

# Problem No. 1:

	A	B	C	D	E
1	City	Bus Type	Miles	Route length	Student Name
2	Miami	Van Hol AG500	196,639	18.7	4/7/2024 5:24
3	Miami	New Flyer Xcelsior	423,917	16.0	
4	Miami	Volvo 7900	435,355	18.9	
5	Atlanta	New Flyer Xcelsior	194,822	16.6	
6	Orlando	Volvo 7900	142,574	14.9	
7	Charlotte	Volvo 7900	99,315	15.8	
8	Miami	New Flyer Xcelsior	251,359	20.1	
9	Atlanta	New Flyer Xcelsior	211,559	17.2	
10	Miami	Van Hol AG500	237,475	19.7	
11	Charlotte	BYD K11M	326,170	18.2	
12	Atlanta	Van Hol AG500	359,956	15.4	
13	Atlanta	Volvo 7900	220,095	21.8	
14	Orlando	Volvo 7900	340,586	21.0	
15	Charlotte	Volvo 7900	414,654	21.7	
16	Miami	New Flyer Xcelsior	410,767	16.7	
17	Orlando	Volvo 7900	185,063	20.1	
18	Atlanta	Volvo 7900	257,426	15.4	
19	Charlotte	Volvo 7900	329,374	14.3	
20	Orlando	BYD K11M	105,853	23.6	
21	Miami	Volvo 7900	90,100	23.6	
22	Atlanta	Volvo 7900	153,872	23.2	
23	Charlotte	New Flyer Xcelsior	203,036	21.7	

← Subpart 1  
← Subpart 2

↑  
Subpart 3

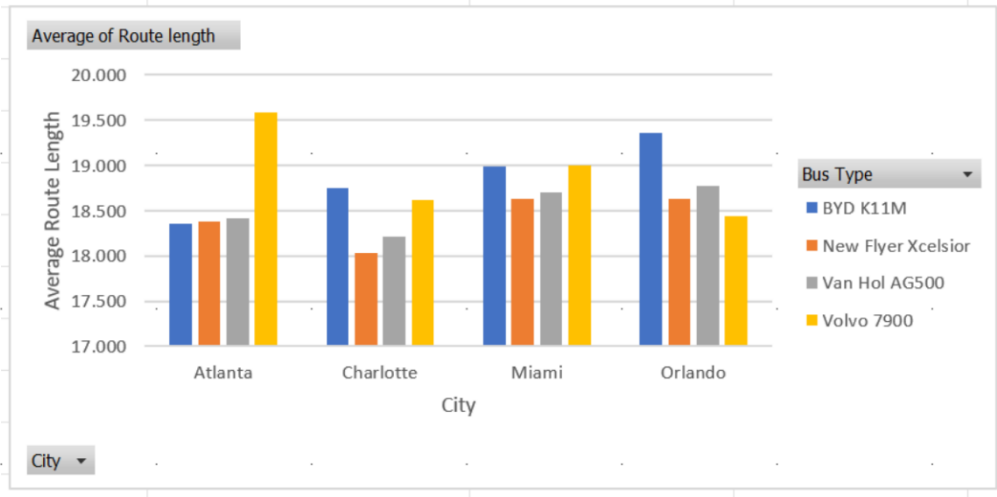
Subpart 4

Count of Bus Type					
Column Labels					
Row Labels	Atlanta	Charlotte	Miami	Orlando	Grand Total
BYD K11M	47	54	102	49	252
New Flyer Xcelsior	67	56	130	48	301
Van Hol AG500	37	42	72	51	202
Volvo 7900	60	57	92	36	245
<b>Grand Total</b>	<b>211</b>	<b>209</b>	<b>396</b>	<b>184</b>	<b>1000</b>

Subpart 5

Average of Miles					
Column Labels					
Row Labels	Atlanta	Charlotte	Miami	Orlando	Grand Total
BYD K11M	253993	265263	258590	266638	260727
New Flyer Xcelsior	275917	251655	276578	278923	272168
Van Hol AG500	270049	256001	257403	303152	270978
Volvo 7900	262984	278742	280477	273359	274744
<b>Grand Total</b>	<b>266327</b>	<b>263432</b>	<b>269364</b>	<b>281278</b>	<b>269676</b>

Subpart 6



Subpart 7

```

Range("E1").Select
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .ThemeColor = xlThemeColorAccent6
    .TintAndShade = 0.799981688894314
    .PatternTintAndShade = 0
End With
ActiveCell.FormulaR1C1 = "Student_Name"
Range("E2").Select
ActiveCell.FormulaR1C1 = "=NOW()"
Range("A1").Select
With Selection.Interior
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
    .ThemeColor = xlThemeColorAccent6
    .TintAndShade = 0.399975585192419
    .PatternTintAndShade = 0
End With
Columns("A:A").Select
Selection.FormatConditions.AddColorScale ColorScaleType:=3
Selection.FormatConditions(Selection.FormatConditions.Count).SetFirstPriority

```

Subpart 8

## Problem No. 2:

	A	B	C	D	E
1	City	Bus Type	Miles	Route length	Student Name
2	Sacramento	Volvo 7900	367,749	16.0	4/7/2024 6:16
3	San Diego	Van Hol AG500	176,475	22.0	
4	Denver	Volvo 7900	361,026	21.2	
5	Denver	Volvo 7900	471,920	18.9	
6	Sacramento	Volvo 7900	121,834	16.6	
7	Denver	Volvo 7900	476,952	17.6	
8	Denver	New Flyer Xcelsior	519,872	23.2	
9	Sacramento	Volvo 7900	483,420	16.9	
10	Denver	New Flyer Xcelsior	302,971	15.5	
11	San Diego	New Flyer Xcelsior	271,439	20.9	
12	Sacramento	BYD K11M	445,115	15.7	
13	San Diego	BYD K11M	445,708	23.0	
14	Los Angeles	Van Hol AG500	421,580	23.2	
15	Denver	Van Hol AG500	337,303	23.7	
16	San Diego	Van Hol AG500	478,462	23.4	
17	Denver	New Flyer Xcelsior	258,929	18.1	
18	Los Angeles	New Flyer Xcelsior	160,838	18.9	
19	Denver	New Flyer Xcelsior	222,817	16.5	
20	San Diego	New Flyer Xcelsior	210,842	21.5	
21	San Diego	Volvo 7900	279,769	23.1	

Subpart 1

City	Los Angeles
<b>Row Labels</b>	<b>Average of Miles</b>
New Flyer Xce	316263
<b>Grand Total</b>	<b>316263</b>

Subpart 2

City	Sacramento
<b>Row Labels</b>	<b>Count of Bus Type</b>
BYD K11M	34
<b>Grand Total</b>	<b>34</b>

Subpart 3

City	San Diego
<b>Row Labels</b>	<b>Average of Miles</b>
Volvo 7900	334120
<b>Grand Total</b>	<b>334120</b>

Subpart 4

Row Labels	Average of Route length
BYD K11M	23.35
New Flyer Xcelsior	22.05
Van Hol AG500	21.71
Volvo 7900	22.73
<b>Grand Total</b>	<b>22.51</b>

Subpart 5

Bus Type	BYD K11M
Row Labels	Sum of Miles
Atlanta	11,937,661
Calgary	15,195,588
Charlotte	14,324,198
Denver	16,845,369
Los Angeles	7,838,071
Miami	26,376,162
Orlando	13,065,273
<b>Portland</b>	<b>29,538,545</b>
Sacramento	13,066,002
San Diego	9,126,857
Seattle	17,448,029
Vancouver	16,386,575
<b>Grand Total</b>	<b>191,148,331</b>

Subpart 6: Portland has the highest number of miles for the BYD K11M (29.54M)

### Problem No. 3:

Subpart A: Make sure it is a public function and variables are declared using *Option Explicit*.

Subpart B:

e:									
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1

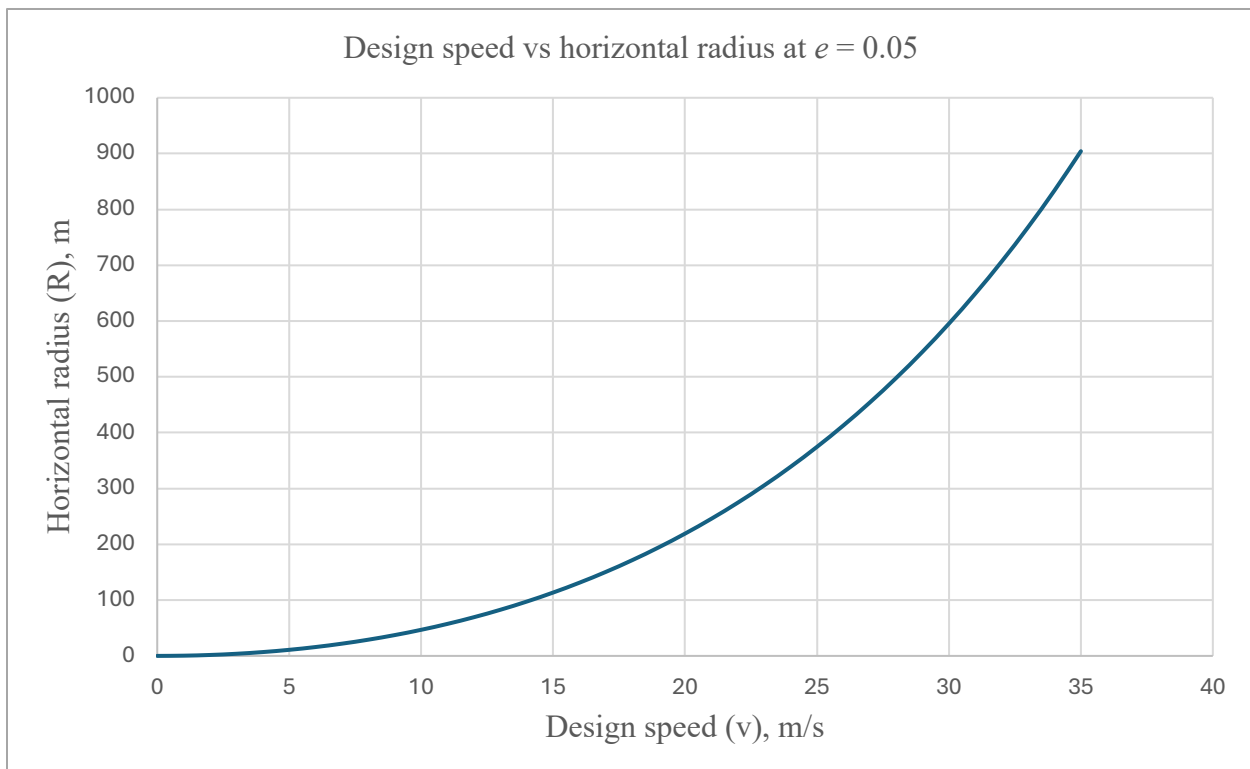
Speed (v)	f:
0	0.2001
1	0.1969
2	0.1937
3	0.1905
4	0.1873
5	0.1841
6	0.1809
7	0.1777
8	0.1745
9	0.1713
10	0.1681
11	0.1649
12	0.1617
13	0.1585
14	0.1553
15	0.1521
16	0.1489
17	0.1457
18	0.1425
19	0.1393
20	0.1361
21	0.1329
22	0.1297
23	0.1265
24	0.1233
25	0.1201
26	0.1169
27	0.1137
28	0.1105
29	0.1073
30	0.1041
31	0.1009
32	0.0977
33	0.0945
34	0.0913
35	0.0881

Horizontal radius (R) for corresponding value of v, f, and e:									
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
2	2	2	2	2	2	2	1	1	1
5	4	4	4	4	4	4	3	3	3
8	8	8	7	7	7	6	6	6	6
13	12	12	11	11	10	10	10	9	9
19	18	17	17	16	15	15	14	14	13
27	25	24	23	22	21	20	19	19	18
35	34	32	30	29	28	27	26	25	24
46	43	41	39	37	36	34	33	32	30
57	54	51	49	47	45	43	41	39	38
71	67	63	60	57	55	53	50	48	47
85	81	77	73	69	66	63	61	58	56
102	97	91	87	83	79	75	72	69	67
121	114	108	102	97	93	89	85	81	78
141	133	126	119	113	108	103	99	95	91
164	155	146	138	131	125	119	114	109	105
189	178	168	159	151	143	137	131	125	120
217	203	191	181	172	163	155	148	142	136
246	231	217	205	194	185	176	168	160	154
279	261	245	232	219	208	198	189	180	173
315	294	276	260	246	233	222	211	202	193
353	330	309	291	275	260	247	235	225	215
395	368	345	324	306	289	274	261	249	238
440	410	383	360	339	320	304	289	275	263
490	455	424	398	375	354	335	318	303	289
543	503	469	439	413	390	369	350	333	318
601	556	517	483	454	428	405	384	365	348
663	612	569	531	498	469	443	420	399	380
731	673	624	582	545	512	484	458	435	414
804	739	684	637	595	559	527	498	473	450
883	810	748	695	649	609	573	542	513	488
969	887	817	758	707	662	622	587	556	528
1062	970	892	825	768	719	675	636	602	571
1163	1059	971	897	834	779	731	688	650	616
1273	1155	1057	975	904	843	790	743	701	664

Reference highlighted values in table above:

$v$ (m/s)	$e$ (dim)	$R$ (m)
15	0.05	113
20	0.05	219
30	0.06	559
15	0.07	103
25	0.09	303
30	0.03	684

Subpart C:



**Problem No. 4:**

Subpart 1: Make sure it is a subroutine and variables are declared using *Option Explicit*.

Subpart 2: Ensure subroutine converts kilometers to meters

**Subpart 3****Subpart 4**

Satellite altitude (km):	Orbit type:	Orbital speed (m/s)	Orbital period (s)	Kinetic energy (J)
300	Low-Earth Orbit	7.73E+03	5.41E+03	5.97E+09
3,500	Medium-Earth Orbit	6.35E+03	9.75E+03	4.03E+09
10,000	Far-Earth Orbit	4.93E+03	2.08E+04	2.43E+09
25,000	Far-Earth Orbit	3.56E+03	5.53E+04	1.27E+09