

## Lampiran

### Lampiran 1. 1 daftar customer

Nama Customer	Alamat
RSUD Sidoarjo	Jl. Mojopahit No.667, Sidowayah, Kabupaten Sidoarjo
RSUD Ponorogo	Jl. Laksamana Yos Sudarso, Segading, Kabupaten Ponorogo
RSUD Welingi	Jl. Dokter Sucipto No.5, Beru, Kec. Wlingi, Kabupaten Blitar
RSUD Tuban	Jl. DR. Wahidin Sudirohusodo No.800, Sidorejo, Kabupaten Tuban
RSUD Ngawi	Jalan Dokter Wahidin No.27, Mulyorejo, Kabupaten Ngawi
RSUD Trenggalek	Jl. DR. Sutomo No.2, Cengkong, Tamanan, Kabupaten Trenggalek,
RSUD Pare	Jl. Pahlawan Kusuma Bangsa No.01, Cangkring, Kec. Pare, Kabupaten Kediri
RS Muhamadiyah Gresik	Jl. Kh. Kholil No.88, Kroman, Pekelingan, Kabupaten Gresik
RS Mitra Keluarga	Jl. Jenderal S. Parman No.8, Krajan Kulon, Waru, Kabupaten Sidoarjo
DINKES	Jl. Raya Jemursari No.197, Sidosermo, Kec. Wonocolo, Kota SBY
RS Siloam	Jl. Raya Gubeng No.70, Gubeng, Kec. Gubeng, Kota SBY
Puskesmas Sedati	Jl. Senopati No.3-7, Kepuh, Betro, Kec. Sedati, Kabupaten Sidoarjo
Puskesmas Waru	Jl. Barito Barat, Tropodo Kulon, Tropodo, Kec. Waru, Kabupaten Sidoarjo

**Lampiran 1. 2 Matriks waktu antar customer (menit)**

no	lokasi	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	PT. Raska Jaya Medika	0	24	166.2	130.2	100.2	154.2	150.8	91.7	32.5	12	13.2	20.4	7.2	10.8
2	RSUD Sidoarjo	24	0	173	119	108	161	156	102	39.4	16.8	28.8	34.8	14.4	20.4
3	RSUD Ponorogo	166.2	173	0	144	177	87.6	45.6	121.7	169.7	160.2	164.5	167.1	167.1	163.7
4	RSUD Welingi	130.2	119	144	0	155.1	159.4	100.8	70.8	149.1	126	130.2	132.8	125.1	129.4
5	RSUD Tuban	100.2	108	177	155.1	0	134.4	160.2	123.4	103.2	96	94.2	88.2	102	99.4
6	RSUD Ngawi	154.2	161	87.6	159.4	134.4	0	95.1	112.2	159.4	150.8	155.1	165.4	156.8	154.2
7	RSUD Trenggalek	150.8	156	45.6	100.8	160.2	95.1	0	100.8	153.4	144.8	148.2	150.8	150.8	147.4
8	RSUD Pare	91.7	102	121.7	70.8	123.4	112.2	100.8	0	96.8	88.2	91.7	94.2	94.2	90.8
9	RS Muhammadiyah Gresik	32.5	39.4	169.7	149.1	103.2	159.4	153.4	96.8	0	40.8	39.6	30	49.2	44.4
10	RS Mitra Keluarga	12	16.8	160.2	126	96	150.8	144.8	88.2	40.8	0	11.8	15.6	9	8.4
11	DINKES	13.2	28.8	164.5	130.2	94.2	155.1	148.2	91.7	39.6	11.8	0	9.1	16.8	8.5
12	RS Siloam	20.4	34.8	167.1	132.8	88.2	165.4	150.8	94.2	30	15.6	9.1	0	22.8	18
13	Puskesmas Sedati	7.2	14.4	167.1	125.1	102	156.8	150.8	94.2	49.2	9	16.8	22.8	0	8
14	Puskesmas Waru	10.8	20.4	163.7	129.4	99.4	154.2	147.4	90.8	44.4	8.4	8.5	18	8	0

### Lampiran 1. 3 Matriks jarak antar customer (km)

no	lokasi	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	PT. Raska Jaya Medika	0	12	192	152	117	180	176	107	38	5	11	17	6	9
2	RSUD Sidoarjo	12	0	202	139	126	188	182	119	46	14	24	29	12	17
3	RSUD Ponorogo	192	202	0	120	207	73	38	142	198	187	192	195	195	191
4	RSUD Welingi	152	139	120	0	181	186	84	59	174	147	152	155	146	151
5	RSUD Tuban	117	126	207	181	0	112	187	144	86	112	110	103	119	116
6	RSUD Ngawi	180	188	73	186	112	0	111	131	186	176	181	193	183	180
7	RSUD Trenggalek	176	182	38	84	187	111	0	84	179	169	173	176	176	172
8	RSUD Pare	107	119	142	59	144	131	84	0	113	103	107	110	110	106
9	RS Muhamadiyah Gresik	38	46	198	174	86	186	179	113	0	34	33	25	41	37
10	RS Mitra Keluarga	5	14	187	147	112	176	169	103	34	0	9.9	13	7.5	6.7
11	DINKES	11	24	192	152	110	181	173	107	33	9.9	0	7.6	14	7.1
12	RS Siloam	17	29	195	155	103	193	176	110	25	13	7.6	0	19	15
13	Puskesmas Sedati	6	12	195	146	119	183	176	110	41	7.5	14	19	0	6.7
14	Puskesmas Waru	9	17	191	151	116	180	172	106	37	6.7	7.1	15	6.7	0

## Lampiran 1. 4 Hasil Pemograman Lingo

### Cluster 1 tanggal 1 Desember 2022

```

Global optimal solution found.
Objective value:                39.70000
Objective bound:                39.70000
Infeasibilities:                0.0000000
Extended solver steps:          0
Total solver iterations:         67
Elapsed runtime seconds:        0.09

```

Rute yang paling optimal adalah:  
 rute pengiriman dari customer 1 ke customer 3 sebesar 12 km  
 rute pengiriman dari customer 2 ke customer 1 sebesar 9 km  
 rute pengiriman dari customer 3 ke customer 4 sebesar 12 km  
 rute pengiriman dari customer 4 ke customer 2 sebesar 6.7 km  
 Model Class: MILP

```

Total variables:                20
Nonlinear variables:            0
Integer variables:              16

Total constraints:              23
Nonlinear constraints:          0

Total nonzeros:                84
Nonlinear nonzeros:            0

```

Reduced Cost	Variable	Value
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	BONGKAR ( 4)	15.00000
0.000000	T ( 1)	9999990.
0.000000	T ( 2)	9999965.

0.000000	T( 3)	0.000000
0.000000	T( 4)	29.40000
0.000000	X( 1, 1)	0.000000
9.000000	X( 1, 2)	0.000000
12.00000	X( 1, 3)	1.000000
6.000000	X( 1, 4)	0.000000
9.000000	X( 2, 1)	1.000000
0.000000	X( 2, 2)	0.000000
17.00000	X( 2, 3)	0.000000
6.700000	X( 2, 4)	0.000000
12.00000	X( 3, 1)	0.000000
17.00000	X( 3, 2)	0.000000
0.000000	X( 3, 3)	0.000000
12.00000	X( 3, 4)	1.000000
6.000000	X( 4, 1)	0.000000
6.700000	X( 4, 2)	1.000000
12.00000	X( 4, 3)	0.000000
0.000000	X( 4, 4)	0.000000
0.000000	D( 1, 1)	0.000000
0.000000	D( 1, 2)	9.000000
0.000000	D( 1, 3)	12.00000
0.000000	D( 1, 4)	6.000000
0.000000	D( 2, 1)	9.000000
0.000000	D( 2, 2)	0.000000

0.000000	D ( 2, 3)	17.00000
0.000000	D ( 2, 4)	6.700000
0.000000	D ( 3, 1)	12.00000
0.000000	D ( 3, 2)	17.00000
0.000000	D ( 3, 3)	0.000000
0.000000	D ( 3, 4)	12.00000
0.000000	D ( 4, 1)	6.000000
0.000000	D ( 4, 2)	6.700000
0.000000	D ( 4, 3)	12.00000
0.000000	D ( 4, 4)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	10.80000
0.000000	DURASI ( 1, 3)	24.00000
0.000000	DURASI ( 1, 4)	7.200000
0.000000	DURASI ( 2, 1)	10.80000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	20.40000
0.000000	DURASI ( 2, 4)	8.400000
0.000000	DURASI ( 3, 1)	24.00000
0.000000	DURASI ( 3, 2)	20.40000
0.000000	DURASI ( 3, 3)	0.000000
0.000000	DURASI ( 3, 4)	14.40000
0.000000	DURASI ( 4, 1)	7.200000
0.000000	DURASI ( 4, 2)	8.400000

0.000000	DURASI ( 4, 3)	14.40000
0.000000	DURASI ( 4, 4)	0.000000

Dual Price	Row	Slack or Surplus
	1	39.70000
-1.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	0.000000
0.000000	9	9999985.
0.000000	10	0.000000
0.000000	11	41.40000
0.000000	12	0.1999995E+08
0.000000	13	0.1999993E+08
0.000000	14	9999985.
0.000000	15	0.000000
0.000000	16	0.1999994E+08
0.000000	17	9999912.
0.000000	18	9999941.
0.000000	19	9999985.
0.000000	20	0.000000

0.000000	21	0.000000
0.000000	22	0.000000
0.000000	23	0.000000

### Cluster 2 tanggal 1 Desember 2022

Global optimal solution found.

Objective value:	36.60000
Objective bound:	36.60000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	81
Elapsed runtime seconds:	0.09

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 5 km  
 rute pengiriman dari customer 2 ke customer 3 sebesar 13 km  
 rute pengiriman dari customer 3 ke customer 4 sebesar 7.6 km  
 rute pengiriman dari customer 4 ke customer 1 sebesar 11 km

Model Class: MILP

Total variables:	20
Nonlinear variables:	0
Integer variables:	16

Total constraints:	23
Nonlinear constraints:	0

Total nonzeros:	84
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000		



0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	BONGKAR ( 4)	15.00000
0.000000	T ( 1)	82.90000
0.000000	T ( 2)	0.000000
0.000000	T ( 3)	30.60000
0.000000	T ( 4)	54.70000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	1.000000
5.000000	X ( 1, 3)	0.000000
17.00000	X ( 1, 4)	0.000000
11.00000	X ( 2, 1)	0.000000
5.000000	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	1.000000
13.00000	X ( 2, 4)	0.000000
9.900000	X ( 3, 1)	0.000000
17.00000	X ( 3, 2)	0.000000
13.00000	X ( 3, 3)	0.000000
0.000000	X ( 3, 4)	1.000000
7.600000	X ( 4, 1)	1.000000
11.00000	X ( 4, 2)	0.000000
9.900000	X ( 4, 3)	0.000000
7.600000	X ( 4, 4)	0.000000
0.000000	D ( 1, 1)	0.000000
0.000000		

0.000000	D ( 1, 2)	5.000000
0.000000	D ( 1, 3)	17.000000
0.000000	D ( 1, 4)	11.000000
0.000000	D ( 2, 1)	5.000000
0.000000	D ( 2, 2)	0.000000
0.000000	D ( 2, 3)	13.000000
0.000000	D ( 2, 4)	9.900000
0.000000	D ( 3, 1)	17.000000
0.000000	D ( 3, 2)	13.000000
0.000000	D ( 3, 3)	0.000000
0.000000	D ( 3, 4)	7.600000
0.000000	D ( 4, 1)	11.000000
0.000000	D ( 4, 2)	9.900000
0.000000	D ( 4, 3)	7.600000
0.000000	D ( 4, 4)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	12.000000
0.000000	DURASI ( 1, 3)	20.400000
0.000000	DURASI ( 1, 4)	13.200000
0.000000	DURASI ( 2, 1)	12.000000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	15.600000
0.000000	DURASI ( 2, 4)	11.800000
0.000000	DURASI ( 3, 1)	20.400000

0.000000	DURASI ( 3, 2)	15.60000
0.000000	DURASI ( 3, 3)	0.000000
0.000000	DURASI ( 3, 4)	9.100000
0.000000	DURASI ( 4, 1)	13.20000
0.000000	DURASI ( 4, 2)	11.80000
0.000000	DURASI ( 4, 3)	9.100000
0.000000	DURASI ( 4, 4)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	36.60000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	0.1000006E+08
0.000000	9	9999985.
0.000000	10	0.000000
0.000000	11	0.1000003E+08
0.000000	12	0.1000002E+08
0.000000	13	9999939.
0.000000	14	9999985.
0.000000	15	0.000000

0.000000	16	0.000000
0.000000	17	9999918.
0.000000	18	9999952.
0.000000	19	9999985.
0.000000	20	0.000000
0.000000	21	0.000000
0.000000	22	0.000000
0.000000	23	0.000000
0.000000		

### Cluster 3 tanggal 2 Desember 2022

Global optimal solution found.

Objective value:	441.0000
Objective bound:	441.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 192 km

rute pengiriman dari customer 2 ke customer 1 sebesar 107 km

rute pengiriman dari customer 3 ke customer 2 sebesar 142 km

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
	R	0.1000000E+08
0.000000		
	BONGKAR( 1)	15.00000
0.000000		
	BONGKAR( 2)	15.00000
0.000000		
	BONGKAR( 3)	15.00000
0.000000		
	T( 1)	243.4000
0.000000		
	T( 2)	136.7000
0.000000		
	T( 3)	0.000000
0.000000		
	X( 1, 1)	0.000000
0.000000		
	X( 1, 2)	0.000000
107.0000		
	X( 1, 3)	1.000000
192.0000		
	X( 2, 1)	1.000000
107.0000		
	X( 2, 2)	0.000000
0.000000		
	X( 2, 3)	0.000000
142.0000		
	X( 3, 1)	0.000000
192.0000		
	X( 3, 2)	1.000000
142.0000		
	X( 3, 3)	0.000000
0.000000		
	D( 1, 1)	0.000000
0.000000		
	D( 1, 2)	107.0000
0.000000		
	D( 1, 3)	192.0000
0.000000		
	D( 2, 1)	107.0000
0.000000		
	D( 2, 2)	0.000000
0.000000		
	D( 2, 3)	142.0000
0.000000		
	D( 3, 1)	192.0000
0.000000		

0.000000	D ( 3, 2)	142.0000
0.000000	D ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	91.70000
0.000000	DURASI ( 1, 3)	166.2000
0.000000	DURASI ( 2, 1)	91.70000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	121.7000
0.000000	DURASI ( 3, 1)	166.2000
0.000000	DURASI ( 3, 2)	121.7000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	441.0000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999727.
0.000000	10	0.1000006E+08
0.000000	11	0.000000

0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

#### Cluster 4 tanggal 2 Desember 2022

Global optimal solution found.

Objective value:	241.0000
Objective bound:	241.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 38 km

rute pengiriman dari customer 2 ke customer 1 sebesar 117 km

rute pengiriman dari customer 3 ke customer 2 sebesar 86 km

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000

	T ( 1)	233.4000
0.000000		
	T ( 2)	118.2000
0.000000		
	T ( 3)	0.000000
0.000000		
	X ( 1, 1)	0.000000
0.000000		
	X ( 1, 2)	0.000000
117.0000		
	X ( 1, 3)	1.000000
38.00000		
	X ( 2, 1)	1.000000
117.0000		
	X ( 2, 2)	0.000000
0.000000		
	X ( 2, 3)	0.000000
86.00000		
	X ( 3, 1)	0.000000
38.00000		
	X ( 3, 2)	1.000000
86.00000		
	X ( 3, 3)	0.000000
0.000000		
	D ( 1, 1)	0.000000
0.000000		
	D ( 1, 2)	117.0000
0.000000		
	D ( 1, 3)	38.00000
0.000000		
	D ( 2, 1)	117.0000
0.000000		
	D ( 2, 2)	0.000000
0.000000		
	D ( 2, 3)	86.00000
0.000000		
	D ( 3, 1)	38.00000
0.000000		
	D ( 3, 2)	86.00000
0.000000		
	D ( 3, 3)	0.000000
0.000000		
	DURASI ( 1, 1)	0.000000
0.000000		
	DURASI ( 1, 2)	100.2000
0.000000		
	DURASI ( 1, 3)	32.50000
0.000000		



0.000000	DURASI ( 2, 1)	100.2000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	103.2000
0.000000	DURASI ( 3, 1)	32.50000
0.000000	DURASI ( 3, 2)	103.2000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
	1	241.0000
-1.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999764.
0.000000	10	0.1000019E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

**Cluster 1 tanggal 5 Desember 2022**

Global optimal solution found.

Objective value:	467.0000
Objective bound:	467.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.15

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 176 km

rute pengiriman dari customer 2 ke customer 1 sebesar 180 km

rute pengiriman dari customer 3 ke customer 2 sebesar 111 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost		
	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	279.3000
0.000000	T ( 2)	110.1000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
180.0000		

176.0000	X( 1, 3)	1.000000
180.0000	X( 2, 1)	1.000000
0.000000	X( 2, 2)	0.000000
111.0000	X( 2, 3)	0.000000
176.0000	X( 3, 1)	0.000000
111.0000	X( 3, 2)	1.000000
0.000000	X( 3, 3)	0.000000
0.000000	D( 1, 1)	0.000000
0.000000	D( 1, 2)	180.0000
0.000000	D( 1, 3)	176.0000
0.000000	D( 2, 1)	180.0000
0.000000	D( 2, 2)	0.000000
0.000000	D( 2, 3)	111.0000
0.000000	D( 3, 1)	176.0000
0.000000	D( 3, 2)	111.0000
0.000000	D( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	154.2000
0.000000	DURASI ( 1, 3)	150.8000
0.000000	DURASI ( 2, 1)	154.2000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	95.10000
0.000000	DURASI ( 3, 1)	150.8000
0.000000	DURASI ( 3, 2)	95.10000

0.000000	DURASI ( 3, 3)	0.000000
Dual Price	Row	Slack or Surplus
-1.000000	1	467.0000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999780.
0.000000	10	0.1000011E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Cluster 2 tanggal 5 Desember 2022

Global optimal solution found.

Objective value:	42.00000
Objective bound:	42.00000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	45
Elapsed runtime seconds:	0.12

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 5 km  
 rute pengiriman dari customer 2 ke customer 1 sebesar 9 km  
 rute pengiriman dari customer 3 ke customer 4 sebesar 13 km  
 rute pengiriman dari customer 4 ke customer 2 sebesar 15 km

Model Class: MILP

Total variables: 20  
 Nonlinear variables: 0  
 Integer variables: 16

Total constraints: 23  
 Nonlinear constraints: 0

Total nonzeros: 84  
 Nonlinear nonzeros: 0

Reduced Cost	Variable	Value
	R	0.1000000E+08
0.000000		
	BONGKAR ( 1)	15.00000
0.000000		
	BONGKAR ( 2)	15.00000
0.000000		
	BONGKAR ( 3)	15.00000
0.000000		
	BONGKAR ( 4)	15.00000
0.000000		
	T ( 1)	89.40000
0.000000		
	T ( 2)	63.60000
0.000000		
	T ( 3)	0.000000
0.000000		
	T ( 4)	30.60000
0.000000		
	X ( 1, 1)	0.000000
0.000000		
	X ( 1, 2)	0.000000
9.000000		
	X ( 1, 3)	1.000000
5.000000		
	X ( 1, 4)	0.000000
17.00000		

	X( 2, 1)	1.000000
9.000000	X( 2, 2)	0.000000
0.000000	X( 2, 3)	0.000000
6.700000	X( 2, 4)	0.000000
15.000000	X( 3, 1)	0.000000
5.000000	X( 3, 2)	0.000000
6.700000	X( 3, 3)	0.000000
0.000000	X( 3, 4)	1.000000
13.000000	X( 4, 1)	0.000000
17.000000	X( 4, 2)	1.000000
15.000000	X( 4, 3)	0.000000
13.000000	X( 4, 4)	0.000000
0.000000	D( 1, 1)	0.000000
0.000000	D( 1, 2)	9.000000
0.000000	D( 1, 3)	5.000000
0.000000	D( 1, 4)	17.000000
0.000000	D( 2, 1)	9.000000
0.000000	D( 2, 2)	0.000000
0.000000	D( 2, 3)	6.700000
0.000000	D( 2, 4)	15.000000
0.000000	D( 3, 1)	5.000000
0.000000	D( 3, 2)	6.700000
0.000000	D( 3, 3)	0.000000
0.000000	D( 3, 4)	13.000000

0.000000	D( 4, 1)	17.00000
0.000000	D( 4, 2)	15.00000
0.000000	D( 4, 3)	13.00000
0.000000	D( 4, 4)	0.000000
0.000000	DURASI( 1, 1)	0.000000
0.000000	DURASI( 1, 2)	10.80000
0.000000	DURASI( 1, 3)	12.00000
0.000000	DURASI( 1, 4)	20.40000
0.000000	DURASI( 2, 1)	10.80000
0.000000	DURASI( 2, 2)	0.000000
0.000000	DURASI( 2, 3)	8.400000
0.000000	DURASI( 2, 4)	18.00000
0.000000	DURASI( 3, 1)	12.00000
0.000000	DURASI( 3, 2)	8.400000
0.000000	DURASI( 3, 3)	0.000000
0.000000	DURASI( 3, 4)	15.60000
0.000000	DURASI( 4, 1)	20.40000
0.000000	DURASI( 4, 2)	18.00000
0.000000	DURASI( 4, 3)	15.60000
0.000000	DURASI( 4, 4)	0.000000
	Row	Slack or Surplus
Dual Price	1	42.00000
-1.000000	2	0.000000
0.000000		

0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	0.000000
0.000000	9	9999985.
0.000000	10	9999913.
0.000000	11	9999934.
0.000000	12	0.1000006E+08
0.000000	13	0.1000004E+08
0.000000	14	9999985.
0.000000	15	0.000000
0.000000	16	0.1000002E+08
0.000000	17	0.000000
0.000000	18	9999939.
0.000000	19	9999985.
0.000000	20	0.000000
0.000000	21	0.000000
0.000000	22	0.000000
0.000000	23	0.000000



### Cluster 4 tanggal 6 Desember 2022

Global optimal solution found.

Objective value:	85.00000
Objective bound:	85.00000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.09

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 38 km

rute pengiriman dari customer 2 ke customer 1 sebesar 6 km

rute pengiriman dari customer 3 ke customer 2 sebesar 41 km

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost	R	0.1000000E+08
0.000000	BONGKAR( 1)	15.00000
0.000000	BONGKAR( 2)	15.00000
0.000000	BONGKAR( 3)	15.00000
0.000000	T( 1)	111.7000
0.000000	T( 2)	64.20000
0.000000	T( 3)	0.000000
0.000000	X( 1, 1)	0.000000
0.000000	X( 1, 2)	0.000000
6.000000		

	X ( 1, 3)	1.000000
38.000000		
	X ( 2, 1)	1.000000
6.000000		
	X ( 2, 2)	0.000000
0.000000		
	X ( 2, 3)	0.000000
41.000000		
	X ( 3, 1)	0.000000
38.000000		
	X ( 3, 2)	1.000000
41.000000		
	X ( 3, 3)	0.000000
0.000000		
	D ( 1, 1)	0.000000
0.000000		
	D ( 1, 2)	6.000000
0.000000		
	D ( 1, 3)	38.000000
0.000000		
	D ( 2, 1)	6.000000
0.000000		
	D ( 2, 2)	0.000000
0.000000		
	D ( 2, 3)	41.000000
0.000000		
	D ( 3, 1)	38.000000
0.000000		
	D ( 3, 2)	41.000000
0.000000		
	D ( 3, 3)	0.000000
0.000000		
	DURASI ( 1, 1)	0.000000
0.000000		
	DURASI ( 1, 2)	32.500000
0.000000		
	DURASI ( 1, 3)	7.200000
0.000000		
	DURASI ( 2, 1)	32.500000
0.000000		
	DURASI ( 2, 2)	0.000000
0.000000		
	DURASI ( 2, 3)	49.200000
0.000000		
	DURASI ( 3, 1)	7.200000
0.000000		
	DURASI ( 3, 2)	49.200000
0.000000		



Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 152 km

rute pengiriman dari customer 2 ke customer 1 sebesar 12 km

rute pengiriman dari customer 3 ke customer 2 sebesar 139 km

Model Class:

MILP

Total variables: 12

Nonlinear variables: 0

Integer variables: 9

Total constraints: 15

Nonlinear constraints: 0

Total nonzeros: 42

Nonlinear nonzeros: 0

	Variable	Value
Reduced Cost	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	173.0000
0.000000	T ( 2)	134.0000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
12.00000	X ( 1, 3)	1.000000
152.0000	X ( 2, 1)	1.000000
12.00000	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
139.0000		

152.0000	X( 3, 1)	0.000000
139.0000	X( 3, 2)	1.000000
0.000000	X( 3, 3)	0.000000
0.000000	D( 1, 1)	0.000000
0.000000	D( 1, 2)	12.00000
0.000000	D( 1, 3)	152.0000
0.000000	D( 2, 1)	12.00000
0.000000	D( 2, 2)	0.000000
0.000000	D( 2, 3)	139.0000
0.000000	D( 3, 1)	152.0000
0.000000	D( 3, 2)	139.0000
0.000000	D( 3, 3)	0.000000
0.000000	DURASI( 1, 1)	0.000000
0.000000	DURASI( 1, 2)	24.00000
0.000000	DURASI( 1, 3)	130.2000
0.000000	DURASI( 2, 1)	24.00000
0.000000	DURASI( 2, 2)	0.000000
0.000000	DURASI( 2, 3)	119.0000
0.000000	DURASI( 3, 1)	130.2000
0.000000	DURASI( 3, 2)	119.0000
0.000000	DURASI( 3, 3)	0.000000
	Row	Slack or Surplus
Dual Price	1	303.0000
-1.000000		

0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999732.
0.000000	10	0.1000003E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Cluster 7 tanggal 7 Desember 2022

Global optimal solution found.

Objective value:	441.0000
Objective bound:	441.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 192 km  
 rute pengiriman dari customer 2 ke customer 1 sebesar 107 km  
 rute pengiriman dari customer 3 ke customer 2 sebesar 142 km  
 Model Class: MILP

Total variables:	12
------------------	----

```

Nonlinear variables:          0
Integer variables:           9

Total constraints:           15
Nonlinear constraints:       0

Total nonzeros:              42
Nonlinear nonzeros:         0

```

Reduced Cost	Variable	Value
	R	0.1000000E+08
0.000000		
	BONGKAR( 1)	15.00000
0.000000		
	BONGKAR( 2)	15.00000
0.000000		
	BONGKAR( 3)	15.00000
0.000000		
	T( 1)	243.4000
0.000000		
	T( 2)	136.7000
0.000000		
	T( 3)	0.000000
0.000000		
	X( 1, 1)	0.000000
0.000000		
	X( 1, 2)	0.000000
107.0000		
	X( 1, 3)	1.000000
192.0000		
	X( 2, 1)	1.000000
107.0000		
	X( 2, 2)	0.000000
0.000000		
	X( 2, 3)	0.000000
142.0000		
	X( 3, 1)	0.000000
192.0000		
	X( 3, 2)	1.000000
142.0000		
	X( 3, 3)	0.000000
0.000000		
	D( 1, 1)	0.000000
0.000000		
	D( 1, 2)	107.0000
0.000000		

0.000000	D ( 1, 3)	192.0000
0.000000	D ( 2, 1)	107.0000
0.000000	D ( 2, 2)	0.000000
0.000000	D ( 2, 3)	142.0000
0.000000	D ( 3, 1)	192.0000
0.000000	D ( 3, 2)	142.0000
0.000000	D ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	91.70000
0.000000	DURASI ( 1, 3)	166.2000
0.000000	DURASI ( 2, 1)	91.70000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	121.7000
0.000000	DURASI ( 3, 1)	166.2000
0.000000	DURASI ( 3, 2)	121.7000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	441.0000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000



0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999727.
0.000000	10	0.1000006E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Cluster 9 tanggal 8 Desember 2022

Global optimal solution found.

Objective value:	467.0000
Objective bound:	467.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 180 km

rute pengiriman dari customer 2 ke customer 1 sebesar 176 km

rute pengiriman dari customer 3 ke customer 2 sebesar 111 km

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	275.9000
0.000000	T ( 2)	110.1000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
176.0000	X ( 1, 3)	1.000000
180.0000	X ( 2, 1)	1.000000
176.0000	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
111.0000	X ( 3, 1)	0.000000
180.0000	X ( 3, 2)	1.000000
111.0000	X ( 3, 3)	0.000000
0.000000	D ( 1, 1)	0.000000
0.000000	D ( 1, 2)	176.0000
0.000000	D ( 1, 3)	180.0000
0.000000	D ( 2, 1)	176.0000
0.000000	D ( 2, 2)	0.000000
0.000000	D ( 2, 3)	111.0000
0.000000		

0.000000	D( 3, 1)	180.0000
0.000000	D( 3, 2)	111.0000
0.000000	D( 3, 3)	0.000000
0.000000	DURASI( 1, 1)	0.000000
0.000000	DURASI( 1, 2)	150.8000
0.000000	DURASI( 1, 3)	154.2000
0.000000	DURASI( 2, 1)	150.8000
0.000000	DURASI( 2, 2)	0.000000
0.000000	DURASI( 2, 3)	95.10000
0.000000	DURASI( 3, 1)	154.2000
0.000000	DURASI( 3, 2)	95.10000
0.000000	DURASI( 3, 3)	0.000000
	Row	Slack or Surplus
Dual Price	1	467.0000
-1.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999780.
0.000000	10	0.1000011E+08

0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Cluster 10 tanggal 8 Desember 2022

Global optimal solution found.

Objective value:	31.00000
Objective bound:	31.00000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 5 km  
 rute pengiriman dari customer 2 ke customer 1 sebesar 12 km  
 rute pengiriman dari customer 3 ke customer 2 sebesar 14 km

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000		

0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	70.80000
0.000000	T ( 2)	31.80000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
12.00000	X ( 1, 3)	1.000000
5.000000	X ( 2, 1)	1.000000
12.00000	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
14.00000	X ( 3, 1)	0.000000
5.000000	X ( 3, 2)	1.000000
14.00000	X ( 3, 3)	0.000000
0.000000	D ( 1, 1)	0.000000
0.000000	D ( 1, 2)	12.00000
0.000000	D ( 1, 3)	5.000000
0.000000	D ( 2, 1)	12.00000
0.000000	D ( 2, 2)	0.000000
0.000000	D ( 2, 3)	14.00000
0.000000	D ( 3, 1)	5.000000
0.000000	D ( 3, 2)	14.00000
0.000000	D ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000

0.000000	DURASI ( 1, 2)	24.00000
0.000000	DURASI ( 1, 3)	12.00000
0.000000	DURASI ( 2, 1)	24.00000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	16.80000
0.000000	DURASI ( 3, 1)	12.00000
0.000000	DURASI ( 3, 2)	16.80000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	31.00000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999936.
0.000000	10	0.1000004E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000



	T ( 2)	23.000000
0.000000		
	T ( 3)	0.000000
0.000000		
	X ( 1, 1)	0.000000
0.000000		
	X ( 1, 2)	0.000000
6.000000		
	X ( 1, 3)	1.000000
9.000000		
	X ( 2, 1)	1.000000
6.000000		
	X ( 2, 2)	0.000000
0.000000		
	X ( 2, 3)	0.000000
6.700000		
	X ( 3, 1)	0.000000
9.000000		
	X ( 3, 2)	1.000000
6.700000		
	X ( 3, 3)	0.000000
0.000000		
	D ( 1, 1)	0.000000
0.000000		
	D ( 1, 2)	6.000000
0.000000		
	D ( 1, 3)	9.000000
0.000000		
	D ( 2, 1)	6.000000
0.000000		
	D ( 2, 2)	0.000000
0.000000		
	D ( 2, 3)	6.700000
0.000000		
	D ( 3, 1)	9.000000
0.000000		
	D ( 3, 2)	6.700000
0.000000		
	D ( 3, 3)	0.000000
0.000000		
	DURASI ( 1, 1)	0.000000
0.000000		
	DURASI ( 1, 2)	7.200000
0.000000		
	DURASI ( 1, 3)	10.800000
0.000000		
	DURASI ( 2, 1)	7.200000
0.000000		



0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	8.000000
0.000000	DURASI ( 3, 1)	10.80000
0.000000	DURASI ( 3, 2)	8.000000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	21.70000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999954.
0.000000	10	0.1000002E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

**Cluster 1 tanggal 12 Desember 2022**

Global optimal solution found.

Objective value:	77.00000
Objective bound:	77.00000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.09

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 38 km

rute pengiriman dari customer 2 ke customer 1 sebesar 5 km

rute pengiriman dari customer 3 ke customer 2 sebesar 34 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost		
	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	138.8000
0.000000	T ( 2)	111.8000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
5.000000		

38.00000	X( 1, 3)	1.000000
5.000000	X( 2, 1)	1.000000
0.000000	X( 2, 2)	0.000000
34.00000	X( 2, 3)	0.000000
38.00000	X( 3, 1)	0.000000
34.00000	X( 3, 2)	1.000000
0.000000	X( 3, 3)	0.000000
0.000000	D( 1, 1)	0.000000
0.000000	D( 1, 2)	5.000000
0.000000	D( 1, 3)	38.00000
0.000000	D( 2, 1)	5.000000
0.000000	D( 2, 2)	0.000000
0.000000	D( 2, 3)	34.00000
0.000000	D( 3, 1)	38.00000
0.000000	D( 3, 2)	34.00000
0.000000	D( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	12.00000
0.000000	DURASI ( 1, 3)	32.50000
0.000000	DURASI ( 2, 1)	12.00000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	96.80000
0.000000	DURASI ( 3, 1)	32.50000
0.000000	DURASI ( 3, 2)	96.80000

0.000000	DURASI ( 3, 3)	0.000000
Dual Price	Row	Slack or Surplus
-1.000000	1	77.00000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999776.
0.000000	10	0.1000009E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

**Cluster 4 tanggal 13 Desember 2022**

Global optimal solution found.  
 Objective value: 35.60000  
 Objective bound: 35.60000  
 Infeasibilities: 0.000000  
 Extended solver steps: 0  
 Total solver iterations: 0  
 Elapsed runtime seconds: 0.09

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 11 km

rute pengiriman dari customer 2 ke customer 1 sebesar 17 km

rute pengiriman dari customer 3 ke customer 2 sebesar 7.6 km

Model Class:

MILP

Total variables: 12

Nonlinear variables: 0

Integer variables: 9

Total constraints: 15

Nonlinear constraints: 0

Total nonzeros: 42

Nonlinear nonzeros: 0

Reduced Cost	Variable	Value
	R	0.1000000E+08
0.000000		
	BONGKAR ( 1)	15.00000
0.000000		
	BONGKAR ( 2)	15.00000
0.000000		
	BONGKAR ( 3)	15.00000
0.000000		
	T ( 1)	59.50000
0.000000		
	T ( 2)	24.10000
0.000000		
	T ( 3)	0.000000
0.000000		
	X( 1, 1)	0.000000
0.000000		
	X( 1, 2)	0.000000
17.00000		
	X( 1, 3)	1.000000
11.00000		
	X( 2, 1)	1.000000
17.00000		
	X( 2, 2)	0.000000
0.000000		
	X( 2, 3)	0.000000
7.600000		
	X( 3, 1)	0.000000
11.00000		

	X ( 3, 2)	1.000000
7.600000		
	X ( 3, 3)	0.000000
0.000000		
	D ( 1, 1)	0.000000
0.000000		
	D ( 1, 2)	17.00000
0.000000		
	D ( 1, 3)	11.00000
0.000000		
	D ( 2, 1)	17.00000
0.000000		
	D ( 2, 2)	0.000000
0.000000		
	D ( 2, 3)	7.600000
0.000000		
	D ( 3, 1)	11.00000
0.000000		
	D ( 3, 2)	7.600000
0.000000		
	D ( 3, 3)	0.000000
0.000000		
	DURASI ( 1, 1)	0.000000
0.000000		
	DURASI ( 1, 2)	20.40000
0.000000		
	DURASI ( 1, 3)	13.20000
0.000000		
	DURASI ( 2, 1)	20.40000
0.000000		
	DURASI ( 2, 2)	0.000000
0.000000		
	DURASI ( 2, 3)	9.100000
0.000000		
	DURASI ( 3, 1)	13.20000
0.000000		
	DURASI ( 3, 2)	9.100000
0.000000		
	DURASI ( 3, 3)	0.000000
0.000000		
	Row	Slack or Surplus
Dual Price	1	35.60000
-1.000000	2	0.000000
0.000000		

0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999952.
0.000000	10	0.1000003E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Cluster 5 tanggal 13 Desember 2022

Global optimal solution found.

Objective value:	35.60000
Objective bound:	35.60000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 17 km  
 rute pengiriman dari customer 2 ke customer 1 sebesar 11 km  
 rute pengiriman dari customer 3 ke customer 2 sebesar 7.6 km

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0
Total nonzeros:	42
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	52.30000
0.000000	T ( 2)	24.10000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
11.00000	X ( 1, 3)	1.000000
17.00000	X ( 2, 1)	1.000000
11.00000	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
7.600000	X ( 3, 1)	0.000000
17.00000	X ( 3, 2)	1.000000
7.600000	X ( 3, 3)	0.000000
0.000000	D ( 1, 1)	0.000000
0.000000	D ( 1, 2)	11.00000
0.000000	D ( 1, 3)	17.00000
0.000000		



0.000000	D( 2, 1)	11.00000
0.000000	D( 2, 2)	0.000000
0.000000	D( 2, 3)	7.600000
0.000000	D( 3, 1)	17.00000
0.000000	D( 3, 2)	7.600000
0.000000	D( 3, 3)	0.000000
0.000000	DURASI( 1, 1)	0.000000
0.000000	DURASI( 1, 2)	13.20000
0.000000	DURASI( 1, 3)	20.40000
0.000000	DURASI( 2, 1)	13.20000
0.000000	DURASI( 2, 2)	0.000000
0.000000	DURASI( 2, 3)	9.100000
0.000000	DURASI( 3, 1)	20.40000
0.000000	DURASI( 3, 2)	9.100000
0.000000	DURASI( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	35.60000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000

0.000000	8	9999985.
0.000000	9	9999952.
0.000000	10	0.1000002E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Cluster 7 tanggal 14 Desember 2022

Global optimal solution found.

Objective value:	445.0000
Objective bound:	445.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.10

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 192 km

rute pengiriman dari customer 2 ke customer 1 sebesar 180 km

rute pengiriman dari customer 3 ke customer 2 sebesar 73 km

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
	R	0.1000000E+08
0.000000		
	BONGKAR( 1)	15.00000
0.000000		
	BONGKAR( 2)	15.00000
0.000000		
	BONGKAR( 3)	15.00000
0.000000		
	T( 1)	283.8000
0.000000		
	T( 2)	102.6000
0.000000		
	T( 3)	0.000000
0.000000		
	X( 1, 1)	0.000000
0.000000		
	X( 1, 2)	0.000000
180.0000		
	X( 1, 3)	1.000000
192.0000		
	X( 2, 1)	1.000000
180.0000		
	X( 2, 2)	0.000000
0.000000		
	X( 2, 3)	0.000000
73.00000		
	X( 3, 1)	0.000000
192.0000		
	X( 3, 2)	1.000000
73.00000		
	X( 3, 3)	0.000000
0.000000		
	D( 1, 1)	0.000000
0.000000		
	D( 1, 2)	180.0000
0.000000		
	D( 1, 3)	192.0000
0.000000		
	D( 2, 1)	180.0000
0.000000		
	D( 2, 2)	0.000000
0.000000		
	D( 2, 3)	73.00000
0.000000		
	D( 3, 1)	192.0000
0.000000		

0.000000	D ( 3, 2)	73.00000
0.000000	D ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	166.2000
0.000000	DURASI ( 1, 3)	87.60000
0.000000	DURASI ( 2, 1)	166.2000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	73.00000
0.000000	DURASI ( 3, 1)	154.2000
0.000000	DURASI ( 3, 2)	87.60000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	445.0000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999809.
0.000000	10	0.1000011E+08
0.000000	11	0.000000
0.000000	12	9999985.

0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Cluster 8 tanggal 15 Desember 2022

Global optimal solution found.

Objective value:	21.70000
Objective bound:	21.70000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 9 km

rute pengiriman dari customer 2 ke customer 1 sebesar 6 km

rute pengiriman dari customer 3 ke customer 2 sebesar 6.7 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000

	T ( 1)	45.20000
0.000000		
	T ( 2)	23.00000
0.000000		
	T ( 3)	0.000000
0.000000		
	X ( 1, 1)	0.000000
0.000000		
	X ( 1, 2)	0.000000
6.000000		
	X ( 1, 3)	1.000000
9.000000		
	X ( 2, 1)	1.000000
6.000000		
	X ( 2, 2)	0.000000
0.000000		
	X ( 2, 3)	0.000000
6.700000		
	X ( 3, 1)	0.000000
9.000000		
	X ( 3, 2)	1.000000
6.700000		
	X ( 3, 3)	0.000000
0.000000		
	D ( 1, 1)	0.000000
0.000000		
	D ( 1, 2)	6.000000
0.000000		
	D ( 1, 3)	9.000000
0.000000		
	D ( 2, 1)	6.000000
0.000000		
	D ( 2, 2)	0.000000
0.000000		
	D ( 2, 3)	6.700000
0.000000		
	D ( 3, 1)	9.000000
0.000000		
	D ( 3, 2)	6.700000
0.000000		
	D ( 3, 3)	0.000000
0.000000		
	DURASI ( 1, 1)	0.000000
0.000000		
	DURASI ( 1, 2)	7.200000
0.000000		
	DURASI ( 1, 3)	10.80000
0.000000		

0.000000	DURASI ( 2, 1)	7.200000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	8.000000
0.000000	DURASI ( 3, 1)	10.80000
0.000000	DURASI ( 3, 2)	8.000000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	21.70000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999954.
0.000000	10	0.1000002E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

**Cluster 11 tanggal 16 Desember 2022**

Global optimal solution found.

Objective value:	304.0000
Objective bound:	304.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.09

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 5 km  
 rute pengiriman dari customer 2 ke customer 1 sebesar 152 km  
 rute pengiriman dari customer 3 ke customer 2 sebesar 147 km

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost		
	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	286.2000
0.000000	T ( 2)	141.0000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
152.0000		



5.000000	X( 1, 3)	1.000000
152.0000	X( 2, 1)	1.000000
0.000000	X( 2, 2)	0.000000
147.0000	X( 2, 3)	0.000000
5.000000	X( 3, 1)	0.000000
147.0000	X( 3, 2)	1.000000
0.000000	X( 3, 3)	0.000000
0.000000	D( 1, 1)	0.000000
0.000000	D( 1, 2)	152.0000
0.000000	D( 1, 3)	5.000000
0.000000	D( 2, 1)	152.0000
0.000000	D( 2, 2)	0.000000
0.000000	D( 2, 3)	147.0000
0.000000	D( 3, 1)	5.000000
0.000000	D( 3, 2)	147.0000
0.000000	D( 3, 3)	0.000000
0.000000	DURASI( 1, 1)	0.000000
0.000000	DURASI( 1, 2)	130.2000
0.000000	DURASI( 1, 3)	12.00000
0.000000	DURASI( 2, 1)	130.2000
0.000000	DURASI( 2, 2)	0.000000
0.000000	DURASI( 2, 3)	126.0000
0.000000	DURASI( 3, 1)	12.00000
0.000000	DURASI( 3, 2)	126.0000

0.000000	DURASI ( 3, 3)	0.000000
Dual Price	Row	Slack or Surplus
	1	304.0000
-1.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999718.
0.000000	10	0.1000026E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000
0.000000		

### Cluster 1 tanggal 19 Desember 2022

Global optimal solution found.

Objective value:	82.00000
Objective bound:	82.00000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.09

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 11 km

rute pengiriman dari customer 2 ke customer 1 sebesar 38 km

rute pengiriman dari customer 3 ke customer 2 sebesar 33 km

Model Class:

MILP

Total variables: 12

Nonlinear variables: 0

Integer variables: 9

Total constraints: 15

Nonlinear constraints: 0

Total nonzeros: 42

Nonlinear nonzeros: 0

Reduced Cost	Variable	Value
	R	0.1000000E+08
0.000000		
	BONGKAR ( 1)	15.00000
0.000000		
	BONGKAR ( 2)	15.00000
0.000000		
	BONGKAR ( 3)	15.00000
0.000000		
	T ( 1)	102.1000
0.000000		
	T ( 2)	54.60000
0.000000		
	T ( 3)	0.000000
0.000000		
	X ( 1, 1)	0.000000
0.000000		
	X ( 1, 2)	0.000000
38.00000		
	X ( 1, 3)	1.000000
11.00000		
	X ( 2, 1)	1.000000
38.00000		
	X ( 2, 2)	0.000000
0.000000		
	X ( 2, 3)	0.000000
33.00000		
	X ( 3, 1)	0.000000
11.00000		

	X ( 3, 2)	1.000000
33.00000	X ( 3, 3)	0.000000
0.000000	D ( 1, 1)	0.000000
0.000000	D ( 1, 2)	38.00000
0.000000	D ( 1, 3)	11.00000
0.000000	D ( 2, 1)	38.00000
0.000000	D ( 2, 2)	0.000000
0.000000	D ( 2, 3)	33.00000
0.000000	D ( 3, 1)	11.00000
0.000000	D ( 3, 2)	33.00000
0.000000	D ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	32.50000
0.000000	DURASI ( 1, 3)	13.20000
0.000000	DURASI ( 2, 1)	32.50000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	39.60000
0.000000	DURASI ( 3, 1)	13.20000
0.000000	DURASI ( 3, 2)	39.60000
0.000000	DURASI ( 3, 3)	0.000000
	Row	Slack or Surplus
Dual Price	1	82.00000
-1.000000	2	0.000000
0.000000		

0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999891.
0.000000	10	0.1000007E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Cluster 3 tanggal 20 Desember 2022

Global optimal solution found.

Objective value:	467.0000
Objective bound:	467.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.15

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 176 km  
 rute pengiriman dari customer 2 ke customer 1 sebesar 180 km  
 rute pengiriman dari customer 3 ke customer 2 sebesar 111 km

Model Class:	MILP
--------------	------

Total variables:	12
------------------	----

```

Nonlinear variables:          0
Integer variables:           9

Total constraints:           15
Nonlinear constraints:       0

Total nonzeros:              42
Nonlinear nonzeros:         0

```

	Variable	Value
Reduced Cost		
	R	0.1000000E+08
0.000000		
	BONGKAR ( 1)	15.00000
0.000000		
	BONGKAR ( 2)	15.00000
0.000000		
	BONGKAR ( 3)	15.00000
0.000000		
	T ( 1)	279.3000
0.000000		
	T ( 2)	110.1000
0.000000		
	T ( 3)	0.000000
0.000000		
	X ( 1, 1)	0.000000
0.000000		
	X ( 1, 2)	0.000000
180.0000		
	X ( 1, 3)	1.000000
176.0000		
	X ( 2, 1)	1.000000
180.0000		
	X ( 2, 2)	0.000000
0.000000		
	X ( 2, 3)	0.000000
111.0000		
	X ( 3, 1)	0.000000
176.0000		
	X ( 3, 2)	1.000000
111.0000		
	X ( 3, 3)	0.000000
0.000000		
	D ( 1, 1)	0.000000
0.000000		

0.000000	D( 1, 2)	180.0000
0.000000	D( 1, 3)	176.0000
0.000000	D( 2, 1)	180.0000
0.000000	D( 2, 2)	0.000000
0.000000	D( 2, 3)	111.0000
0.000000	D( 3, 1)	176.0000
0.000000	D( 3, 2)	111.0000
0.000000	D( 3, 3)	0.000000
0.000000	DURASI( 1, 1)	0.000000
0.000000	DURASI( 1, 2)	154.2000
0.000000	DURASI( 1, 3)	150.8000
0.000000	DURASI( 2, 1)	154.2000
0.000000	DURASI( 2, 2)	0.000000
0.000000	DURASI( 2, 3)	95.10000
0.000000	DURASI( 3, 1)	150.8000
0.000000	DURASI( 3, 2)	95.10000
0.000000	DURASI( 3, 3)	0.000000
	Row	Slack or Surplus
Dual Price	1	467.0000
-1.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000

0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999780.
0.000000	10	0.1000011E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

#### Cluster 4 tanggal 21 Desember 2022

Global optimal solution found.

Objective value:	41.00000
Objective bound:	41.00000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 9 km

rute pengiriman dari customer 2 ke customer 1 sebesar 17 km

rute pengiriman dari customer 3 ke customer 2 sebesar 15 km

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0



Reduced Cost	Variable	Value
	R	0.1000000E+08
0.000000		
	BONGKAR( 1)	15.00000
0.000000		
	BONGKAR( 2)	15.00000
0.000000		
	BONGKAR( 3)	15.00000
0.000000		
	T( 1)	68.40000
0.000000		
	T( 2)	33.00000
0.000000		
	T( 3)	0.000000
0.000000		
	X( 1, 1)	0.000000
0.000000		
	X( 1, 2)	0.000000
17.00000		
	X( 1, 3)	1.000000
9.000000		
	X( 2, 1)	1.000000
17.00000		
	X( 2, 2)	0.000000
0.000000		
	X( 2, 3)	0.000000
15.00000		
	X( 3, 1)	0.000000
9.000000		
	X( 3, 2)	1.000000
15.00000		
	X( 3, 3)	0.000000
0.000000		
	D( 1, 1)	0.000000
0.000000		
	D( 1, 2)	17.00000
0.000000		
	D( 1, 3)	9.000000
0.000000		
	D( 2, 1)	17.00000
0.000000		
	D( 2, 2)	0.000000
0.000000		
	D( 2, 3)	15.00000
0.000000		
	D( 3, 1)	9.000000
0.000000		

0.000000	D ( 3, 2)	15.00000
0.000000	D ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	20.40000
0.000000	DURASI ( 1, 3)	10.80000
0.000000	DURASI ( 2, 1)	20.40000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	18.00000
0.000000	DURASI ( 3, 1)	10.80000
0.000000	DURASI ( 3, 2)	18.00000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	41.00000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999934.
0.000000	10	0.1000004E+08
0.000000	11	0.000000

0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Cluster 1 tanggal 26 Desember 2022

Global optimal solution found.

Objective value:	77.00000
Objective bound:	77.00000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.09

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 38 km

rute pengiriman dari customer 2 ke customer 1 sebesar 5 km

rute pengiriman dari customer 3 ke customer 2 sebesar 34 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000

	T ( 1)	138.8000
0.000000		
	T ( 2)	111.8000
0.000000		
	T ( 3)	0.000000
0.000000		
	X ( 1, 1)	0.000000
0.000000		
	X ( 1, 2)	0.000000
5.000000		
	X ( 1, 3)	1.000000
38.00000		
	X ( 2, 1)	1.000000
5.000000		
	X ( 2, 2)	0.000000
0.000000		
	X ( 2, 3)	0.000000
34.00000		
	X ( 3, 1)	0.000000
38.00000		
	X ( 3, 2)	1.000000
34.00000		
	X ( 3, 3)	0.000000
0.000000		
	D ( 1, 1)	0.000000
0.000000		
	D ( 1, 2)	5.000000
0.000000		
	D ( 1, 3)	38.00000
0.000000		
	D ( 2, 1)	5.000000
0.000000		
	D ( 2, 2)	0.000000
0.000000		
	D ( 2, 3)	34.00000
0.000000		
	D ( 3, 1)	38.00000
0.000000		
	D ( 3, 2)	34.00000
0.000000		
	D ( 3, 3)	0.000000
0.000000		
	DURASI ( 1, 1)	0.000000
0.000000		
	DURASI ( 1, 2)	12.00000
0.000000		
	DURASI ( 1, 3)	32.50000
0.000000		

0.000000	DURASI ( 2, 1)	12.00000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	96.80000
0.000000	DURASI ( 3, 1)	32.50000
0.000000	DURASI ( 3, 2)	96.80000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
	1	77.00000
-1.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999776.
0.000000	10	0.1000009E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

**Cluster 4 tanggal 27 Desember 2022**

Global optimal solution found.

Objective value:	445.0000
Objective bound:	445.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.10

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 192 km

rute pengiriman dari customer 2 ke customer 1 sebesar 180 km

rute pengiriman dari customer 3 ke customer 2 sebesar 73 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	15
Nonlinear constraints:	0

Total nonzeros:	42
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost		
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	283.8000
0.000000	T ( 2)	102.6000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000		

	X( 1, 2)	0.000000
180.0000		
	X( 1, 3)	1.000000
192.0000		
	X( 2, 1)	1.000000
180.0000		
	X( 2, 2)	0.000000
0.000000		
	X( 2, 3)	0.000000
73.00000		
	X( 3, 1)	0.000000
192.0000		
	X( 3, 2)	1.000000
73.00000		
	X( 3, 3)	0.000000
0.000000		
	D( 1, 1)	0.000000
0.000000		
	D( 1, 2)	180.0000
0.000000		
	D( 1, 3)	192.0000
0.000000		
	D( 2, 1)	180.0000
0.000000		
	D( 2, 2)	0.000000
0.000000		
	D( 2, 3)	73.00000
0.000000		
	D( 3, 1)	192.0000
0.000000		
	D( 3, 2)	73.00000
0.000000		
	D( 3, 3)	0.000000
0.000000		
	DURASI ( 1, 1)	0.000000
0.000000		
	DURASI ( 1, 2)	166.2000
0.000000		
	DURASI ( 1, 3)	87.60000
0.000000		
	DURASI ( 2, 1)	166.2000
0.000000		
	DURASI ( 2, 2)	0.000000
0.000000		
	DURASI ( 2, 3)	73.00000
0.000000		
	DURASI ( 3, 1)	154.2000
0.000000		

0.000000	DURASI ( 3, 2)	87.60000
0.000000	DURASI ( 3, 3)	0.000000
Dual Price	Row	Slack or Surplus
-1.000000	1	445.0000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999809.
0.000000	10	0.1000011E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Cluster 8 tanggal 29 Desember 2022

Global optimal solution found.

Objective value:	41.00000
Objective bound:	41.00000
Infeasibilities:	0.000000
Extended solver steps:	0



Total solver iterations: 0  
 Elapsed runtime seconds: 0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 9 km  
 rute pengiriman dari customer 2 ke customer 1 sebesar 17 km  
 rute pengiriman dari customer 3 ke customer 2 sebesar 15 km

Model Class: MILP

Total variables: 12  
 Nonlinear variables: 0  
 Integer variables: 9  
  
 Total constraints: 15  
 Nonlinear constraints: 0  
  
 Total nonzeros: 42  
 Nonlinear nonzeros: 0

Reduced Cost	Variable	Value
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	68.40000
0.000000	T ( 2)	33.00000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
17.00000	X ( 1, 3)	1.000000
9.000000	X ( 2, 1)	1.000000
17.00000	X ( 2, 2)	0.000000
0.000000		

	X ( 2, 3)	0.000000
15.000000		
	X ( 3, 1)	0.000000
9.000000		
	X ( 3, 2)	1.000000
15.000000		
	X ( 3, 3)	0.000000
0.000000		
	D ( 1, 1)	0.000000
0.000000		
	D ( 1, 2)	17.000000
0.000000		
	D ( 1, 3)	9.000000
0.000000		
	D ( 2, 1)	17.000000
0.000000		
	D ( 2, 2)	0.000000
0.000000		
	D ( 2, 3)	15.000000
0.000000		
	D ( 3, 1)	9.000000
0.000000		
	D ( 3, 2)	15.000000
0.000000		
	D ( 3, 3)	0.000000
0.000000		
	DURASI ( 1, 1)	0.000000
0.000000		
	DURASI ( 1, 2)	20.400000
0.000000		
	DURASI ( 1, 3)	10.800000
0.000000		
	DURASI ( 2, 1)	20.400000
0.000000		
	DURASI ( 2, 2)	0.000000
0.000000		
	DURASI ( 2, 3)	18.000000
0.000000		
	DURASI ( 3, 1)	10.800000
0.000000		
	DURASI ( 3, 2)	18.000000
0.000000		
	DURASI ( 3, 3)	0.000000
0.000000		

Dual Price	Row	Slack or Surplus
-1.000000	1	41.00000
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999934.
0.000000	10	0.1000004E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Cluster 10 tanggal 30 Desember 2022

Global optimal solution found.

Objective value:	35.60000
Objective bound:	35.60000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.09

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 3 sebesar 11 km  
 rute pengiriman dari customer 2 ke customer 1 sebesar 17 km  
 rute pengiriman dari customer 3 ke customer 2 sebesar 7.6 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9
Total constraints:	15
Nonlinear constraints:	0
Total nonzeros:	42
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	59.50000
0.000000	T ( 2)	24.10000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
17.00000	X ( 1, 3)	1.000000
11.00000	X ( 2, 1)	1.000000
17.00000	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
7.600000	X ( 3, 1)	0.000000
11.00000	X ( 3, 2)	1.000000
7.600000	X ( 3, 3)	0.000000
0.000000		

0.000000	D( 1, 1)	0.000000
0.000000	D( 1, 2)	17.00000
0.000000	D( 1, 3)	11.00000
0.000000	D( 2, 1)	17.00000
0.000000	D( 2, 2)	0.000000
0.000000	D( 2, 3)	7.600000
0.000000	D( 3, 1)	11.00000
0.000000	D( 3, 2)	7.600000
0.000000	D( 3, 3)	0.000000
0.000000	DURASI( 1, 1)	0.000000
0.000000	DURASI( 1, 2)	20.40000
0.000000	DURASI( 1, 3)	13.20000
0.000000	DURASI( 2, 1)	20.40000
0.000000	DURASI( 2, 2)	0.000000
0.000000	DURASI( 2, 3)	9.100000
0.000000	DURASI( 3, 1)	13.20000
0.000000	DURASI( 3, 2)	9.100000
0.000000	DURASI( 3, 3)	0.000000
	Row	Slack or Surplus
Dual Price	1	35.60000
-1.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000		

0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999952.
0.000000	10	0.1000003E+08
0.000000	11	0.000000
0.000000	12	9999985.
0.000000	13	0.000000
0.000000	14	0.000000
0.000000	15	0.000000

### Lampiran 1. 5 Hasil Pemograman Lingo Biaya (Rupiah)

#### Tanggal 1 Cluster 1

Global optimal solution found.

Objective value:	44110.00
Objective bound:	44110.00
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	40
Elapsed runtime seconds:	0.11

Model Class:	MILP
--------------	------

Total variables:	20
Nonlinear variables:	0
Integer variables:	16

Total constraints:	22
Nonlinear constraints:	0

Total nonzeros:	81
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	BONGKAR ( 4)	15.00000
0.000000	T ( 1)	9999990.
0.000000	T ( 2)	9999965.
0.000000	T ( 3)	0.000000
0.000000	T ( 4)	29.40000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
10000.00	X ( 1, 3)	1.000000
13333.00	X ( 1, 4)	0.000000
6667.000	X ( 2, 1)	1.000000
10000.00	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
18889.00	X ( 2, 4)	0.000000
7444.000	X ( 3, 1)	0.000000
13333.00	X ( 3, 2)	0.000000
18889.00	X ( 3, 3)	0.000000
0.000000	X ( 3, 4)	1.000000
13333.00		

	X ( 4, 1)	0.000000
6667.000		
	X ( 4, 2)	1.000000
7444.000		
	X ( 4, 3)	0.000000
13333.00		
	X ( 4, 4)	0.000000
0.000000		
	COST ( 1, 1)	0.000000
0.000000		
	COST ( 1, 2)	10000.00
0.000000		
	COST ( 1, 3)	13333.00
0.000000		
	COST ( 1, 4)	6667.000
0.000000		
	COST ( 2, 1)	10000.00
0.000000		
	COST ( 2, 2)	0.000000
0.000000		
	COST ( 2, 3)	18889.00
0.000000		
	COST ( 2, 4)	7444.000
0.000000		
	COST ( 3, 1)	13333.00
0.000000		
	COST ( 3, 2)	18889.00
0.000000		
	COST ( 3, 3)	0.000000
0.000000		
	COST ( 3, 4)	13333.00
0.000000		
	COST ( 4, 1)	6667.000
0.000000		
	COST ( 4, 2)	7444.000
0.000000		
	COST ( 4, 3)	13333.00
0.000000		
	COST ( 4, 4)	0.000000
0.000000		
	DURASI ( 1, 1)	0.000000
0.000000		
	DURASI ( 1, 2)	10.80000
0.000000		
	DURASI ( 1, 3)	24.00000
0.000000		
	DURASI ( 1, 4)	7.200000
0.000000		



0.000000	DURASI ( 2, 1)	10.80000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	20.40000
0.000000	DURASI ( 2, 4)	8.400000
0.000000	DURASI ( 3, 1)	24.00000
0.000000	DURASI ( 3, 2)	20.40000
0.000000	DURASI ( 3, 3)	0.000000
0.000000	DURASI ( 3, 4)	14.40000
0.000000	DURASI ( 4, 1)	7.200000
0.000000	DURASI ( 4, 2)	8.400000
0.000000	DURASI ( 4, 3)	14.40000
0.000000	DURASI ( 4, 4)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	44110.00
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	0.000000
0.000000	10	41.40000

0.000000	11	0.1999995E+08
0.000000	12	0.1999993E+08
0.000000	13	9999985.
0.000000	14	0.000000
0.000000	15	0.1999994E+08
0.000000	16	9999912.
0.000000	17	9999941.
0.000000	18	9999985.
0.000000	19	0.000000
0.000000	20	0.000000
0.000000	21	0.000000
0.000000	22	0.000000

### Tanggal 2 Cluster 4

Global optimal solution found.

Objective value:	522722.0
Objective bound:	522722.0
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.13

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	14
Nonlinear constraints:	0

Total nonzeros:	39
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	317.9000
0.000000	T ( 2)	136.7000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
293833.0	X ( 1, 3)	1.000000
157889.0	X ( 2, 1)	1.000000
293833.0	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
71000.00	X ( 3, 1)	0.000000
157889.0	X ( 3, 2)	1.000000
71000.00	X ( 3, 3)	0.000000
0.000000	COST ( 1, 1)	0.000000
0.000000	COST ( 1, 2)	293833.0
0.000000	COST ( 1, 3)	157889.0
0.000000	COST ( 2, 1)	293833.0
0.000000	COST ( 2, 2)	0.000000
0.000000	COST ( 2, 3)	71000.00
0.000000		

0.000000	COST ( 3, 1)	157889.0
0.000000	COST ( 3, 2)	71000.00
0.000000	COST ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	166.2000
0.000000	DURASI ( 1, 3)	91.70000
0.000000	DURASI ( 2, 1)	166.2000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	121.7000
0.000000	DURASI ( 3, 1)	91.70000
0.000000	DURASI ( 3, 2)	121.7000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	522722.0
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	9999985.
0.000000	8	9999727.
0.000000	9	0.1000021E+08
0.000000	10	0.000000

0.000000	11	9999985.
0.000000	12	0.000000
0.000000	13	0.000000
0.000000	14	0.000000

### Tanggal 5 cluster 1

Global optimal solution found.

Objective value:	581056.0
Objective bound:	581056.0
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.09

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	14
Nonlinear constraints:	0

Total nonzeros:	40
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost		
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1 )	15.00000
0.000000	BONGKAR ( 2 )	15.00000

0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	279.3000
0.000000	T ( 2)	110.1000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
280500.0	X ( 1, 3)	1.000000
276056.0	X ( 2, 1)	1.000000
280500.0	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
24500.00	X ( 3, 1)	0.000000
276056.0	X ( 3, 2)	1.000000
24500.00	X ( 3, 3)	0.000000
0.000000	COST ( 1, 1)	0.000000
0.000000	COST ( 1, 2)	280500.0
0.000000	COST ( 1, 3)	276056.0
0.000000	COST ( 2, 1)	280500.0
0.000000	COST ( 2, 2)	0.000000
0.000000	COST ( 2, 3)	24500.00
0.000000	COST ( 3, 1)	276056.0
0.000000	COST ( 3, 2)	24500.00
0.000000	COST ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	154.2000
0.000000		

0.000000	DURASI ( 1, 3)	150.8000
0.000000	DURASI ( 2, 1)	154.2000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	95.10000
0.000000	DURASI ( 3, 1)	150.8000
0.000000	DURASI ( 3, 2)	95.10000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	581056.0
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	9999985.
0.000000	8	9999780.
0.000000	9	0.1000011E+08
0.000000	10	0.000000
0.000000	11	9999985.
0.000000	12	0.000000
0.000000	13	0.000000
0.000000	14	0.000000

**Tanggal 5 cluster 2**

Global optimal solution found.

Objective value:	46667.00
Objective bound:	46667.00
Infeasibilities:	0.000000
Extended solver steps:	9
Total solver iterations:	62
Elapsed runtime seconds:	0.14

Model Class:	MILP
--------------	------

Total variables:	20
Nonlinear variables:	0
Integer variables:	16

Total constraints:	22
Nonlinear constraints:	0

Total nonzeros:	81
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	BONGKAR ( 4)	15.00000
0.000000	T ( 1)	89.40000
0.000000	T ( 2)	63.60000
0.000000	T ( 3)	0.000000
0.000000	T ( 4)	30.60000
0.000000	X ( 1, 1)	0.000000



10000.00	X( 1, 2)	0.000000
5556.000	X( 1, 3)	1.000000
18889.00	X( 1, 4)	0.000000
10000.00	X( 2, 1)	1.000000
0.000000	X( 2, 2)	0.000000
7444.000	X( 2, 3)	0.000000
16667.00	X( 2, 4)	0.000000
5556.000	X( 3, 1)	0.000000
7444.000	X( 3, 2)	0.000000
0.000000	X( 3, 3)	0.000000
14444.00	X( 3, 4)	1.000000
18889.00	X( 4, 1)	0.000000
16667.00	X( 4, 2)	1.000000
14444.00	X( 4, 3)	0.000000
0.000000	X( 4, 4)	0.000000
0.000000	COST( 1, 1)	0.000000
0.000000	COST( 1, 2)	10000.00
0.000000	COST( 1, 3)	5556.000
0.000000	COST( 1, 4)	18889.00
0.000000	COST( 2, 1)	10000.00
0.000000	COST( 2, 2)	0.000000
0.000000	COST( 2, 3)	7444.000
0.000000	COST( 2, 4)	16667.00
0.000000	COST( 3, 1)	5556.000

0.000000	COST ( 3, 2)	7444.000
0.000000	COST ( 3, 3)	0.000000
0.000000	COST ( 3, 4)	14444.00
0.000000	COST ( 4, 1)	18889.00
0.000000	COST ( 4, 2)	16667.00
0.000000	COST ( 4, 3)	14444.00
0.000000	COST ( 4, 4)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	10.80000
0.000000	DURASI ( 1, 3)	12.00000
0.000000	DURASI ( 1, 4)	20.40000
0.000000	DURASI ( 2, 1)	10.80000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	8.400000
0.000000	DURASI ( 2, 4)	18.00000
0.000000	DURASI ( 3, 1)	12.00000
0.000000	DURASI ( 3, 2)	8.400000
0.000000	DURASI ( 3, 3)	0.000000
0.000000	DURASI ( 3, 4)	15.60000
0.000000	DURASI ( 4, 1)	20.40000
0.000000	DURASI ( 4, 2)	18.00000
0.000000	DURASI ( 4, 3)	15.60000
0.000000	DURASI ( 4, 4)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	46667.00
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	0.000000
0.000000	8	9999985.
0.000000	9	9999913.
0.000000	10	9999934.
0.000000	11	0.1000006E+08
0.000000	12	0.1000004E+08
0.000000	13	9999985.
0.000000	14	0.000000
0.000000	15	0.1000002E+08
0.000000	16	0.000000
0.000000	17	9999939.
0.000000	18	9999985.
0.000000	19	0.000000
0.000000	20	0.000000
0.000000	21	0.000000
0.000000	22	0.000000

**Tanggal 7 cluster 6**

Global optimal solution found.

Objective value:	522722.0
Objective bound:	522722.0
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.10

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	14
Nonlinear constraints:	0

Total nonzeros:	39
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost		
	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	317.9000
0.000000	T ( 2)	136.7000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
293833.0	X ( 1, 3)	1.000000
157889.0		

293833.0	X( 2, 1)	1.000000
0.000000	X( 2, 2)	0.000000
71000.00	X( 2, 3)	0.000000
157889.0	X( 3, 1)	0.000000
71000.00	X( 3, 2)	1.000000
0.000000	X( 3, 3)	0.000000
0.000000	COST( 1, 1)	0.000000
0.000000	COST( 1, 2)	293833.0
0.000000	COST( 1, 3)	157889.0
0.000000	COST( 2, 1)	293833.0
0.000000	COST( 2, 2)	0.000000
0.000000	COST( 2, 3)	71000.00
0.000000	COST( 3, 1)	157889.0
0.000000	COST( 3, 2)	71000.00
0.000000	COST( 3, 3)	0.000000
0.000000	DURASI( 1, 1)	0.000000
0.000000	DURASI( 1, 2)	166.2000
0.000000	DURASI( 1, 3)	91.70000
0.000000	DURASI( 2, 1)	166.2000
0.000000	DURASI( 2, 2)	0.000000
0.000000	DURASI( 2, 3)	121.7000
0.000000	DURASI( 3, 1)	91.70000
0.000000	DURASI( 3, 2)	121.7000
0.000000	DURASI( 3, 3)	0.000000

	Row	Slack or Surplus
Dual Price		
-1.000000	1	522722.0
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	9999985.
0.000000	8	9999727.
0.000000	9	0.1000021E+08
0.000000	10	0.000000
0.000000	11	9999985.
0.000000	12	0.000000
0.000000	13	0.000000
0.000000	14	0.000000

### Tanggal 8 cluster 8

Global optimal solution found.

Objective value:	581056.0
Objective bound:	581056.0
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.09

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	14
Nonlinear constraints:	0
Total nonzeros:	40
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR( 1)	15.00000
0.000000	BONGKAR( 2)	15.00000
0.000000	BONGKAR( 3)	15.00000
0.000000	T( 1)	279.3000
0.000000	T( 2)	110.1000
0.000000	T( 3)	0.000000
0.000000	X( 1, 1)	0.000000
0.000000	X( 1, 2)	0.000000
280500.0	X( 1, 3)	1.000000
276056.0	X( 2, 1)	1.000000
280500.0	X( 2, 2)	0.000000
0.000000	X( 2, 3)	0.000000
24500.00	X( 3, 1)	0.000000
276056.0	X( 3, 2)	1.000000
24500.00	X( 3, 3)	0.000000
0.000000	COST( 1, 1)	0.000000
0.000000		

0.000000	COST ( 1, 2)	280500.0
0.000000	COST ( 1, 3)	276056.0
0.000000	COST ( 2, 1)	280500.0
0.000000	COST ( 2, 2)	0.000000
0.000000	COST ( 2, 3)	24500.00
0.000000	COST ( 3, 1)	276056.0
0.000000	COST ( 3, 2)	24500.00
0.000000	COST ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	154.2000
0.000000	DURASI ( 1, 3)	150.8000
0.000000	DURASI ( 2, 1)	154.2000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	95.10000
0.000000	DURASI ( 3, 1)	150.8000
0.000000	DURASI ( 3, 2)	95.10000
0.000000	DURASI ( 3, 3)	0.000000
	Row	Slack or Surplus
Dual Price	1	581056.0
-1.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000		



0.000000	6	0.000000
0.000000	7	9999985.
0.000000	8	9999780.
0.000000	9	0.1000011E+08
0.000000	10	0.000000
0.000000	11	9999985.
0.000000	12	0.000000
0.000000	13	0.000000
0.000000	14	0.000000

### Tanggal 12 cluster 1

Global optimal solution found.

Objective value:	114556.0
Objective bound:	114556.0
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.12

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	14
Nonlinear constraints:	0

Total nonzeros:	40
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	138.8000
0.000000	T ( 2)	111.8000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
5556.000	X ( 1, 3)	1.000000
56722.00	X ( 2, 1)	1.000000
5556.000	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
52278.00	X ( 3, 1)	0.000000
56722.00	X ( 3, 2)	1.000000
52278.00	X ( 3, 3)	0.000000
0.000000	COST ( 1, 1)	0.000000
0.000000	COST ( 1, 2)	5556.000
0.000000	COST ( 1, 3)	56722.00
0.000000	COST ( 2, 1)	5556.000
0.000000	COST ( 2, 2)	0.000000
0.000000	COST ( 2, 3)	52278.00
0.000000		

0.000000	COST ( 3, 1)	56722.00
0.000000	COST ( 3, 2)	52278.00
0.000000	COST ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	12.00000
0.000000	DURASI ( 1, 3)	32.50000
0.000000	DURASI ( 2, 1)	12.00000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	96.80000
0.000000	DURASI ( 3, 1)	32.50000
0.000000	DURASI ( 3, 2)	96.80000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	114556.0
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	9999985.
0.000000	8	9999776.
0.000000	9	0.1000009E+08
0.000000	10	0.000000

0.000000	11	9999985.
0.000000	12	0.000000
0.000000	13	0.000000
0.000000	14	0.000000

### Tanggal 13 cluster 2

Global optimal solution found.

Objective value:	39555.00
Objective bound:	39555.00
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.10

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	14
Nonlinear constraints:	0

Total nonzeros:	40
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	59.50000

0.000000	T( 2)	24.10000
0.000000	T( 3)	0.000000
0.000000	X( 1, 1)	0.000000
18889.00	X( 1, 2)	0.000000
12222.00	X( 1, 3)	1.000000
18889.00	X( 2, 1)	1.000000
0.000000	X( 2, 2)	0.000000
8444.000	X( 2, 3)	0.000000
12222.00	X( 3, 1)	0.000000
8444.000	X( 3, 2)	1.000000
0.000000	X( 3, 3)	0.000000
0.000000	COST( 1, 1)	0.000000
0.000000	COST( 1, 2)	18889.00
0.000000	COST( 1, 3)	12222.00
0.000000	COST( 2, 1)	18889.00
0.000000	COST( 2, 2)	0.000000
0.000000	COST( 2, 3)	8444.000
0.000000	COST( 3, 1)	12222.00
0.000000	COST( 3, 2)	8444.000
0.000000	COST( 3, 3)	0.000000
0.000000	DURASI( 1, 1)	0.000000
0.000000	DURASI( 1, 2)	20.40000
0.000000	DURASI( 1, 3)	13.20000
0.000000	DURASI( 2, 1)	20.40000

0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	9.100000
0.000000	DURASI ( 3, 1)	13.20000
0.000000	DURASI ( 3, 2)	9.100000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	39555.00
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	9999985.
0.000000	8	9999952.
0.000000	9	0.1000003E+08
0.000000	10	0.000000
0.000000	11	9999985.
0.000000	12	0.000000
0.000000	13	0.000000
0.000000	14	0.000000

**Tanggal 14 cluster 7**

Global optimal solution found.

Objective value:	598833.0
Objective bound:	598833.0
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.12

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	14
Nonlinear constraints:	0

Total nonzeros:	40
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	283.8000
0.000000	T ( 2)	102.6000
0.000000	T ( 3)	0.000000
0.000000	X( 1, 1)	0.000000
0.000000	X( 1, 2)	0.000000
280500.0	X( 1, 3)	1.000000
293833.0		

280500.0	X ( 2, 1)	1.000000
0.000000	X ( 2, 2)	0.000000
24500.00	X ( 2, 3)	0.000000
293833.0	X ( 3, 1)	0.000000
24500.00	X ( 3, 2)	1.000000
0.000000	X ( 3, 3)	0.000000
0.000000	COST ( 1, 1)	0.000000
0.000000	COST ( 1, 2)	280500.0
0.000000	COST ( 1, 3)	293833.0
0.000000	COST ( 2, 1)	280500.0
0.000000	COST ( 2, 2)	0.000000
0.000000	COST ( 2, 3)	24500.00
0.000000	COST ( 3, 1)	293833.0
0.000000	COST ( 3, 2)	24500.00
0.000000	COST ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	166.2000
0.000000	DURASI ( 1, 3)	87.60000
0.000000	DURASI ( 2, 1)	166.2000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	73.00000
0.000000	DURASI ( 3, 1)	154.2000
0.000000	DURASI ( 3, 2)	87.60000
0.000000	DURASI ( 3, 3)	0.000000



Dual Price	Row	Slack or Surplus
-1.000000	1	598833.0
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	9999985.
0.000000	8	9999809.
0.000000	9	0.1000011E+08
0.000000	10	0.000000
0.000000	11	9999985.
0.000000	12	0.000000
0.000000	13	0.000000
0.000000	14	0.000000

### Tanggal 19 cluster 1

Global optimal solution found.

Objective value:	120111.0
Objective bound:	120111.0
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.09

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0

```

Integer variables:          9
Total constraints:         14
Nonlinear constraints:     0

Total nonzeros:           40
Nonlinear nonzeros:       0

```

Reduced Cost	Variable	Value
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	82.80000
0.000000	T ( 2)	54.60000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
12222.00	X ( 1, 3)	1.000000
56722.00	X ( 2, 1)	1.000000
12222.00	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
51167.00	X ( 3, 1)	0.000000
56722.00	X ( 3, 2)	1.000000
51167.00	X ( 3, 3)	0.000000
0.000000	COST ( 1, 1)	0.000000
0.000000		

0.000000	COST ( 1, 2)	12222.00
0.000000	COST ( 1, 3)	56722.00
0.000000	COST ( 2, 1)	12222.00
0.000000	COST ( 2, 2)	0.000000
0.000000	COST ( 2, 3)	51167.00
0.000000	COST ( 3, 1)	56722.00
0.000000	COST ( 3, 2)	51167.00
0.000000	COST ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	13.20000
0.000000	DURASI ( 1, 3)	32.50000
0.000000	DURASI ( 2, 1)	13.20000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	39.60000
0.000000	DURASI ( 3, 1)	32.50000
0.000000	DURASI ( 3, 2)	39.60000
0.000000	DURASI ( 3, 3)	0.000000
	Row	Slack or Surplus
Dual Price	1	120111.0
-1.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000		

0.000000	6	0.000000
0.000000	7	9999985.
0.000000	8	9999891.
0.000000	9	0.1000004E+08
0.000000	10	0.000000
0.000000	11	9999985.
0.000000	12	0.000000
0.000000	13	0.000000
0.000000	14	0.000000

### Tanggal 21 cluster 1

Global optimal solution found.

Objective value:	45556.00
Objective bound:	45556.00
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.13

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	14
Nonlinear constraints:	0

Total nonzeros:	40
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	58.80000
0.000000	T ( 2)	33.00000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
10000.00	X ( 1, 3)	1.000000
18889.00	X ( 2, 1)	1.000000
10000.00	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
16667.00	X ( 3, 1)	0.000000
18889.00	X ( 3, 2)	1.000000
16667.00	X ( 3, 3)	0.000000
0.000000	COST ( 1, 1)	0.000000
0.000000	COST ( 1, 2)	10000.00
0.000000	COST ( 1, 3)	18889.00
0.000000	COST ( 2, 1)	10000.00
0.000000	COST ( 2, 2)	0.000000
0.000000	COST ( 2, 3)	16667.00
0.000000		

0.000000	COST ( 3, 1)	18889.00
0.000000	COST ( 3, 2)	16667.00
0.000000	COST ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	10.80000
0.000000	DURASI ( 1, 3)	20.40000
0.000000	DURASI ( 2, 1)	10.80000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	18.00000
0.000000	DURASI ( 3, 1)	20.40000
0.000000	DURASI ( 3, 2)	18.00000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	45556.00
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	9999985.
0.000000	8	9999934.
0.000000	9	0.1000002E+08
0.000000	10	0.000000

0.000000	11	9999985.
0.000000	12	0.000000
0.000000	13	0.000000
0.000000	14	0.000000

### Tanggal 26 cluster 1

Global optimal solution found.

Objective value:	45556.00
Objective bound:	45556.00
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.12

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	14
Nonlinear constraints:	0

Total nonzeros:	40
Nonlinear nonzeros:	0

	Variable	Value
Reduced Cost		
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1 )	15.00000
0.000000	BONGKAR ( 2 )	15.00000

0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	58.80000
0.000000	T ( 2)	33.00000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
10000.00	X ( 1, 3)	1.000000
18889.00	X ( 2, 1)	1.000000
10000.00	X ( 2, 2)	0.000000
0.000000	X ( 2, 3)	0.000000
16667.00	X ( 3, 1)	0.000000
18889.00	X ( 3, 2)	1.000000
16667.00	X ( 3, 3)	0.000000
0.000000	COST ( 1, 1)	0.000000
0.000000	COST ( 1, 2)	10000.00
0.000000	COST ( 1, 3)	18889.00
0.000000	COST ( 2, 1)	10000.00
0.000000	COST ( 2, 2)	0.000000
0.000000	COST ( 2, 3)	16667.00
0.000000	COST ( 3, 1)	18889.00
0.000000	COST ( 3, 2)	16667.00
0.000000	COST ( 3, 3)	0.000000
0.000000	DURASI ( 1, 1)	0.000000
0.000000	DURASI ( 1, 2)	10.80000
0.000000		



0.000000	DURASI ( 1, 3)	20.40000
0.000000	DURASI ( 2, 1)	10.80000
0.000000	DURASI ( 2, 2)	0.000000
0.000000	DURASI ( 2, 3)	18.00000
0.000000	DURASI ( 3, 1)	20.40000
0.000000	DURASI ( 3, 2)	18.00000
0.000000	DURASI ( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	45556.00
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	9999985.
0.000000	8	9999934.
0.000000	9	0.1000002E+08
0.000000	10	0.000000
0.000000	11	9999985.
0.000000	12	0.000000
0.000000	13	0.000000
0.000000	14	0.000000

**Tanggal 27 cluster 4**

Global optimal solution found.

Objective value:	598833.0
Objective bound:	598833.0
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.10

Model Class:	MILP
--------------	------

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	14
Nonlinear constraints:	0

Total nonzeros:	40
Nonlinear nonzeros:	0

Reduced Cost	Variable	Value
0.000000	JUMLAH_KENDARAAN	1.000000
0.000000	R	0.1000000E+08
0.000000	BONGKAR ( 1)	15.00000
0.000000	BONGKAR ( 2)	15.00000
0.000000	BONGKAR ( 3)	15.00000
0.000000	T ( 1)	283.8000
0.000000	T ( 2)	102.6000
0.000000	T ( 3)	0.000000
0.000000	X ( 1, 1)	0.000000
0.000000	X ( 1, 2)	0.000000
280500.0	X ( 1, 3)	1.000000
293833.0		

280500.0	X( 2, 1)	1.000000
0.000000	X( 2, 2)	0.000000
24500.00	X( 2, 3)	0.000000
293833.0	X( 3, 1)	0.000000
24500.00	X( 3, 2)	1.000000
0.000000	X( 3, 3)	0.000000
0.000000	COST( 1, 1)	0.000000
0.000000	COST( 1, 2)	280500.0
0.000000	COST( 1, 3)	293833.0
0.000000	COST( 2, 1)	280500.0
0.000000	COST( 2, 2)	0.000000
0.000000	COST( 2, 3)	24500.00
0.000000	COST( 3, 1)	293833.0
0.000000	COST( 3, 2)	24500.00
0.000000	COST( 3, 3)	0.000000
0.000000	DURASI( 1, 1)	0.000000
0.000000	DURASI( 1, 2)	166.2000
0.000000	DURASI( 1, 3)	87.60000
0.000000	DURASI( 2, 1)	166.2000
0.000000	DURASI( 2, 2)	0.000000
0.000000	DURASI( 2, 3)	73.00000
0.000000	DURASI( 3, 1)	154.2000
0.000000	DURASI( 3, 2)	87.60000
0.000000	DURASI( 3, 3)	0.000000

Dual Price	Row	Slack or Surplus
-1.000000	1	598833.0
0.000000	2	0.000000
0.000000	3	0.000000
0.000000	4	0.000000
0.000000	5	0.000000
0.000000	6	0.000000
0.000000	7	9999985.
0.000000	8	9999809.
0.000000	9	0.1000011E+08
0.000000	10	0.000000
0.000000	11	9999985.
0.000000	12	0.000000
0.000000	13	0.000000
0.000000	14	0.000000

## BIOGRAFI



DINA SARI DEWIS,

Dilahirkan di kota Pematangsiantar, Sumatera Utara.

Pada tanggal 11 September 2000.

Anak kedua dari pasangan Rabdi dan Niswatin. Penulis menyelesaikan Pendidikan sekolah dasar di SD Negeri Dahlia Pematangsiantar dan tamat pada tahun 2012. Pada tahun itu juga penulis melanjutkan Pendidikan di SMP Negeri 2 Pematangsiantar dan tamat pada tahun 2015, disaat SMP penulis aktif mengikuti kegiatan Ekstrakurikuler yaitu Pramuka. Kemudian penulis melanjutkan Pendidikan di SMA Negeri 6 Pematangsiantar pada tahun 2015 dan tamat pada tahun 2018, disaat SMA penulis aktif mengikuti kegiatan Ekstrakurikuler yaitu Pramuka. Pada tahun 2019 penulis melanjutkan Pendidikan di

perguruan tinggi swasta, tepatnya di Universitas 17 Agustus 1945 Surabaya Fakultas Teknik Program Studi Teknik Industri. Berikut ini adalah email penulis yang bisa dihubungi [dinaachenn10@gmail.com](mailto:dinaachenn10@gmail.com)