

CEE 3804 - Computer Applications (Solution)

Problem 1 - Use of Excel DBASE functions to answer various questions

O10 =DAVERAGE(car_data[All], "Gas Tank Size", J6:Q7)

Model	Country	Type	Weight	Turning Circle	Displacement	Horsepower	Gas Tank Size
1 Acura Integra	Japan	Small	2700	37	112	130	13.2
2 Acura Legend V6	Japan	Medium	3265	42	163	160	18
3 Audi 100	Other	Medium	2935	39	141	130	21.1
4 Audi 80	Other	Compact	2670	35	121	108	15.9
5 Audi 90	Other	Compact	2790	35	141	130	15.9
6 BMW 325i	Other	Compact	2895	35	152	168	16.4
7 BMW 535i	Other	Medium	3640	39	209	208	21.1
8 Buick Century	USA	Medium	2880	41	151	110	15.7
9 Buick Electra V6	USA	Large	3350	43	231	165	18
10 Buick Le Sabre V6	USA	Large	3325	42	231	165	18
11 Buick Riviera V6	USA	Medium	3465	41	231	165	18.8
12 Buick Skylark	USA	Compact	2640	39	151	110	13.6
13 Cadillac Brougham V8	USA	Large	4285	44	307	140	25
14 Cadillac De Ville V8	USA	Large	3545	43	273	180	18
15 Cadillac Eldorado V8	USA	Medium	3480	42	273	180	18.8
16 Chevrolet Astro V6	USA	Large	4025	42	262	150	27
17 Chevrolet Beretta	USA	Compact	2655	38	133	95	15.6
18 Chevrolet Camaro V6	USA	Sporty	3110	41	191	140	15.5
19 Chevrolet Camaro V8	USA	Sporty	3320	41	305	170	15.5
20 Chevrolet Caprice V8	USA	Large	3855	42	305	170	25
21 Chevrolet Cavalier	USA	Compact	2485	38	133	95	13.6
22 Chevrolet Corvette V8	USA	Sporty	3280	42	350	250	20
23 Chevrolet Lumina	USA	Medium	3195	42	151	110	17.1
24 Chevrolet Lumina APV V6	USA	Large	3630	42	191	120	20
25 Chrysler Imperial V6	USA	Medium	3570	43	202	150	16
26 Chrysler Le Baron Coupe	USA	Medium	2975	39	153	150	14
27 Chrysler Le Baron V6	USA	Compact	3065	41	181	141	16
28 Chrysler New Yorker V6	USA	Medium	3450	42	202	147	16
29 Dodge Caravan	USA	Large	3385	42	153	100	20
30 Dodge Colt	Japan	Small	2270	32	90	81	13.2
31 Dodge Daytona	USA	Sporty	2885	38	153	100	14
32 Dodge Daytona Turbo	USA	Sporty	2935	38	135	150	14
33 Dodge Dynasty	USA	Medium	3080	42	153	100	16
34 Dodge Grand Caravan V6	USA	Large	3735	47	202	150	20
35 Dodge Omni	USA	Small	2300	40	135	93	13
36 Dodge Shadow Turbo	USA	Compact	2670	38	153	150	14
37 Eagle Premier V6	USA	Medium	3145	39	180	150	17
38 Eagle Summit	USA	Small	2560	36	97	113	13.2
39 Eagle Talon	USA	Sporty	2780	39	122	135	15.9
40 Ford Aerostar V6	USA	Large	3665	42	182	145	21
41 Ford Escort	USA	Small	2345	37	114	90	13
42 Ford Festiva	Other	Small	1845	33	81	63	10
43 Ford LTD Crown Victoria V	USA	Large	3850	45	302	150	18
44 Ford Mustang	USA	Sporty	2850	40	140	88	15.4
45 Ford Mustang V8	USA	Sporty	3310	44	302	225	15.4
46 Ford Probe	USA	Sporty	2695	38	133	110	15.1

Part a: Average Gas Tank Size = 17.02

Part b: Average HorsePower = 132.83

Part c: Average HorsePower of US cars weighting more than 2900 lbs = 152.59

Part d: No of cars with engine displacement between 118 and 290 = 78

Part e: STD of turning circle o Japanese cars = 2.96

Part f: Maximum HorsePower of US cars = 250

O18 =DAVERAGE(car_data[All], "Horsepower", J14:Q15)

Model	Country	Type	Weight	Turning Circle	Displacement	Horsepower	Gas Tank Size
1 Acura Integra	Japan	Small	2700	37	112	130	13.2
2 Acura Legend V6	Japan	Medium	3265	42	163	160	18
3 Audi 100	Other	Medium	2935	39	141	130	21.1
4 Audi 80	Other	Compact	2670	35	121	108	15.9
5 Audi 90	Other	Compact	2790	35	141	130	15.9
6 BMW 325i	Other	Compact	2895	35	152	168	16.4
7 BMW 535i	Other	Medium	3640	39	209	208	21.1
8 Buick Century	USA	Medium	2880	41	151	110	15.7
9 Buick Electra V6	USA	Large	3350	43	231	165	18
10 Buick Le Sabre V6	USA	Large	3325	42	231	165	18
11 Buick Riviera V6	USA	Medium	3465	41	231	165	18.8
12 Buick Skylark	USA	Compact	2640	39	151	110	13.6
13 Cadillac Brougham V8	USA	Large	4285	44	307	140	25
14 Cadillac De Ville V8	USA	Large	3545	43	273	180	18
15 Cadillac Eldorado V8	USA	Medium	3480	42	273	180	18.8
16 Chevrolet Astro V6	USA	Large	4025	42	262	150	27
17 Chevrolet Beretta	USA	Compact	2655	38	133	95	15.6
18 Chevrolet Camaro V6	USA	Sporty	3110	41	191	140	15.5
19 Chevrolet Camaro V8	USA	Sporty	3320	41	305	170	15.5
20 Chevrolet Caprice V8	USA	Large	3855	42	305	170	25
21 Chevrolet Cavalier	USA	Compact	2485	38	133	95	13.6
22 Chevrolet Corvette V8	USA	Sporty	3280	42	350	250	20
23 Chevrolet Lumina	USA	Medium	3195	42	151	110	17.1
24 Chevrolet Lumina APV V6	USA	Large	3630	42	191	120	20
25 Chrysler Imperial V6	USA	Medium	3570	43	202	150	16
26 Chrysler Le Baron Coupe	USA	Medium	2975	39	153	150	14
27 Chrysler Le Baron V6	USA	Compact	3065	41	181	141	16
28 Chrysler New Yorker V6	USA	Medium	3450	42	202	147	16
29 Dodge Caravan	USA	Large	3385	42	153	100	20
30 Dodge Colt	Japan	Small	2270	32	90	81	13.2
31 Dodge Daytona	USA	Sporty	2885	38	153	100	14
32 Dodge Daytona Turbo	USA	Sporty	2935	38	135	150	14
33 Dodge Dynasty	USA	Medium	3080	42	153	100	16
34 Dodge Grand Caravan V6	USA	Large	3735	47	202	150	20
35 Dodge Omni	USA	Small	2300	40	135	93	13
36 Dodge Shadow Turbo	USA	Compact	2670	38	153	150	14
37 Eagle Premier V6	USA	Medium	3145	39	180	150	17
38 Eagle Summit	USA	Small	2560	36	97	113	13.2
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42 Ford Festiva	Other	Small	1845	33	81	63	10
43 Ford LTD Crown Victoria V	USA	Large	3850	45	302	150	18

Part a: Average Gas Tank Size = 17.02

Part b: Average HorsePower = 132.83

Part c: Average HorsePower of US cars weighting more than 2900 lbs = 152.59

Part d: No of cars with engine displacement between 118 and 290 = 78

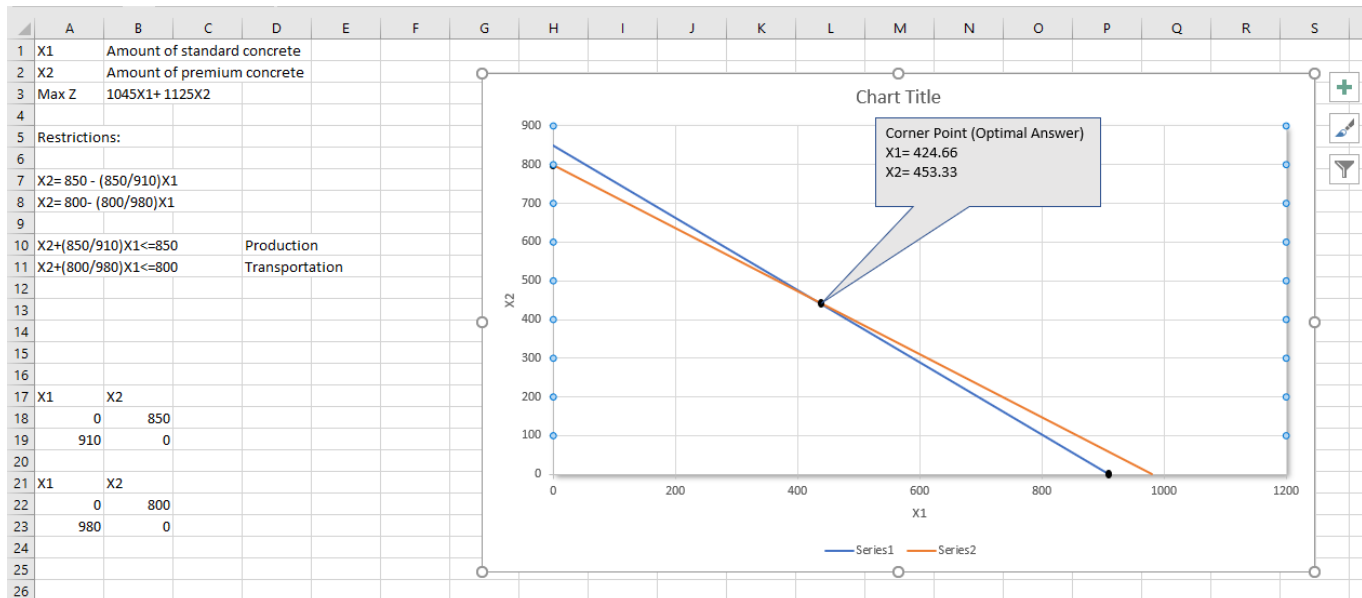
Part e: STD of turning circle o Japanese cars = 2.96

Part f: Maximum HorsePower of US cars = 250

Problem 2

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Z= 300X1+ 500X2							BV	Z	X1	X2	X3	X4	X5	RHS	Ratio	
2								Z	1	-300	-500	0	0	0	0	0	
3								X3	0	2	2	1	0	0	0	200	100
4	Restrictions:							X4	0	1	0	0	1	0	50	inf	
5	2X1 +2X2 <=		200					X5	0	0	1	0	0	1	60	60	
6	X1 <=		40														
7	X2 <=		60														
8	X1 >=		0					BV	Z	X1	X2	X3	X4	X5	RHS	Ratio	
9	X2 >=		0					Z	1	-300	0	0	0	500	30000		
10								X3	0	2	0	1	0	-2	80	40	
11								X4	0	1	0	0	1	0	50	50	
12	Standard Form:							X2	0	0	1	0	0	1	60	inf	
13																	
14	Z- 300X1- 500X2 =			0				BV	Z	X1	X2	X3	X4	X5	RHS	Ratio	
15	2X1 +2X2 + X3 =		200					Z	1	0	0	150	0	200	42000		
16	X1 +X4 =		50					X1	0	1	0	0.5	0	-1	40		
17	X2+ X5 =		60					X4	0	0	0	-0.5	1	1	10		
18								X2	0	0	1	0	0	1	60		
19																	
20																	
21																	
22																	
23	Solution by Excel Solver																
24	Objective function																
25	42000																
26			RHS		Formula												
27	2X1 +2X2 <=		200		200												
28	X1 <=		50		40												
29	X2 <=		60		60												
30	X1 >=		0		0												
31	X2 >=		0		0												
32																	

Problem 3



Problem 4

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1																				
2	X1	Amount removed from river A			5200															
3	X2	Amount removed from river B			12328															
4	X3	Amount removed from river C			37072															
5	X4	Amount removed from Airport			5200															
6	X5	Amount removed from City			5200															
7																				
8																				
9	Objective Function																			
10	Min Z	1.2X1+ X2+ 0.8X3+ 2.2X4+ 1.65X5				Formula														
11						68245.6														
12																				
13	Restrictions:																			
14																				
15	5200<=X1<=18868																			
16	5200<=X2<=20816																			
17	5200<=X3<=37072																			
18	5200<=X4<=28200																			
19	5200<=X5<=11500																			
20	X1+ X2+ X3+ X4+ X5>= 65000				65000															
21																				
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Solver Parameters

Set Objective:

To: Max Min Value Of:

By Changing Variable Cells:

Subject to the Constraints:

- SES2 <= 18868
- SES2 >= 5200
- SES20 >= 65000
- SES3 <= 20816
- SES3 >= 5200
- SES4 <= 37072
- SES4 <= 5200
- SES5 <= 28200
- SES5 <= 5200
- SES6 <= 11500
- SES6 >= 5200

Make Unconstrained Variables Non-Negative

Select a Solving Method:

Solving Method
 Select the GRG Nonlinear engine for Solver Problems that are smooth nonlinear. Select the LP Simplex engine for linear Solver Problems, and select the Evolutionary engine for Solver problems that are non-smooth.