4_3 + 9 PVM_x_1_3_5_3
+ 15 PVM_x_1_3_6_3 + 11 PVM_x_1_3_7_3 + 12 PVM_x_1_3_8_3 + 24 PVM_x_1_3_9_3
+ 6 PVS_x_2_3_10_3 + 7 PVS_x_2_3_11_3 + 4 PVS_x_2_3_12_3 + 3 PVS_x_2_3_1_3
+ 6 PVS_x_2_3_2_3 + 6 PVS_x_2_3_3_3 + 3 PVS_x_2_3_4_3 + 4 PVS_x_2_3_5_3
+ PVS_x_2_3_8_3 + 2 PVS_x_2_3_9_3 >= 9.54545454545

```

_C65: 13 PVM_x_1_3_10_1 + 9 PVM_x_1_3_11_1 + 6 PVM_x_1_3_12_1
+ 9 PVM_x_1_3_13_1 + 21 PVM_x_1_3_14_1 + 7 PVM_x_1_3_15_1 + 7 PVM_x_1_3_16_1
+ 8 PVM_x_1_3_17_1 + 4 PVM_x_1_3_18_1 + 10 PVM_x_1_3_19_1 + 5 PVM_x_1_3_1_1
+ 12 PVM_x_1_3_3_1 + 14 PVM_x_1_3_4_1 + 9 PVM_x_1_3_5_1 + 14 PVM_x_1_3_6_1
+ 9 PVM_x_1_3_7_1 + 11 PVM_x_1_3_8_1 + 7 PVM_x_1_3_9_1 + 7 PVS_x_2_3_10_1
+ 4 PVS_x_2_3_11_1 + 2 PVS_x_2_3_12_1 + 2 PVS_x_2_3_13_1 + 4 PVS_x_2_3_1_1
+ 19 PVS_x_2_3_4_1 + 19 PVS_x_2_3_5_1 + 8 PVS_x_2_3_9_1 <= 34.0909090909

$$\begin{aligned} _C66: & 13 \text{ PVM_x_1_3_10_1} + 9 \text{ PVM_x_1_3_11_1} + 6 \text{ PVM_x_1_3_12_1} \\ & + 9 \text{ PVM_x_1_3_13_1} + 21 \text{ PVM_x_1_3_14_1} + 7 \text{ PVM_x_1_3_15_1} + 7 \text{ PVM_x_1_3_16_1} \\ & + 8 \text{ PVM_x_1_3_17_1} + 4 \text{ PVM_x_1_3_18_1} + 10 \text{ PVM_x_1_3_19_1} + 5 \text{ PVM_x_1_3_1_1} \\ & + 12 \text{ PVM_x_1_3_3_1} + 14 \text{ PVM_x_1_3_4_1} + 9 \text{ PVM_x_1_3_5_1} + 14 \text{ PVM_x_1_3_6_1} \\ & + 9 \text{ PVM_x_1_3_7_1} + 11 \text{ PVM_x_1_3_8_1} + 7 \text{ PVM_x_1_3_9_1} + 7 \text{ PVS_x_2_3_10_1} \\ & + 4 \text{ PVS_x_2_3_11_1} + 2 \text{ PVS_x_2_3_12_1} + 2 \text{ PVS_x_2_3_13_1} + 4 \text{ PVS_x_2_3_1_1} \\ & + 19 \text{ PVS_x_2_3_4_1} + 19 \text{ PVS_x_2_3_5_1} + 8 \text{ PVS_x_2_3_9_1} \geq 0 \end{aligned}$$

_C67: 13 PVM_x_1_3_10_2 + 9 PVM_x_1_3_11_2 + 6 PVM_x_1_3_12_2
+ 9 PVM_x_1_3_13_2 + 21 PVM_x_1_3_14_2 + 7 PVM_x_1_3_15_2 + 7 PVM_x_1_3_16_2

+ 8 PVM_x_1_3_17_2 + 4 PVM_x_1_3_18_2 + 10 PVM_x_1_3_19_2 + 5 PVM_x_1_3_1_2
+ 12 PVM_x_1_3_3_2 + 14 PVM_x_1_3_4_2 + 9 PVM_x_1_3_5_2 + 14 PVM_x_1_3_6_2
+ 9 PVM_x_1_3_7_2 + 11 PVM_x_1_3_8_2 + 7 PVM_x_1_3_9_2 + 7 PVS_x_2_3_10_2
+ 4 PVS_x_2_3_11_2 + 2 PVS_x_2_3_12_2 + 2 PVS_x_2_3_13_2 + 4 PVS_x_2_3_1_2
+ 19 PVS_x_2_3_4_2 + 19 PVS_x_2_3_5_2 + 8 PVS_x_2_3_9_2 <= 34.0909090909

_C68: 13 PVM_x_1_3_10_2 + 9 PVM_x_1_3_11_2 + 6 PVM_x_1_3_12_2
+ 9 PVM_x_1_3_13_2 + 21 PVM_x_1_3_14_2 + 7 PVM_x_1_3_15_2 + 7 PVM_x_1_3_16_2
+ 8 PVM_x_1_3_17_2 + 4 PVM_x_1_3_18_2 + 10 PVM_x_1_3_19_2 + 5 PVM_x_1_3_1_2
+ 12 PVM_x_1_3_3_2 + 14 PVM_x_1_3_4_2 + 9 PVM_x_1_3_5_2 + 14 PVM_x_1_3_6_2
+ 9 PVM_x_1_3_7_2 + 11 PVM_x_1_3_8_2 + 7 PVM_x_1_3_9_2 + 7 PVS_x_2_3_10_2
+ 4 PVS_x_2_3_11_2 + 2 PVS_x_2_3_12_2 + 2 PVS_x_2_3_13_2 + 4 PVS_x_2_3_1_2
+ 19 PVS_x_2_3_4_2 + 19 PVS_x_2_3_5_2 + 8 PVS_x_2_3_9_2 >= 0

_C69: 13 PVM_x_1_3_10_3 + 9 PVM_x_1_3_11_3 + 6 PVM_x_1_3_12_3
+ 9 PVM_x_1_3_13_3 + 21 PVM_x_1_3_14_3 + 7 PVM_x_1_3_15_3 + 7 PVM_x_1_3_16_3
+ 8 PVM_x_1_3_17_3 + 4 PVM_x_1_3_18_3 + 10 PVM_x_1_3_19_3 + 5 PVM_x_1_3_1_3
+ 12 PVM_x_1_3_3_3 + 14 PVM_x_1_3_4_3 + 9 PVM_x_1_3_5_3 + 14 PVM_x_1_3_6_3
+ 9 PVM_x_1_3_7_3 + 11 PVM_x_1_3_8_3 + 7 PVM_x_1_3_9_3 + 7 PVS_x_2_3_10_3
+ 4 PVS_x_2_3_11_3 + 2 PVS_x_2_3_12_3 + 2 PVS_x_2_3_13_3 + 4 PVS_x_2_3_1_3
+ 19 PVS_x_2_3_4_3 + 19 PVS_x_2_3_5_3 + 8 PVS_x_2_3_9_3 <= 34.0909090909

_C70: 13 PVM_x_1_3_10_3 + 9 PVM_x_1_3_11_3 + 6 PVM_x_1_3_12_3
+ 9 PVM_x_1_3_13_3 + 21 PVM_x_1_3_14_3 + 7 PVM_x_1_3_15_3 + 7 PVM_x_1_3_16_3
+ 8 PVM_x_1_3_17_3 + 4 PVM_x_1_3_18_3 + 10 PVM_x_1_3_19_3 + 5 PVM_x_1_3_1_3
+ 12 PVM_x_1_3_3_3 + 14 PVM_x_1_3_4_3 + 9 PVM_x_1_3_5_3 + 14 PVM_x_1_3_6_3
+ 9 PVM_x_1_3_7_3 + 11 PVM_x_1_3_8_3 + 7 PVM_x_1_3_9_3 + 7 PVS_x_2_3_10_3
+ 4 PVS_x_2_3_11_3 + 2 PVS_x_2_3_12_3 + 2 PVS_x_2_3_13_3 + 4 PVS_x_2_3_1_3
+ 19 PVS_x_2_3_4_3 + 19 PVS_x_2_3_5_3 + 8 PVS_x_2_3_9_3 >= 0

_C71: 23 PVM_x_1_3_10_1 + 19 PVM_x_1_3_11_1 + 21 PVM_x_1_3_12_1
+ 14 PVM_x_1_3_13_1 + 28 PVM_x_1_3_14_1 + 37 PVM_x_1_3_15_1
+ 29 PVM_x_1_3_16_1 + 22 PVM_x_1_3_17_1 + 20 PVM_x_1_3_18_1
+ 11 PVM_x_1_3_19_1 + 25 PVM_x_1_3_1_1 + 13 PVM_x_1_3_2_1 + 35 PVM_x_1_3_3_1
+ 46 PVM_x_1_3_4_1 + 35 PVM_x_1_3_5_1 + 21 PVM_x_1_3_6_1 + 17 PVM_x_1_3_7_1
+ 17 PVM_x_1_3_8_1 + 30 PVM_x_1_3_9_1 + 10 PVS_x_2_3_10_1 + 12 PVS_x_2_3_11_1
+ 3 PVS_x_2_3_12_1 + 6 PVS_x_2_3_13_1 + PVS_x_2_3_1_1 + 24 PVS_x_2_3_2_1
+ 6 PVS_x_2_3_3_1 + 37 PVS_x_2_3_4_1 + 3 PVS_x_2_3_5_1 + 11 PVS_x_2_3_6_1
+ 4 PVS_x_2_3_7_1 + 6 PVS_x_2_3_8_1 + 13 PVS_x_2_3_9_1 <= 119.318181818

_C72: 23 PVM_x_1_3_10_1 + 19 PVM_x_1_3_11_1 + 21 PVM_x_1_3_12_1
+ 14 PVM_x_1_3_13_1 + 28 PVM_x_1_3_14_1 + 37 PVM_x_1_3_15_1
+ 29 PVM_x_1_3_16_1 + 22 PVM_x_1_3_17_1 + 20 PVM_x_1_3_18_1
+ 11 PVM_x_1_3_19_1 + 25 PVM_x_1_3_1_1 + 13 PVM_x_1_3_2_1 + 35 PVM_x_1_3_3_1
+ 46 PVM_x_1_3_4_1 + 35 PVM_x_1_3_5_1 + 21 PVM_x_1_3_6_1 + 17 PVM_x_1_3_7_1
+ 17 PVM_x_1_3_8_1 + 30 PVM_x_1_3_9_1 + 10 PVS_x_2_3_10_1 + 12 PVS_x_2_3_11_1
+ 3 PVS_x_2_3_12_1 + 6 PVS_x_2_3_13_1 + PVS_x_2_3_1_1 + 24 PVS_x_2_3_2_1

+ 6 PVS_x_2_3_3_1 + 37 PVS_x_2_3_4_1 + 3 PVS_x_2_3_5_1 + 11 PVS_x_2_3_6_1
+ 4 PVS_x_2_3_7_1 + 6 PVS_x_2_3_8_1 + 13 PVS_x_2_3_9_1 >= 14.2045454545

_C73: 23 PVM_x_1_3_10_2 + 19 PVM_x_1_3_11_2 + 21 PVM_x_1_3_12_2
+ 14 PVM_x_1_3_13_2 + 28 PVM_x_1_3_14_2 + 37 PVM_x_1_3_15_2
+ 29 PVM_x_1_3_16_2 + 22 PVM_x_1_3_17_2 + 20 PVM_x_1_3_18_2
+ 11 PVM_x_1_3_19_2 + 25 PVM_x_1_3_1_2 + 13 PVM_x_1_3_2_2 + 35 PVM_x_1_3_3_2
+ 46 PVM_x_1_3_4_2 + 35 PVM_x_1_3_5_2 + 21 PVM_x_1_3_6_2 + 17 PVM_x_1_3_7_2
+ 17 PVM_x_1_3_8_2 + 30 PVM_x_1_3_9_2 + 10 PVS_x_2_3_10_2 + 12 PVS_x_2_3_11_2
+ 3 PVS_x_2_3_12_2 + 6 PVS_x_2_3_13_2 + PVS_x_2_3_1_2 + 24 PVS_x_2_3_2_2
+ 6 PVS_x_2_3_3_2 + 37 PVS_x_2_3_4_2 + 3 PVS_x_2_3_5_2 + 11 PVS_x_2_3_6_2
+ 4 PVS_x_2_3_7_2 + 6 PVS_x_2_3_8_2 + 13 PVS_x_2_3_9_2 <= 119.318181818

_C74: 23 PVM_x_1_3_10_2 + 19 PVM_x_1_3_11_2 + 21 PVM_x_1_3_12_2
+ 14 PVM_x_1_3_13_2 + 28 PVM_x_1_3_14_2 + 37 PVM_x_1_3_15_2
+ 29 PVM_x_1_3_16_2 + 22 PVM_x_1_3_17_2 + 20 PVM_x_1_3_18_2
+ 11 PVM_x_1_3_19_2 + 25 PVM_x_1_3_1_2 + 13 PVM_x_1_3_2_2 + 35 PVM_x_1_3_3_2
+ 46 PVM_x_1_3_4_2 + 35 PVM_x_1_3_5_2 + 21 PVM_x_1_3_6_2 + 17 PVM_x_1_3_7_2
+ 17 PVM_x_1_3_8_2 + 30 PVM_x_1_3_9_2 + 10 PVS_x_2_3_10_2 + 12 PVS_x_2_3_11_2
+ 3 PVS_x_2_3_12_2 + 6 PVS_x_2_3_13_2 + PVS_x_2_3_1_2 + 24 PVS_x_2_3_2_2
+ 6 PVS_x_2_3_3_2 + 37 PVS_x_2_3_4_2 + 3 PVS_x_2_3_5_2 + 11 PVS_x_2_3_6_2
+ 4 PVS_x_2_3_7_2 + 6 PVS_x_2_3_8_2 + 13 PVS_x_2_3_9_2 >= 14.2045454545

_C75: 23 PVM_x_1_3_10_3 + 19 PVM_x_1_3_11_3 + 21 PVM_x_1_3_12_3
+ 14 PVM_x_1_3_13_3 + 28 PVM_x_1_3_14_3 + 37 PVM_x_1_3_15_3
+ 29 PVM_x_1_3_16_3 + 22 PVM_x_1_3_17_3 + 20 PVM_x_1_3_18_3
+ 11 PVM_x_1_3_19_3 + 25 PVM_x_1_3_1_3 + 13 PVM_x_1_3_2_3 + 35 PVM_x_1_3_3_3
+ 46 PVM_x_1_3_4_3 + 35 PVM_x_1_3_5_3 + 21 PVM_x_1_3_6_3 + 17 PVM_x_1_3_7_3
+ 17 PVM_x_1_3_8_3 + 30 PVM_x_1_3_9_3 + 10 PVS_x_2_3_10_3 + 12 PVS_x_2_3_11_3
+ 3 PVS_x_2_3_12_3 + 6 PVS_x_2_3_13_3 + PVS_x_2_3_1_3 + 24 PVS_x_2_3_2_3
+ 6 PVS_x_2_3_3_3 + 37 PVS_x_2_3_4_3 + 3 PVS_x_2_3_5_3 + 11 PVS_x_2_3_6_3
+ 4 PVS_x_2_3_7_3 + 6 PVS_x_2_3_8_3 + 13 PVS_x_2_3_9_3 <= 119.318181818

_C76: 23 PVM_x_1_3_10_3 + 19 PVM_x_1_3_11_3 + 21 PVM_x_1_3_12_3
+ 14 PVM_x_1_3_13_3 + 28 PVM_x_1_3_14_3 + 37 PVM_x_1_3_15_3
+ 29 PVM_x_1_3_16_3 + 22 PVM_x_1_3_17_3 + 20 PVM_x_1_3_18_3
+ 11 PVM_x_1_3_19_3 + 25 PVM_x_1_3_1_3 + 13 PVM_x_1_3_2_3 + 35 PVM_x_1_3_3_3
+ 46 PVM_x_1_3_4_3 + 35 PVM_x_1_3_5_3 + 21 PVM_x_1_3_6_3 + 17 PVM_x_1_3_7_3
+ 17 PVM_x_1_3_8_3 + 30 PVM_x_1_3_9_3 + 10 PVS_x_2_3_10_3 + 12 PVS_x_2_3_11_3
+ 3 PVS_x_2_3_12_3 + 6 PVS_x_2_3_13_3 + PVS_x_2_3_1_3 + 24 PVS_x_2_3_2_3
+ 6 PVS_x_2_3_3_3 + 37 PVS_x_2_3_4_3 + 3 PVS_x_2_3_5_3 + 11 PVS_x_2_3_6_3
+ 4 PVS_x_2_3_7_3 + 6 PVS_x_2_3_8_3 + 13 PVS_x_2_3_9_3 >= 14.2045454545

VARIABLES

0 <= PVM_x_1_3_10_1 <= 1 Integer
0 <= PVM_x_1_3_10_2 <= 1 Integer
0 <= PVM_x_1_3_10_3 <= 1 Integer

```

0 <= PVM_x_1_3_11_1 <= 1 Integer
0 <= PVM_x_1_3_11_2 <= 1 Integer
0 <= PVM_x_1_3_11_3 <= 1 Integer
0 <= PVM_x_1_3_12_1 <= 1 Integer
0 <= PVM_x_1_3_12_2 <= 1 Integer
0 <= PVM_x_1_3_12_3 <= 1 Integer
0 <= PVM_x_1_3_13_1 <= 1 Integer
0 <= PVM_x_1_3_13_2 <= 1 Integer
0 <= PVM_x_1_3_13_3 <= 1 Integer
0 <= PVM_x_1_3_14_1 <= 1 Integer
0 <= PVM_x_1_3_14_2 <= 1 Integer
0 <= PVM_x_1_3_14_3 <= 1 Integer
0 <= PVM_x_1_3_15_1 <= 1 Integer
0 <= PVM_x_1_3_15_2 <= 1 Integer
0 <= PVM_x_1_3_15_3 <= 1 Integer
0 <= PVM_x_1_3_16_1 <= 1 Integer
0 <= PVM_x_1_3_16_2 <= 1 Integer
0 <= PVM_x_1_3_16_3 <= 1 Integer
0 <= PVM_x_1_3_17_1 <= 1 Integer
0 <= PVM_x_1_3_17_2 <= 1 Integer
0 <= PVM_x_1_3_17_3 <= 1 Integer
0 <= PVM_x_1_3_18_1 <= 1 Integer
0 <= PVM_x_1_3_18_2 <= 1 Integer
0 <= PVM_x_1_3_18_3 <= 1 Integer
0 <= PVM_x_1_3_19_1 <= 1 Integer
0 <= PVM_x_1_3_19_2 <= 1 Integer
0 <= PVM_x_1_3_19_3 <= 1 Integer
0 <= PVM_x_1_3_1_1 <= 1 Integer
0 <= PVM_x_1_3_1_2 <= 1 Integer
0 <= PVM_x_1_3_1_3 <= 1 Integer
0 <= PVM_x_1_3_2_1 <= 1 Integer
0 <= PVM_x_1_3_2_2 <= 1 Integer
0 <= PVM_x_1_3_2_3 <= 1 Integer
0 <= PVM_x_1_3_3_1 <= 1 Integer
0 <= PVM_x_1_3_3_2 <= 1 Integer
0 <= PVM_x_1_3_3_3 <= 1 Integer
0 <= PVM_x_1_3_4_1 <= 1 Integer
0 <= PVM_x_1_3_4_2 <= 1 Integer
0 <= PVM_x_1_3_4_3 <= 1 Integer
0 <= PVM_x_1_3_5_1 <= 1 Integer
0 <= PVM_x_1_3_5_2 <= 1 Integer
0 <= PVM_x_1_3_5_3 <= 1 Integer
0 <= PVM_x_1_3_6_1 <= 1 Integer
0 <= PVM_x_1_3_6_2 <= 1 Integer
0 <= PVM_x_1_3_6_3 <= 1 Integer
0 <= PVM_x_1_3_7_1 <= 1 Integer
0 <= PVM_x_1_3_7_2 <= 1 Integer

```

```

0 <= PVM_x_1_3_7_3 <= 1 Integer
0 <= PVM_x_1_3_8_1 <= 1 Integer
0 <= PVM_x_1_3_8_2 <= 1 Integer
0 <= PVM_x_1_3_8_3 <= 1 Integer
0 <= PVM_x_1_3_9_1 <= 1 Integer
0 <= PVM_x_1_3_9_2 <= 1 Integer
0 <= PVM_x_1_3_9_3 <= 1 Integer
0 <= PVS_x_2_3_10_1 <= 1 Integer
0 <= PVS_x_2_3_10_2 <= 1 Integer
0 <= PVS_x_2_3_10_3 <= 1 Integer
0 <= PVS_x_2_3_11_1 <= 1 Integer
0 <= PVS_x_2_3_11_2 <= 1 Integer
0 <= PVS_x_2_3_11_3 <= 1 Integer
0 <= PVS_x_2_3_12_1 <= 1 Integer
0 <= PVS_x_2_3_12_2 <= 1 Integer
0 <= PVS_x_2_3_12_3 <= 1 Integer
0 <= PVS_x_2_3_13_1 <= 1 Integer
0 <= PVS_x_2_3_13_2 <= 1 Integer
0 <= PVS_x_2_3_13_3 <= 1 Integer
0 <= PVS_x_2_3_1_1 <= 1 Integer
0 <= PVS_x_2_3_1_2 <= 1 Integer
0 <= PVS_x_2_3_1_3 <= 1 Integer
0 <= PVS_x_2_3_2_1 <= 1 Integer
0 <= PVS_x_2_3_2_2 <= 1 Integer
0 <= PVS_x_2_3_2_3 <= 1 Integer
0 <= PVS_x_2_3_3_1 <= 1 Integer
0 <= PVS_x_2_3_3_2 <= 1 Integer
0 <= PVS_x_2_3_3_3 <= 1 Integer
0 <= PVS_x_2_3_4_1 <= 1 Integer
0 <= PVS_x_2_3_4_2 <= 1 Integer
0 <= PVS_x_2_3_4_3 <= 1 Integer
0 <= PVS_x_2_3_5_1 <= 1 Integer
0 <= PVS_x_2_3_5_2 <= 1 Integer
0 <= PVS_x_2_3_5_3 <= 1 Integer
0 <= PVS_x_2_3_6_1 <= 1 Integer
0 <= PVS_x_2_3_6_2 <= 1 Integer
0 <= PVS_x_2_3_6_3 <= 1 Integer
0 <= PVS_x_2_3_7_1 <= 1 Integer
0 <= PVS_x_2_3_7_2 <= 1 Integer
0 <= PVS_x_2_3_7_3 <= 1 Integer
0 <= PVS_x_2_3_8_1 <= 1 Integer
0 <= PVS_x_2_3_8_2 <= 1 Integer
0 <= PVS_x_2_3_8_3 <= 1 Integer
0 <= PVS_x_2_3_9_1 <= 1 Integer
0 <= PVS_x_2_3_9_2 <= 1 Integer
0 <= PVS_x_2_3_9_3 <= 1 Integer

```

8 Save Dataframe Results

```
[41]: OC_df.to_csv(os.path.join(os.path.dirname(notebook_path), "result_OC_df.csv"))
      TP_df.to_csv(os.path.join(os.path.dirname(notebook_path), "result_TP_df.csv"))
      PV_df.to_csv(os.path.join(os.path.dirname(notebook_path), "result_PV_df.csv"))
      DR_df.to_csv(os.path.join(os.path.dirname(notebook_path), "result_DR_df.csv"))
```