

Task1 Q1: Import Data

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup
1	073_190	73	Steel	29.1	42.7	.	1377.9	.	135	0	1
2	057_032	57	Steel	55.9	141.1	.	3349.8	.	180	1	1
3	022_141	22	Steel	46.6	105	.	2585.3	.	160	1	1
4	089_177	89	Steel	38.5	62.3	.	1026.9	.	1	1	Middle
5	039_105	39	Steel	62	150	.	863	.	1	1	Fast
6	013_143	13	Steel	67.1	164.1	.	4192.9	.	1	1	Fast
7	050_158	50	Steel	62.1	134.5	.	4530.8	.	130	1	1
8	037_139	37	Steel	62.1	131.3	.	2532.8	.	180	1	1
9	003_025	3	Steel	45	90	.	1300	.	73	1	1
10	022_118	22	Steel	62.1	124.7	.	3464.6	.	150	1	1
11	044_064	44	Steel	68	167	150	4124	.	160	1	1
12	023_143	23	Steel	65.3	151.6	.	492.2	.	50	1	1
13	058_112	58	Steel	65.3	151.6	.	492.2	.	50	1	1
14	012_022	12	Steel	49.7	108.3	.	2559.1	.	1	1	Middle
15	023_108	23	Steel	47	131.3	.	935	.	108	1	1
16	076_094	76	Steel	37.3	50.8	.	1391.1	.	80	0	1
17	083_093	83	Steel	45	63	.	1775	.	1	1	Middle
18	071_161	71	Wood	68	107	162	2937	.	87	1	0
19	001_123	1	Steel	65.2	132	.	2800	.	150	1	1
20	014_170	14	Steel	65.3	151.6	.	590.6	.	1	1	Fast
21	021_022	21	Steel	62.1	98.4	.	2296.6	.	1	1	Fast
22	075_035	75	Steel	70	179	171	3266	.	1	1	Fast
23	084_048	84	Steel	22.4	36.4	.	984.3	.	68	0	1
24	024_073	24	Steel	25.7	50	.	1282.8	.	1	1	Slow
25	011_091	11	Steel	67	170	164	4164	.	160	1	1
26	028_132	28	Steel	26.7	36.1	.	1017.1	.	100	0	1
27	035_163	35	Steel	43.5	49.3	.	1036.8	.	47	1	1
28	001_049	1	Steel	44.7	52.5	.	1574.8	.	1	1	Middle
29	051_060	51	Steel	52.8	108.3	.	2870.8	.	1	1	Fast
30	075_054	75	Steel	47	116.5	.	935	.	108	1	1
31	022_126	22	Steel	29.1	45.9	.	1377.9	.	0	1	Slow
32	002_071	2	Steel	52.8	98.4	100	2066.9	.	120	1	1
33	029_077	29	Steel	28	49.3	.	1213.9	.	70	0	1
34	061_047	61	Steel	28	45.9	.	1213.9	.	85	0	1
35	032_055	32	Steel	46.6	103.7	.	1213.9	.	1	1	Middle
36	055_083	55	Steel	28.6	42.7	.	1036.8	.	0	1	Slow
37	035_190	35	Steel	52.8	101.7	98.4	2477	.	0	1	Fast
38	069_086	69	Steel	56	140	113	3359	.	155	1	1
39	053_174	53	Steel	74.6	180.4	.	3280.8	.	1	1	Fast
40	034_123	34	Steel	37.3	116.5	.	820.3	.	0	1	Middle
41	070_082	70	Steel	49.7	108.3	95.2	2624.7	.	130	1	1
42	036_054	36	Steel	49.7	108.3	95.2	2624.7	.	130	1	1
43	035_181	35	Steel	52.8	101.7	98.4	2477	.	0	1	Fast
44	020_187	20	Steel	43.5	72.2	.	1184.4	.	1	1	Middle
45	035_085	35	Steel	53.7	117.8	111.8	2454.1	.	92	1	1
46	044_077	44	Steel	80	230	215	5282	.	180	0	1
47	010_013	10	Steel	47	116.5	.	935	.	108	1	1
48	022_129	22	Steel	62.1	124.7	.	3464.6	.	150	1	1
49	075_070	75	Wood	50.1	95	87.3	2877	.	180	0	0
50	064_133	64	Steel	55.9	111.6	.	1968.5	.	1	1	Fast
51	022_056	22	Steel	62.1	124.7	.	3464.6	.	150	1	1
52	044_045	44	Steel	68	167	150	4124	.	160	1	1
53	023_178	23	Steel	65.3	151.6	.	492.2	.	50	1	1
54	058_073	58	Steel	65.3	151.6	.	492.2	.	50	1	1
55	012_114	12	Steel	49.7	108.3	.	2559.1	.	1	1	Middle
56	023_070	23	Steel	47	131.3	.	935	.	108	1	1
57	076_119	76	Steel	37.3	50.8	.	1391.1	.	80	0	1
58	083_138	83	Steel	45	63	.	1775	.	1	1	Middle
59	071_028	71	Wood	68	107	162	2937	.	87	1	0

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup
60	001_057	1	Steel	65.2	132	.	2800	150	1	1	Fast
61	014_017	14	Steel	65.3	151.6	.	590.6	.	1	1	Fast
62	021_060	21	Steel	62.1	98.4	.	2296.6	.	1	1	Fast
63	075_117	75	Steel	70	179	171	3266	.	1	1	Fast
64	084_054	84	Steel	22.4	36.4	.	984.3	68	0	1	Slow
65	024_054	24	Steel	25.7	50	.	1282.8	.	1	1	Slow
66	011_038	11	Steel	67	170	164	4164	160	1	1	Fast
67	028_042	28	Steel	26.7	36.1	.	1017.1	100	0	1	Slow
68	035_023	35	Steel	43.5	49.3	.	1036.8	47	1	1	Middle
69	001_129	1	Steel	44.7	52.5	.	1574.8	.	1	1	Middle
70	051_016	51	Steel	52.8	108.3	.	2870.8	.	1	1	Fast
71	075_091	75	Steel	47	116.5	.	935	108	1	1	Middle
72	022_101	22	Steel	29.1	45.9	.	1377.9	.	0	1	Slow
73	002_113	2	Steel	52.8	98.4	100	2066.9	120	1	1	Fast
74	029_146	29	Steel	28	49.3	.	1213.9	70	0	1	Slow
75	061_053	61	Steel	28	45.9	.	1213.9	85	0	1	Slow
76	068_195	68	Steel	25.7	50	.	1282.8	48	1	1	Slow
77	086_194	86	Steel	54.7	104.3	.	2805.1	126	1	1	Fast
78	067_080	67	Steel	59	114.8	.	2460.7	80	1	1	Fast
79	027_081	27	Steel	29.1	42.7	.	1377.9	90	0	1	Slow
80	031_168	31	Steel	55.9	108.3	.	2526.3	90	1	1	Fast
81	035_092	35	Steel	44.7	47.1	.	1960.7	.	0	1	Middle
82	048_002	48	Steel	35	51.8	49.8	1312.3	95	0	1	Slow
83	016_021	16	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle
84	049_148	49	Steel	47.9	80.4	.	1942.3	120	1	1	Middle
85	075_084	75	Steel	37	107	.	825	.	0	1	Middle
86	075_110	75	Steel	63	154	144	4155	150	1	1	Fast
87	075_129	75	Steel	28	49.3	.	1213.9	92	0	1	Slow
88	041_044	41	Steel	65.6	191.6	177	1204	92	1	1	Fast
89	006_147	6	Steel	49.7	78.8	.	1584.7	.	1	1	Middle
90	035_178	35	Steel	83	170.6	196.8	2788.8	.	0	1	Fast
91	007_185	7	Steel	34.2	55.8	.	1410.8	.	0	1	Slow
92	075_146	75	Steel	52	95	.	2099	.	1	1	Fast
93	086_014	86	Steel	65.3	151.6	.	492.2	60	1	1	Fast
94	009_177	9	Steel	60	102	130	4429	.	1	1	Fast
95	067_001	67	Steel	36	55.8	.	1410.8	75	0	1	Middle
96	019_037	19	Steel	65.3	151.6	.	492.2	50	1	1	Fast
97	063_024	63	Steel	29.1	34.8	.	990.8	.	1	1	Slow
98	022_097	22	Wood	62.1	131.3	.	3444.9	205	0	0	Fast
99	033_044	33	Steel	16.2	10.8	.	197.5	.	0	1	Slow
100	078_140	78	Steel	23.6	16.4	.	984.3	.	1	1	Slow
101	040_114	40	Steel	17.4	26.3	.	574.2	.	0	1	Slow
102	005_103	5	Steel	50	131.3	.	1013.8	90	1	1	Middle
103	023_029	23	Steel	65.3	151.6	.	492.2	50	1	1	Fast
104	074_068	74	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle
105	075_162	75	Steel	62	150	.	863	.	1	1	Fast
106	023_191	23	Steel	47	116.5	.	935	108	1	1	Middle
107	018_173	18	Steel	50	131.3	.	1013.8	90	1	1	Middle
108	038_108	38	Steel	75	200	.	3600	.	0	1	Fast
109	065_061	65	Steel	83.3	249.3	255.9	5131.3	180	0	1	Fast
110	042_134	42	Steel	49.7	108.3	.	2585.3	120	1	1	Middle
111	090_030	90	Steel	21.8	19	.	410.1	.	0	1	Slow
112	088_193	88	Steel	32.9	65.6	.	2673.9	.	0	1	Slow
113	048_073	48	Steel	40.4	65.6	.	1633.8	.	0	1	Middle
114	030_051	30	Steel	52	100	.	1246	60	1	1	Fast
115	075_096	75	Steel	65.6	191.6	177	1204	92	1	1	Fast
116	079_026	79	Steel	43.5	65.6	.	1640.4	112	0	1	Middle
117	062_145	62	Steel	47	116.5	.	935	108	1	1	Middle
118	052_030	52	Steel	40	75	68	2400	.	1	1	Middle
119	075_058	75	Steel	55	100	90	2900	120	1	1	Fast
120	060_137	60	Wood	56	82	78	3150	150	0	0	Fast

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup
121	060_134	60	Steel	56	102	93	2170	125	1	1	Fast
122	078_113	78	Steel	60.3	137.8	124.67	2559.1	108	0	1	Fast
123	082_101	82	Steel	65.6	191.6	177	1204	92	1	1	Fast
124	004_013	4	Steel	68	65	180	1222	.	0	1	Fast
125	077_008	77	Steel	71.5	166	178	5019.67	180	0	1	Fast
126	047_180	47	Steel	80.8	262.5	218.1	3500	.	0	1	Fast
127	026_088	26	Steel	80.8	259.2	229.7	6708.67	216	0	1	Fast
128	057_046	57	Steel	95	318.25	306.75	8133.1	.	0	1	Fast
129	019_173	19	Steel	100	377.33	328.1	1235	28	0	1	Fast
130	011_169	11	Wood	40	78	72	2558	105	0	0	Middle
131	003_168	3	Steel	41	94	66	2423	60	1	1	Middle
132	075_190	75	Steel	42	70	64	3100	120	0	1	Middle
133	027_171	27	Steel	45	56	47	635	66	1	1	Middle
134	072_189	72	Steel	46	70	62	1250	.	1	1	Middle
135	015_147	15	Wood	47	80	75	2750	75	0	0	Middle
136	038_155	38	Wood	50	84	78	3360	105	0	0	Middle
137	066_142	66	Wood	50	55	52	2650	105	0	0	Middle
138	046_168	46	Wood	50	70	70	2272	.	0	0	Middle
139	085_067	85	Wood	52	92	90	2680	.	0	0	Fast
140	075_074	75	Wood	53	98	88	4000	150	0	0	Fast
141	087_049	87	Wood	53	100	95	4230	133	0	0	Fast
142	043_186	43	Wood	55	70	95	2887	90	0	0	Fast
143	075_069	75	Steel	55	115	95	2170	125	1	1	Fast
144	054_069	54	Wood	55	70	76	2640	.	0	0	Fast
145	025_030	25	Steel	55	83	75	1942	75	1	1	Fast
146	075_101	75	Steel	55	115	95	2170	125	1	1	Fast
147	075_163	75	Steel	55	115	95	2170	125	1	1	Fast
148	075_164	75	Steel	55	100	90	2900	120	1	1	Fast
149	060_188	60	Steel	55	138	138	985	90	1	1	Fast
150	056_180	56	Wood	55	101.5	100	3800	120	0	0	Fast
151	078_051	78	Steel	60.3	137.8	124.67	2559.1	108	0	1	Fast
152	085_096	85	Steel	55	115	95	2170	125	1	1	Fast
153	075_114	75	Wood	62	110	92	3872	150	0	0	Fast
154	075_150	75	Wood	62	125	115	4325	150	0	0	Fast
155	017_008	17	Steel	63	163	128	2682	108	1	1	Fast
156	075_151	75	Steel	63	150	141	3985	180	1	1	Fast
157	075_031	75	Steel	63	154	144	4155	180	1	1	Fast
158	060_014	60	Wood	64.8	105	141	7400	220	0	0	Fast
159	075_083	75	Wood	65	143	137	4920	150	0	0	Fast
160	069_035	69	Steel	65	150	150	3700	180	0	1	Fast
161	075_079	75	Steel	65	156	146	4370	180	1	1	Fast
162	075_037	75	Wood	65	179.5	124	5080	146	0	0	Fast
163	087_198	87	Steel	65	117	115	3470	150	1	1	Fast
164	075_056	75	Steel	65	150	150	3937	195	1	1	Fast
165	011_196	11	Wood	65	161	155	5427	193	0	0	Fast
166	069_032	69	Steel	65	149	144	4177	219	1	1	Fast
167	018_098	18	Wood	65	95	151	4000	135	0	0	Fast
168	075_147	75	Steel	65	157	148	4210	.	1	1	Fast
169	071_089	71	Steel	66	120	155	3073	136	1	1	Fast
170	075_097	75	Wood	66	127	147	4650	143	0	0	Fast
171	075_065	75	Wood	66.3	122	150	5051	.	0	0	Fast
172	059_043	59	Steel	67	203	144	4777	160	1	1	Fast
173	080_115	80	Steel	67	110	105	3700	135	1	1	Fast
174	009_149	9	Steel	67	195	170	3828	190	1	1	Fast
175	075_082	75	Steel	68	173	155	3800	140	1	1	Fast
176	060_007	60	Steel	70	155	80	2757	.	1	1	Fast
177	075_169	75	Steel	70	188	171	3830	150	1	1	Fast
178	011_010	11	Steel	72	205	194.6	5106	120	0	1	Fast
179	075_130	75	Steel	73	208	205	5400	200	0	1	Fast
180	075_141	75	Wood	73	179.5	166.5	5080	146	0	0	Fast
181	075_159	75	Steel	73	202	208	5057	150	0	1	Fast

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup
182	009_084	9	Steel	73	170	210	4882	135	0	1	Fast
183	081_130	81	Steel	74	207	196	5460	180	0	1	Fast
184	018_175	18	Steel	75	200	205	5600	180	0	1	Fast
185	087_120	87	Steel	75	205	205	5600	180	0	1	Fast
186	075_010	75	Steel	76	175	215	3610	.	1	1	Fast
187	075_111	75	Steel	77	208	221	5400	155	0	1	Fast
188	060_001	60	Wood	78.4	218	214	7032	.	1	0	Fast
189	043_174	43	Steel	80	160	225	3000	.	1	1	Fast
190	075_060	75	Steel	80	230	215	5394	240	0	1	Fast
191	060_084	60	Steel	80	165	133	1560	.	0	1	Fast
192	008_026	8	Steel	80	209	225	5843	163	0	1	Fast
193	045_100	45	Steel	82	205	130	2202	62	0	1	Fast
194	043_022	43	Steel	82	160	228	3200	.	0	1	Fast
195	075_128	75	Steel	85	245	255	5312	210	0	1	Fast
196	075_036	75	Steel	85	235	255	4500	180	0	1	Fast
197	011_155	11	Steel	93	310	300	6595	165	0	1	Fast
198	075_103	75	Steel	100	415	328.1	1235	.	0	1	Fast
199	011_054	11	Steel	120	420	400	2800	.	0	1	Fast
200	075_127	75	Steel	65.6	191.5	177	1204	92	1	1	Fast

Task1 Q2: Adjust for Missing Data

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup
1	073_190	73	Steel	29.1	42.7	0	1377.9	135	0	1	Slow
2	057_032	57	Steel	55.9	141.1	0	3349.8	180	1	1	Fast
3	022_141	22	Steel	46.6	105	0	2585.3	160	1	1	Middle
4	089_177	89	Steel	38.5	62.3	0	1026.9	.	1	1	Middle
5	039_105	39	Steel	62	150	0	863	.	1	1	Fast
6	013_143	13	Steel	67.1	164.1	0	4192.9	.	1	1	Fast
7	050_158	50	Steel	62.1	134.5	0	4530.8	130	1	1	Fast
8	037_139	37	Steel	62.1	131.3	0	2532.8	180	1	1	Fast
9	003_025	3	Steel	45	90	0	1300	73	1	1	Middle
10	022_118	22	Steel	62.1	124.7	0	3464.6	150	1	1	Fast
11	044_064	44	Steel	68	167	150	4124	160	1	1	Fast
12	023_143	23	Steel	65.3	151.6	0	492.2	50	1	1	Fast
13	058_112	58	Steel	65.3	151.6	0	492.2	50	1	1	Fast
14	012_022	12	Steel	49.7	108.3	0	2559.1	.	1	1	Middle
15	023_108	23	Steel	47	131.3	0	935	108	1	1	Middle
16	076_094	76	Steel	37.3	50.8	0	1391.1	80	0	1	Middle
17	083_093	83	Steel	45	63	0	1775	.	1	1	Middle
18	071_161	71	Wood	68	107	162	2937	87	1	0	Fast
19	001_123	1	Steel	65.2	132	0	2800	150	1	1	Fast
20	014_170	14	Steel	65.3	151.6	0	590.6	.	1	1	Fast
21	021_022	21	Steel	62.1	98.4	0	2296.6	.	1	1	Fast
22	075_035	75	Steel	70	179	171	3266	.	1	1	Fast
23	084_048	84	Steel	22.4	36.4	0	984.3	68	0	1	Slow
24	024_073	24	Steel	25.7	50	0	1282.8	.	1	1	Slow
25	011_091	11	Steel	67	170	164	4164	160	1	1	Fast
26	028_132	28	Steel	26.7	36.1	0	1017.1	100	0	1	Slow
27	035_163	35	Steel	43.5	49.3	0	1036.8	47	1	1	Middle
28	001_049	1	Steel	44.7	52.5	0	1574.8	.	1	1	Middle
29	051_060	51	Steel	52.8	108.3	0	2870.8	.	1	1	Fast
30	075_054	75	Steel	47	116.5	0	935	108	1	1	Middle
31	022_126	22	Steel	29.1	45.9	0	1377.9	.	0	1	Slow
32	002_071	2	Steel	52.8	98.4	100	2066.9	120	1	1	Fast
33	029_077	29	Steel	28	49.3	0	1213.9	70	0	1	Slow
34	061_047	61	Steel	28	45.9	0	1213.9	85	0	1	Slow
35	032_055	32	Steel	46.6	103.7	0	1213.9	.	1	1	Middle
36	055_083	55	Steel	28.6	42.7	0	1036.8	.	0	1	Slow
37	035_190	35	Steel	52.8	101.7	98.4	2477	.	0	1	Fast

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38	069_086	69	Steel	56	140	113	3359	155	1	1	Fast
39	053_174	53	Steel	74.6	180.4	0	3280.8	.	1	1	Fast
40	034_123	34	Steel	37.3	116.5	0	820.3	.	0	1	Middle
41	070_082	70	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle
42	036_054	36	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle
43	035_181	35	Steel	52.8	101.7	98.4	2477	.	0	1	Fast
44	020_187	20	Steel	43.5	72.2	0	1184.4	.	1	1	Middle
45	035_085	35	Steel	53.7	117.8	111.8	2454.1	92	1	1	Fast
46	044_077	44	Steel	80	230	215	5282	180	0	1	Fast
47	010_013	10	Steel	47	116.5	0	935	108	1	1	Middle
48	022_129	22	Steel	62.1	124.7	0	3464.6	150	1	1	Fast
49	075_070	75	Wood	50.1	95	87.3	2877	180	0	0	Fast
50	064_133	64	Steel	55.9	111.6	0	1968.5	.	1	1	Fast
51	022_056	22	Steel	62.1	124.7	0	3464.6	150	1	1	Fast
52	044_045	44	Steel	68	167	150	4124	160	1	1	Fast
53	023_178	23	Steel	65.3	151.6	0	492.2	50	1	1	Fast
54	058_073	58	Steel	65.3	151.6	0	492.2	50	1	1	Fast
55	012_114	12	Steel	49.7	108.3	0	2559.1	.	1	1	Middle
56	023_070	23	Steel	47	131.3	0	935	108	1	1	Middle
57	076_119	76	Steel	37.3	50.8	0	1391.1	80	0	1	Middle
58	083_138	83	Steel	45	63	0	1775	.	1	1	Middle
59	071_028	71	Wood	68	107	162	2937	87	1	0	Fast
60	001_057	1	Steel	65.2	132	0	2800	150	1	1	Fast
61	014_017	14	Steel	65.3	151.6	0	590.6	.	1	1	Fast
62	021_060	21	Steel	62.1	98.4	0	2296.6	.	1	1	Fast
63	075_117	75	Steel	70	179	171	3266	.	1	1	Fast
64	084_054	84	Steel	22.4	36.4	0	984.3	68	0	1	Slow
65	024_054	24	Steel	25.7	50	0	1282.8	.	1	1	Slow
66	011_038	11	Steel	67	170	164	4164	160	1	1	Fast
67	028_042	28	Steel	26.7	36.1	0	1017.1	100	0	1	Slow
68	035_023	35	Steel	43.5	49.3	0	1036.8	47	1	1	Middle
69	001_129	1	Steel	44.7	52.5	0	1574.8	.	1	1	Middle
70	051_016	51	Steel	52.8	108.3	0	2870.8	.	1	1	Fast
71	075_091	75	Steel	47	116.5	0	935	108	1	1	Middle
72	022_101	22	Steel	29.1	45.9	0	1377.9	.	0	1	Slow
73	002_113	2	Steel	52.8	98.4	100	2066.9	120	1	1	Fast
74	029_146	29	Steel	28	49.3	0	1213.9	70	0	1	Slow
75	061_053	61	Steel	28	45.9	0	1213.9	85	0	1	Slow
76	068_195	68	Steel	25.7	50	0	1282.8	48	1	1	Slow
77	086_194	86	Steel	54.7	104.3	0	2805.1	126	1	1	Fast
78	067_080	67	Steel	59	114.8	0	2460.7	80	1	1	Fast
79	027_081	27	Steel	29.1	42.7	0	1377.9	90	0	1	Slow
80	031_168	31	Steel	55.9	108.3	0	2526.3	90	1	1	Fast
81	035_092	35	Steel	44.7	47.1	0	1960.7	.	0	1	Middle
82	048_002	48	Steel	35	51.8	49.8	1312.3	95	0	1	Slow
83	016_021	16	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle
84	049_148	49	Steel	47.9	80.4	0	1942.3	120	1	1	Middle
85	075_084	75	Steel	37	107	0	825	.	0	1	Middle
86	075_110	75	Steel	63	154	144	4155	150	1	1	Fast
87	075_129	75	Steel	28	49.3	0	1213.9	92	0	1	Slow
88	041_044	41	Steel	65.6	191.6	177	1204	92	1	1	Fast
89	006_147	6	Steel	49.7	78.8	0	1584.7	.	1	1	Middle
90	035_178	35	Steel	83	170.6	196.8	2788.8	.	0	1	Fast
91	007_185	7	Steel	34.2	55.8	0	1410.8	.	0	1	Slow
92	075_146	75	Steel	52	95	0	2099	.	1	1	Fast
93	086_014	86	Steel	65.3	151.6	0	492.2	60	1	1	Fast
94	009_177	9	Steel	60	102	130	4429	.	1	1	Fast
95	067_001	67	Steel	36	55.8	0	1410.8	75	0	1	Middle
96	019_037	19	Steel	65.3	151.6	0	492.2	50	1	1	Fast
97	063_024	63	Steel	29.1	34.8	0	990.8	.	1	1	Slow
98	022_097	22	Wood	62.1	131.3	0	3444.9	205	0	0	Fast

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup
99	033_044	33	Steel	16.2	10.8	0	197.5	.	0	1	Slow
100	078_140	78	Steel	23.6	16.4	0	984.3	.	1	1	Slow
101	040_114	40	Steel	17.4	26.3	0	574.2	.	0	1	Slow
102	005_103	5	Steel	50	131.3	0	1013.8	90	1	1	Middle
103	023_029	23	Steel	65.3	151.6	0	492.2	50	1	1	Fast
104	074_068	74	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle
105	075_162	75	Steel	62	150	0	863	.	1	1	Fast
106	023_191	23	Steel	47	116.5	0	935	108	1	1	Middle
107	018_173	18	Steel	50	131.3	0	1013.8	90	1	1	Middle
108	038_108	38	Steel	75	200	0	3600	.	0	1	Fast
109	065_061	65	Steel	83.3	249.3	255.9	5131.3	180	0	1	Fast
110	042_134	42	Steel	49.7	108.3	0	2585.3	120	1	1	Middle
111	090_030	90	Steel	21.8	19	0	410.1	.	0	1	Slow
112	088_193	88	Steel	32.9	65.6	0	2673.9	.	0	1	Slow
113	048_073	48	Steel	40.4	65.6	0	1633.8	.	0	1	Middle
114	030_051	30	Steel	52	100	0	1246	60	1	1	Fast
115	075_096	75	Steel	65.6	191.6	177	1204	92	1	1	Fast
116	079_026	79	Steel	43.5	65.6	0	1640.4	112	0	1	Middle
117	062_145	62	Steel	47	116.5	0	935	108	1	1	Middle
118	052_030	52	Steel	40	75	68	2400	.	1	1	Middle
119	075_058	75	Steel	55	100	90	2900	120	1	1	Fast
120	060_137	60	Wood	56	82	78	3150	150	0	0	Fast
121	060_134	60	Steel	56	102	93	2170	125	1	1	Fast
122	078_113	78	Steel	60.3	137.8	124.67	2559.1	108	0	1	Fast
123	082_101	82	Steel	65.6	191.6	177	1204	92	1	1	Fast
124	004_013	4	Steel	68	65	180	1222	.	0	1	Fast
125	077_008	77	Steel	71.5	166	178	5019.67	180	0	1	Fast
126	047_180	47	Steel	80.8	262.5	218.1	3500	.	0	1	Fast
127	026_088	26	Steel	80.8	259.2	229.7	6708.67	216	0	1	Fast
128	057_046	57	Steel	95	318.25	306.75	8133.1	.	0	1	Fast
129	019_173	19	Steel	100	377.33	328.1	1235	28	0	1	Fast
130	011_169	11	Wood	40	78	72	2558	105	0	0	Middle
131	003_168	3	Steel	41	94	66	2423	60	1	1	Middle
132	075_190	75	Steel	42	70	64	3100	120	0	1	Middle
133	027_171	27	Steel	45	56	47	635	66	1	1	Middle
134	072_189	72	Steel	46	70	62	1250	.	1	1	Middle
135	015_147	15	Wood	47	80	75	2750	75	0	0	Middle
136	038_155	38	Wood	50	84	78	3360	105	0	0	Middle
137	066_142	66	Wood	50	55	52	2650	105	0	0	Middle
138	046_168	46	Wood	50	70	70	2272	.	0	0	Middle
139	085_067	85	Wood	52	92	90	2680	.	0	0	Fast
140	075_074	75	Wood	53	98	88	4000	150	0	0	Fast
141	087_049	87	Wood	53	100	95	4230	133	0	0	Fast
142	043_186	43	Wood	55	70	95	2887	90	0	0	Fast
143	075_069	75	Steel	55	115	95	2170	125	1	1	Fast
144	054_069	54	Wood	55	70	76	2640	.	0	0	Fast
145	025_030	25	Steel	55	83	75	1942	75	1	1	Fast
146	075_101	75	Steel	55	115	95	2170	125	1	1	Fast
147	075_163	75	Steel	55	115	95	2170	125	1	1	Fast
148	075_164	75	Steel	55	100	90	2900	120	1	1	Fast
149	060_188	60	Steel	55	138	138	985	90	1	1	Fast
150	056_180	56	Wood	55	101.5	100	3800	120	0	0	Fast
151	078_051	78	Steel	60.3	137.8	124.67	2559.1	108	0	1	Fast
152	085_096	85	Steel	55	115	95	2170	125	1	1	Fast
153	075_114	75	Wood	62	110	92	3872	150	0	0	Fast
154	075_150	75	Wood	62	125	115	4325	150	0	0	Fast
155	017_008	17	Steel	63	163	128	2682	108	1	1	Fast
156	075_151	75	Steel	63	150	141	3985	180	1	1	Fast
157	075_031	75	Steel	63	154	144	4155	180	1	1	Fast
158	060_014	60	Wood	64.8	105	141	7400	220	0	0	Fast
159	075_083	75	Wood	65	143	137	4920	150	0	0	Fast

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup
160	069_035	69	Steel	65	150	150	3700	180	0	1	Fast
161	075_079	75	Steel	65	156	146	4370	180	1	1	Fast
162	075_037	75	Wood	65	179.5	124	5080	146	0	0	Fast
163	087_198	87	Steel	65	117	115	3470	150	1	1	Fast
164	075_056	75	Steel	65	150	150	3937	195	1	1	Fast
165	011_196	11	Wood	65	161	155	5427	193	0	0	Fast
166	069_032	69	Steel	65	149	144	4177	219	1	1	Fast
167	018_098	18	Wood	65	95	151	4000	135	0	0	Fast
168	075_147	75	Steel	65	157	148	4210	.	1	1	Fast
169	071_089	71	Steel	66	120	155	3073	136	1	1	Fast
170	075_097	75	Wood	66	127	147	4650	143	0	0	Fast
171	075_065	75	Wood	66.3	122	150	5051	.	0	0	Fast
172	059_043	59	Steel	67	203	144	4777	160	1	1	Fast
173	080_115	80	Steel	67	110	105	3700	135	1	1	Fast
174	009_149	9	Steel	67	195	170	3828	190	1	1	Fast
175	075_082	75	Steel	68	173	155	3800	140	1	1	Fast
176	060_007	60	Steel	70	155	80	2757	.	1	1	Fast
177	075_169	75	Steel	70	188	171	3830	150	1	1	Fast
178	011_010	11	Steel	72	205	194.6	5106	120	0	1	Fast
179	075_130	75	Steel	73	208	205	5400	200	0	1	Fast
180	075_141	75	Wood	73	179.5	166.5	5080	146	0	0	Fast
181	075_159	75	Steel	73	202	208	5057	150	0	1	Fast
182	009_084	9	Steel	73	170	210	4882	135	0	1	Fast
183	081_130	81	Steel	74	207	196	5460	180	0	1	Fast
184	018_175	18	Steel	75	200	205	5600	180	0	1	Fast
185	087_120	87	Steel	75	205	205	5600	180	0	1	Fast
186	075_010	75	Steel	76	175	215	3610	.	1	1	Fast
187	075_111	75	Steel	77	208	221	5400	155	0	1	Fast
188	060_001	60	Wood	78.4	218	214	7032	.	1	0	Fast
189	043_174	43	Steel	80	160	225	3000	.	1	1	Fast
190	075_060	75	Steel	80	230	215	5394	240	0	1	Fast
191	060_084	60	Steel	80	165	133	1560	.	0	1	Fast
192	008_026	8	Steel	80	209	225	5843	163	0	1	Fast
193	045_100	45	Steel	82	205	130	2202	62	0	1	Fast
194	043_022	43	Steel	82	160	228	3200	.	0	1	Fast
195	075_128	75	Steel	85	245	255	5312	210	0	1	Fast
196	075_036	75	Steel	85	235	255	4500	180	0	1	Fast
197	011_155	11	Steel	93	310	300	6595	165	0	1	Fast
198	075_103	75	Steel	100	415	328.1	1235	.	0	1	Fast
199	011_054	11	Steel	120	420	400	2800	.	0	1	Fast
200	075_127	75	Steel	65.6	191.5	177	1204	92	1	1	Fast

Task1 Q3: Create Character Variable

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup	LengthGroup
1	073_190	73	Steel	29.1	42.7	0	1377.9	135	0	1	Slow	Short
2	057_032	57	Steel	55.9	141.1	0	3349.8	180	1	1	Fast	Medium
3	022_141	22	Steel	46.6	105	0	2585.3	160	1	1	Middle	Medium
4	089_177	89	Steel	38.5	62.3	0	1026.9	.	1	1	Middle	Short
5	039_105	39	Steel	62	150	0	863	.	1	1	Fast	Short
6	013_143	13	Steel	67.1	164.1	0	4192.9	.	1	1	Fast	Long
7	050_158	50	Steel	62.1	134.5	0	4530.8	130	1	1	Fast	Long
8	037_139	37	Steel	62.1	131.3	0	2532.8	180	1	1	Fast	Medium
9	003_025	3	Steel	45	90	0	1300	73	1	1	Middle	Short
10	022_118	22	Steel	62.1	124.7	0	3464.6	150	1	1	Fast	Medium
11	044_064	44	Steel	68	167	150	4124	160	1	1	Fast	Long
12	023_143	23	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short
13	058_112	58	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short
14	012_022	12	Steel	49.7	108.3	0	2559.1	.	1	1	Middle	Medium
15	023_108	23	Steel	47	131.3	0	935	108	1	1	Middle	Short

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup	LengthGroup
16	076_094	76	Steel	37.3	50.8	0	1391.1	80	0	1	Middle	Short
17	083_093	83	Steel	45	63	0	1775	.	1	1	Middle	Medium
18	071_161	71	Wood	68	107	162	2937	87	1	0	Fast	Medium
19	001_123	1	Steel	65.2	132	0	2800	150	1	1	Fast	Medium
20	014_170	14	Steel	65.3	151.6	0	590.6	.	1	1	Fast	Short
21	021_022	21	Steel	62.1	98.4	0	2296.6	.	1	1	Fast	Medium
22	075_035	75	Steel	70	179	171	3266	.	1	1	Fast	Medium
23	084_048	84	Steel	22.4	36.4	0	984.3	68	0	1	Slow	Short
24	024_073	24	Steel	25.7	50	0	1282.8	.	1	1	Slow	Short
25	011_091	11	Steel	67	170	164	4164	160	1	1	Fast	Long
26	028_132	28	Steel	26.7	36.1	0	1017.1	100	0	1	Slow	Short
27	035_163	35	Steel	43.5	49.3	0	1036.8	47	1	1	Middle	Short
28	001_049	1	Steel	44.7	52.5	0	1574.8	.	1	1	Middle	Short
29	051_060	51	Steel	52.8	108.3	0	2870.8	.	1	1	Fast	Medium
30	075_054	75	Steel	47	116.5	0	935	108	1	1	Middle	Short
31	022_126	22	Steel	29.1	45.9	0	1377.9	.	0	1	Slow	Short
32	002_071	2	Steel	52.8	98.4	100	2066.9	120	1	1	Fast	Medium
33	029_077	29	Steel	28	49.3	0	1213.9	70	0	1	Slow	Short
34	061_047	61	Steel	28	45.9	0	1213.9	85	0	1	Slow	Short
35	032_055	32	Steel	46.6	103.7	0	1213.9	.	1	1	Middle	Short
36	055_083	55	Steel	28.6	42.7	0	1036.8	.	0	1	Slow	Short
37	035_190	35	Steel	52.8	101.7	98.4	2477	.	0	1	Fast	Medium
38	069_086	69	Steel	56	140	113	3359	155	1	1	Fast	Medium
39	053_174	53	Steel	74.6	180.4	0	3280.8	.	1	1	Fast	Medium
40	034_123	34	Steel	37.3	116.5	0	820.3	.	0	1	Middle	Short
41	070_082	70	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle	Medium
42	036_054	36	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle	Medium
43	035_181	35	Steel	52.8	101.7	98.4	2477	.	0	1	Fast	Medium
44	020_187	20	Steel	43.5	72.2	0	1184.4	.	1	1	Middle	Short
45	035_085	35	Steel	53.7	117.8	111.8	2454.1	92	1	1	Fast	Medium
46	044_077	44	Steel	80	230	215	5282	180	0	1	Fast	Long
47	010_013	10	Steel	47	116.5	0	935	108	1	1	Middle	Short
48	022_129	22	Steel	62.1	124.7	0	3464.6	150	1	1	Fast	Medium
49	075_070	75	Wood	50.1	95	87.3	2877	180	0	0	Fast	Medium
50	064_133	64	Steel	55.9	111.6	0	1968.5	.	1	1	Fast	Medium
51	022_056	22	Steel	62.1	124.7	0	3464.6	150	1	1	Fast	Medium
52	044_045	44	Steel	68	167	150	4124	160	1	1	Fast	Long
53	023_178	23	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short
54	058_073	58	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short
55	012_114	12	Steel	49.7	108.3	0	2559.1	.	1	1	Middle	Medium
56	023_070	23	Steel	47	131.3	0	935	108	1	1	Middle	Short
57	076_119	76	Steel	37.3	50.8	0	1391.1	80	0	1	Middle	Short
58	083_138	83	Steel	45	63	0	1775	.	1	1	Middle	Medium
59	071_028	71	Wood	68	107	162	2937	87	1	0	Fast	Medium
60	001_057	1	Steel	65.2	132	0	2800	150	1	1	Fast	Medium
61	014_017	14	Steel	65.3	151.6	0	590.6	.	1	1	Fast	Short
62	021_060	21	Steel	62.1	98.4	0	2296.6	.	1	1	Fast	Medium
63	075_117	75	Steel	70	179	171	3266	.	1	1	Fast	Medium
64	084_054	84	Steel	22.4	36.4	0	984.3	68	0	1	Slow	Short
65	024_054	24	Steel	25.7	50	0	1282.8	.	1	1	Slow	Short
66	011_038	11	Steel	67	170	164	4164	160	1	1	Fast	Long
67	028_042	28	Steel	26.7	36.1	0	1017.1	100	0	1	Slow	Short
68	035_023	35	Steel	43.5	49.3	0	1036.8	47	1	1	Middle	Short
69	001_129	1	Steel	44.7	52.5	0	1574.8	.	1	1	Middle	Short
70	051_016	51	Steel	52.8	108.3	0	2870.8	.	1	1	Fast	Medium
71	075_091	75	Steel	47	116.5	0	935	108	1	1	Middle	Short
72	022_101	22	Steel	29.1	45.9	0	1377.9	.	0	1	Slow	Short
73	002_113	2	Steel	52.8	98.4	100	2066.9	120	1	1	Fast	Medium
74	029_146	29	Steel	28	49.3	0	1213.9	70	0	1	Slow	Short
75	061_053	61	Steel	28	45.9	0	1213.9	85	0	1	Slow	Short
76	068_195	68	Steel	25.7	50	0	1282.8	48	1	1	Slow	Short

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup	LengthGroup
77	086_194	86	Steel	54.7	104.3	0	2805.1	126	1	1	Fast	Medium
78	067_080	67	Steel	59	114.8	0	2460.7	80	1	1	Fast	Medium
79	027_081	27	Steel	29.1	42.7	0	1377.9	90	0	1	Slow	Short
80	031_168	31	Steel	55.9	108.3	0	2526.3	90	1	1	Fast	Medium
81	035_092	35	Steel	44.7	47.1	0	1960.7	.	0	1	Middle	Medium
82	048_002	48	Steel	35	51.8	49.8	1312.3	95	0	1	Slow	Short
83	016_021	16	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle	Medium
84	049_148	49	Steel	47.9	80.4	0	1942.3	120	1	1	Middle	Medium
85	075_084	75	Steel	37	107	0	825	.	0	1	Middle	Short
86	075_110	75	Steel	63	154	144	4155	150	1	1	Fast	Long
87	075_129	75	Steel	28	49.3	0	1213.9	92	0	1	Slow	Short
88	041_044	41	Steel	65.6	191.6	177	1204	92	1	1	Fast	Short
89	006_147	6	Steel	49.7	78.8	0	1584.7	.	1	1	Middle	Short
90	035_178	35	Steel	83	170.6	196.8	2788.8	.	0	1	Fast	Medium
91	007_185	7	Steel	34.2	55.8	0	1410.8	.	0	1	Slow	Short
92	075_146	75	Steel	52	95	0	2099	.	1	1	Fast	Medium
93	086_014	86	Steel	65.3	151.6	0	492.2	60	1	1	Fast	Short
94	009_177	9	Steel	60	102	130	4429	.	1	1	Fast	Long
95	067_001	67	Steel	36	55.8	0	1410.8	75	0	1	Middle	Short
96	019_037	19	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short
97	063_024	63	Steel	29.1	34.8	0	990.8	.	1	1	Slow	Short
98	022_097	22	Wood	62.1	131.3	0	3444.9	205	0	0	Fast	Medium
99	033_044	33	Steel	16.2	10.8	0	197.5	.	0	1	Slow	Short
100	078_140	78	Steel	23.6	16.4	0	984.3	.	1	1	Slow	Short
101	040_114	40	Steel	17.4	26.3	0	574.2	.	0	1	Slow	Short
102	005_103	5	Steel	50	131.3	0	1013.8	90	1	1	Middle	Short
103	023_029	23	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short
104	074_068	74	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle	Medium
105	075_162	75	Steel	62	150	0	863	.	1	1	Fast	Short
106	023_191	23	Steel	47	116.5	0	935	108	1	1	Middle	Short
107	018_173	18	Steel	50	131.3	0	1013.8	90	1	1	Middle	Short
108	038_108	38	Steel	75	200	0	3600	.	0	1	Fast	Medium
109	065_061	65	Steel	83.3	249.3	255.9	5131.3	180	0	1	Fast	Long
110	042_134	42	Steel	49.7	108.3	0	2585.3	120	1	1	Middle	Medium
111	090_030	90	Steel	21.8	19	0	410.1	.	0	1	Slow	Short
112	088_193	88	Steel	32.9	65.6	0	2673.9	.	0	1	Slow	Medium
113	048_073	48	Steel	40.4	65.6	0	1633.8	.	0	1	Middle	Short
114	030_051	30	Steel	52	100	0	1246	60	1	1	Fast	Short
115	075_096	75	Steel	65.6	191.6	177	1204	92	1	1	Fast	Short
116	079_026	79	Steel	43.5	65.6	0	1640.4	112	0	1	Middle	Short
117	062_145	62	Steel	47	116.5	0	935	108	1	1	Middle	Short
118	052_030	52	Steel	40	75	68	2400	.	1	1	Middle	Medium
119	075_058	75	Steel	55	100	90	2900	120	1	1	Fast	Medium
120	060_137	60	Wood	56	82	78	3150	150	0	0	Fast	Medium
121	060_134	60	Steel	56	102	93	2170	125	1	1	Fast	Medium
122	078_113	78	Steel	60.3	137.8	124.67	2559.1	108	0	1	Fast	Medium
123	082_101	82	Steel	65.6	191.6	177	1204	92	1	1	Fast	Short
124	004_013	4	Steel	68	65	180	1222	.	0	1	Fast	Short
125	077_008	77	Steel	71.5	166	178	5019.67	180	0	1	Fast	Long
126	047_180	47	Steel	80.8	262.5	218.1	3500	.	0	1	Fast	Medium
127	026_088	26	Steel	80.8	259.2	229.7	6708.67	216	0	1	Fast	Long
128	057_046	57	Steel	95	318.25	306.75	8133.1	.	0	1	Fast	Long
129	019_173	19	Steel	100	377.33	328.1	1235	28	0	1	Fast	Short
130	011_169	11	Wood	40	78	72	2558	105	0	0	Middle	Medium
131	003_168	3	Steel	41	94	66	2423	60	1	1	Middle	Medium
132	075_190	75	Steel	42	70	64	3100	120	0	1	Middle	Medium
133	027_171	27	Steel	45	56	47	635	66	1	1	Middle	Short
134	072_189	72	Steel	46	70	62	1250	.	1	1	Middle	Short
135	015_147	15	Wood	47	80	75	2750	75	0	0	Middle	Medium
136	038_155	38	Wood	50	84	78	3360	105	0	0	Middle	Medium
137	066_142	66	Wood	50	55	52	2650	105	0	0	Middle	Medium

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup	LengthGroup
138	046_168	46	Wood	50	70	70	2272	.	0	0	Middle	Medium
139	085_067	85	Wood	52	92	90	2680	.	0	0	Fast	Medium
140	075_074	75	Wood	53	98	88	4000	150	0	0	Fast	Medium
141	087_049	87	Wood	53	100	95	4230	133	0	0	Fast	Long
142	043_186	43	Wood	55	70	95	2887	90	0	0	Fast	Medium
143	075_069	75	Steel	55	115	95	2170	125	1	1	Fast	Medium
144	054_069	54	Wood	55	70	76	2640	.	0	0	Fast	Medium
145	025_030	25	Steel	55	83	75	1942	75	1	1	Fast	Medium
146	075_101	75	Steel	55	115	95	2170	125	1	1	Fast	Medium
147	075_163	75	Steel	55	115	95	2170	125	1	1	Fast	Medium
148	075_164	75	Steel	55	100	90	2900	120	1	1	Fast	Medium
149	060_188	60	Steel	55	138	138	985	90	1	1	Fast	Short
150	056_180	56	Wood	55	101.5	100	3800	120	0	0	Fast	Medium
151	078_051	78	Steel	60.3	137.8	124.67	2559.1	108	0	1	Fast	Medium
152	085_096	85	Steel	55	115	95	2170	125	1	1	Fast	Medium
153	075_114	75	Wood	62	110	92	3872	150	0	0	Fast	Medium
154	075_150	75	Wood	62	125	115	4325	150	0	0	Fast	Long
155	017_008	17	Steel	63	163	128	2682	108	1	1	Fast	Medium
156	075_151	75	Steel	63	150	141	3985	180	1	1	Fast	Medium
157	075_031	75	Steel	63	154	144	4155	180	1	1	Fast	Long
158	060_014	60	Wood	64.8	105	141	7400	220	0	0	Fast	Long
159	075_083	75	Wood	65	143	137	4920	150	0	0	Fast	Long
160	069_035	69	Steel	65	150	150	3700	180	0	1	Fast	Medium
161	075_079	75	Steel	65	156	146	4370	180	1	1	Fast	Long
162	075_037	75	Wood	65	179.5	124	5080	146	0	0	Fast	Long
163	087_198	87	Steel	65	117	115	3470	150	1	1	Fast	Medium
164	075_056	75	Steel	65	150	150	3937	195	1	1	Fast	Medium
165	011_196	11	Wood	65	161	155	5427	193	0	0	Fast	Long
166	069_032	69	Steel	65	149	144	4177	219	1	1	Fast	Long
167	018_098	18	Wood	65	95	151	4000	135	0	0	Fast	Medium
168	075_147	75	Steel	65	157	148	4210	.	1	1	Fast	Long
169	071_089	71	Steel	66	120	155	3073	136	1	1	Fast	Medium
170	075_097	75	Wood	66	127	147	4650	143	0	0	Fast	Long
171	075_065	75	Wood	66.3	122	150	5051	.	0	0	Fast	Long
172	059_043	59	Steel	67	203	144	4777	160	1	1	Fast	Long
173	080_115	80	Steel	67	110	105	3700	135	1	1	Fast	Medium
174	009_149	9	Steel	67	195	170	3828	190	1	1	Fast	Medium
175	075_082	75	Steel	68	173	155	3800	140	1	1	Fast	Medium
176	060_007	60	Steel	70	155	80	2757	.	1	1	Fast	Medium
177	075_169	75	Steel	70	188	171	3830	150	1	1	Fast	Medium
178	011_010	11	Steel	72	205	194.6	5106	120	0	1	Fast	Long
179	075_130	75	Steel	73	208	205	5400	200	0	1	Fast	Long
180	075_141	75	Wood	73	179.5	166.5	5080	146	0	0	Fast	Long
181	075_159	75	Steel	73	202	208	5057	150	0	1	Fast	Long
182	009_084	9	Steel	73	170	210	4882	135	0	1	Fast	Long
183	081_130	81	Steel	74	207	196	5460	180	0	1	Fast	Long
184	018_175	18	Steel	75	200	205	5600	180	0	1	Fast	Long
185	087_120	87	Steel	75	205	205	5600	180	0	1	Fast	Long
186	075_010	75	Steel	76	175	215	3610	.	1	1	Fast	Medium
187	075_111	75	Steel	77	208	221	5400	155	0	1	Fast	Long
188	060_001	60	Wood	78.4	218	214	7032	.	1	0	Fast	Long
189	043_174	43	Steel	80	160	225	3000	.	1	1	Fast	Medium
190	075_060	75	Steel	80	230	215	5394	240	0	1	Fast	Long
191	060_084	60	Steel	80	165	133	1560	.	0	1	Fast	Short
192	008_026	8	Steel	80	209	225	5843	163	0	1	Fast	Long
193	045_100	45	Steel	82	205	130	2202	62	0	1	Fast	Medium
194	043_022	43	Steel	82	160	228	3200	.	0	1	Fast	Medium
195	075_128	75	Steel	85	245	255	5312	210	0	1	Fast	Long
196	075_036	75	Steel	85	235	255	4500	180	0	1	Fast	Long
197	011_155	11	Steel	93	310	300	6595	165	0	1	Fast	Long
198	075_103	75	Steel	100	415	328.1	1235	.	0	1	Fast	Short

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup	LengthGroup
199	011_054	11	Steel	120	420	400	2800	.	0	1	Fast	Medium
200	075_127	75	Steel	65.6	191.5	177	1204	92	1	1	Fast	Short

Task1 Q4: Create Ratio

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup	LengthGroup	Ratio
1	073_190	73	Steel	29.1	42.7	0	1377.9	135	0	1	Slow	Short	1.46735
2	057_032	57	Steel	55.9	141.1	0	3349.8	180	1	1	Fast	Medium	2.52415
3	022_141	22	Steel	46.6	105	0	2585.3	160	1	1	Middle	Medium	2.25322
4	089_177	89	Steel	38.5	62.3	0	1026.9	.	1	1	Middle	Short	1.61818
5	039_105	39	Steel	62	150	0	863	.	1	1	Fast	Short	2.41935
6	013_143	13	Steel	67.1	164.1	0	4192.9	.	1	1	Fast	Long	2.44560
7	050_158	50	Steel	62.1	134.5	0	4530.8	130	1	1	Fast	Long	2.16586
8	037_139	37	Steel	62.1	131.3	0	2532.8	180	1	1	Fast	Medium	2.11433
9	003_025	3	Steel	45	90	0	1300	73	1	1	Middle	Short	2.00000
10	022_118	22	Steel	62.1	124.7	0	3464.6	150	1	1	Fast	Medium	2.00805
11	044_064	44	Steel	68	167	150	4124	160	1	1	Fast	Long	2.45588
12	023_143	23	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short	2.32159
13	058_112	58	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short	2.32159
14	012_022	12	Steel	49.7	108.3	0	2559.1	.	1	1	Middle	Medium	2.17907
15	023_108	23	Steel	47	131.3	0	935	108	1	1	Middle	Short	2.79362
16	076_094	76	Steel	37.3	50.8	0	1391.1	80	0	1	Middle	Short	1.36193
17	083_093	83	Steel	45	63	0	1775	.	1	1	Middle	Medium	1.40000
18	071_161	71	Wood	68	107	162	2937	87	1	0	Fast	Medium	1.57353
19	001_123	1	Steel	65.2	132	0	2800	150	1	1	Fast	Medium	2.02454
20	014_170	14	Steel	65.3	151.6	0	590.6	.	1	1	Fast	Short	2.32159
21	021_022	21	Steel	62.1	98.4	0	2296.6	.	1	1	Fast	Medium	1.58454
22	075_035	75	Steel	70	179	171	3266	.	1	1	Fast	Medium	2.55714
23	084_048	84	Steel	22.4	36.4	0	984.3	68	0	1	Slow	Short	1.62500
24	024_073	24	Steel	25.7	50	0	1282.8	.	1	1	Slow	Short	1.94553
25	011_091	11	Steel	67	170	164	4164	160	1	1	Fast	Long	2.53731
26	028_132	28	Steel	26.7	36.1	0	1017.1	100	0	1	Slow	Short	1.35206
27	035_163	35	Steel	43.5	49.3	0	1036.8	47	1	1	Middle	Short	1.13333
28	001_049	1	Steel	44.7	52.5	0	1574.8	.	1	1	Middle	Short	1.17450
29	051_060	51	Steel	52.8	108.3	0	2870.8	.	1	1	Fast	Medium	2.05114
30	075_054	75	Steel	47	116.5	0	935	108	1	1	Middle	Short	2.47872
31	022_126	22	Steel	29.1	45.9	0	1377.9	.	0	1	Slow	Short	1.57732
32	002_071	2	Steel	52.8	98.4	100	2066.9	120	1	1	Fast	Medium	1.86364
33	029_077	29	Steel	28	49.3	0	1213.9	70	0	1	Slow	Short	1.76071
34	061_047	61	Steel	28	45.9	0	1213.9	85	0	1	Slow	Short	1.63929
35	032_055	32	Steel	46.6	103.7	0	1213.9	.	1	1	Middle	Short	2.22532
36	055_083	55	Steel	28.6	42.7	0	1036.8	.	0	1	Slow	Short	1.49301
37	035_190	35	Steel	52.8	101.7	98.4	2477	.	0	1	Fast	Medium	1.92614
38	069_086	69	Steel	56	140	113	3359	155	1	1	Fast	Medium	2.50000
39	053_174	53	Steel	74.6	180.4	0	3280.8	.	1	1	Fast	Medium	2.41823
40	034_123	34	Steel	37.3	116.5	0	820.3	.	0	1	Middle	Short	3.12332
41	070_082	70	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle	Medium	2.17907
42	036_054	36	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle	Medium	2.17907
43	035_181	35	Steel	52.8	101.7	98.4	2477	.	0	1	Fast	Medium	1.92614
44	020_187	20	Steel	43.5	72.2	0	1184.4	.	1	1	Middle	Short	1.65977
45	035_085	35	Steel	53.7	117.8	111.8	2454.1	92	1	1	Fast	Medium	2.19367
46	044_077	44	Steel	80	230	215	5282	180	0	1	Fast	Long	2.87500
47	010_013	10	Steel	47	116.5	0	935	108	1	1	Middle	Short	2.47872
48	022_129	22	Steel	62.1	124.7	0	3464.6	150	1	1	Fast	Medium	2.00805
49	075_070	75	Wood	50.1	95	87.3	2877	180	0	0	Fast	Medium	1.89621
50	064_133	64	Steel	55.9	111.6	0	1968.5	.	1	1	Fast	Medium	1.99642
51	022_056	22	Steel	62.1	124.7	0	3464.6	150	1	1	Fast	Medium	2.00805
52	044_045	44	Steel	68	167	150	4124	160	1	1	Fast	Long	2.45588
53	023_178	23	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short	2.32159
54	058_073	58	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short	2.32159

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup	LengthGroup	Ratio
55	012_114	12	Steel	49.7	108.3	0	2559.1	.	1	1	Middle	Medium	2.17907
56	023_070	23	Steel	47	131.3	0	935	108	1	1	Middle	Short	2.79362
57	076_119	76	Steel	37.3	50.8	0	1391.1	80	0	1	Middle	Short	1.36193
58	083_138	83	Steel	45	63	0	1775	.	1	1	Middle	Medium	1.40000
59	071_028	71	Wood	68	107	162	2937	87	1	0	Fast	Medium	1.57353
60	001_057	1	Steel	65.2	132	0	2800	150	1	1	Fast	Medium	2.02454
61	014_017	14	Steel	65.3	151.6	0	590.6	.	1	1	Fast	Short	2.32159
62	021_060	21	Steel	62.1	98.4	0	2296.6	.	1	1	Fast	Medium	1.58454
63	075_117	75	Steel	70	179	171	3266	.	1	1	Fast	Medium	2.55714
64	084_054	84	Steel	22.4	36.4	0	984.3	68	0	1	Slow	Short	1.62500
65	024_054	24	Steel	25.7	50	0	1282.8	.	1	1	Slow	Short	1.94553
66	011_038	11	Steel	67	170	164	4164	160	1	1	Fast	Long	2.53731
67	028_042	28	Steel	26.7	36.1	0	1017.1	100	0	1	Slow	Short	1.35206
68	035_023	35	Steel	43.5	49.3	0	1036.8	47	1	1	Middle	Short	1.13333
69	001_129	1	Steel	44.7	52.5	0	1574.8	.	1	1	Middle	Short	1.17450
70	051_016	51	Steel	52.8	108.3	0	2870.8	.	1	1	Fast	Medium	2.05114
71	075_091	75	Steel	47	116.5	0	935	108	1	1	Middle	Short	2.47872
72	022_101	22	Steel	29.1	45.9	0	1377.9	.	0	1	Slow	Short	1.57732
73	002_113	2	Steel	52.8	98.4	100	2066.9	120	1	1	Fast	Medium	1.86364
74	029_146	29	Steel	28	49.3	0	1213.9	70	0	1	Slow	Short	1.76071
75	061_053	61	Steel	28	45.9	0	1213.9	85	0	1	Slow	Short	1.63929
76	068_195	68	Steel	25.7	50	0	1282.8	48	1	1	Slow	Short	1.94553
77	086_194	86	Steel	54.7	104.3	0	2805.1	126	1	1	Fast	Medium	1.90676
78	067_080	67	Steel	59	114.8	0	2460.7	80	1	1	Fast	Medium	1.94576
79	027_081	27	Steel	29.1	42.7	0	1377.9	90	0	1	Slow	Short	1.46735
80	031_168	31	Steel	55.9	108.3	0	2526.3	90	1	1	Fast	Medium	1.93739
81	035_092	35	Steel	44.7	47.1	0	1960.7	.	0	1	Middle	Medium	1.05369
82	048_002	48	Steel	35	51.8	49.8	1312.3	95	0	1	Slow	Short	1.48000
83	016_021	16	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle	Medium	2.17907
84	049_148	49	Steel	47.9	80.4	0	1942.3	120	1	1	Middle	Medium	1.67850
85	075_084	75	Steel	37	107	0	825	.	0	1	Middle	Short	2.89189
86	075_110	75	Steel	63	154	144	4155	150	1	1	Fast	Long	2.44444
87	075_129	75	Steel	28	49.3	0	1213.9	92	0	1	Slow	Short	1.76071
88	041_044	41	Steel	65.6	191.6	177	1204	92	1	1	Fast	Short	2.92073
89	006_147	6	Steel	49.7	78.8	0	1584.7	.	1	1	Middle	Short	1.58551
90	035_178	35	Steel	83	170.6	196.8	2788.8	.	0	1	Fast	Medium	2.05542
91	007_185	7	Steel	34.2	55.8	0	1410.8	.	0	1	Slow	Short	1.63158
92	075_146	75	Steel	52	95	0	2099	.	1	1	Fast	Medium	1.82692
93	086_014	86	Steel	65.3	151.6	0	492.2	60	1	1	Fast	Short	2.32159
94	009_177	9	Steel	60	102	130	4429	.	1	1	Fast	Long	1.70000
95	067_001	67	Steel	36	55.8	0	1410.8	75	0	1	Middle	Short	1.55000
96	019_037	19	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short	2.32159
97	063_024	63	Steel	29.1	34.8	0	990.8	.	1	1	Slow	Short	1.19588
98	022_097	22	Wood	62.1	131.3	0	3444.9	205	0	0	Fast	Medium	2.11433
99	033_044	33	Steel	16.2	10.8	0	197.5	.	0	1	Slow	Short	0.66667
100	078_140	78	Steel	23.6	16.4	0	984.3	.	1	1	Slow	Short	0.69492
101	040_114	40	Steel	17.4	26.3	0	574.2	.	0	1	Slow	Short	1.51149
102	005_103	5	Steel	50	131.3	0	1013.8	90	1	1	Middle	Short	2.62600
103	023_029	23	Steel	65.3	151.6	0	492.2	50	1	1	Fast	Short	2.32159
104	074_068	74	Steel	49.7	108.3	95.2	2624.7	130	1	1	Middle	Medium	2.17907
105	075_162	75	Steel	62	150	0	863	.	1	1	Fast	Short	2.41935
106	023_191	23	Steel	47	116.5	0	935	108	1	1	Middle	Short	2.47872
107	018_173	18	Steel	50	131.3	0	1013.8	90	1	1	Middle	Short	2.62600
108	038_108	38	Steel	75	200	0	3600	.	0	1	Fast	Medium	2.66667
109	065_061	65	Steel	83.3	249.3	255.9	5131.3	180	0	1	Fast	Long	2.99280
110	042_134	42	Steel	49.7	108.3	0	2585.3	120	1	1	Middle	Medium	2.17907
111	090_030	90	Steel	21.8	19	0	410.1	.	0	1	Slow	Short	0.87156
112	088_193	88	Steel	32.9	65.6	0	2673.9	.	0	1	Slow	Medium	1.99392
113	048_073	48	Steel	40.4	65.6	0	1633.8	.	0	1	Middle	Short	1.62376
114	030_051	30	Steel	52	100	0	1246	60	1	1	Fast	Short	1.92308
115	075_096	75	Steel	65.6	191.6	177	1204	92	1	1	Fast	Short	2.92073

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup	LengthGroup	Ratio
116	079_026	79	Steel	43.5	65.6	0	1640.4	112	0	1	Middle	Short	1.50805
117	062_145	62	Steel	47	116.5	0	935	108	1	1	Middle	Short	2.47872
118	052_030	52	Steel	40	75	68	2400	.	1	1	Middle	Medium	1.87500
119	075_058	75	Steel	55	100	90	2900	120	1	1	Fast	Medium	1.81818
120	060_137	60	Wood	56	82	78	3150	150	0	0	Fast	Medium	1.46429
121	060_134	60	Steel	56	102	93	2170	125	1	1	Fast	Medium	1.82143
122	078_113	78	Steel	60.3	137.8	124.67	2559.1	108	0	1	Fast	Medium	2.28524
123	082_101	82	Steel	65.6	191.6	177	1204	92	1	1	Fast	Short	2.92073
124	004_013	4	Steel	68	65	180	1222	.	0	1	Fast	Short	0.95588
125	077_008	77	Steel	71.5	166	178	5019.67	180	0	1	Fast	Long	2.32168
126	047_180	47	Steel	80.8	262.5	218.1	3500	.	0	1	Fast	Medium	3.24876
127	026_088	26	Steel	80.8	259.2	229.7	6708.67	216	0	1	Fast	Long	3.20792
128	057_046	57	Steel	95	318.25	306.75	8133.1	.	0	1	Fast	Long	3.35000
129	019_173	19	Steel	100	377.33	328.1	1235	28	0	1	Fast	Short	3.77330
130	011_169	11	Wood	40	78	72	2558	105	0	0	Middle	Medium	1.95000
131	003_168	3	Steel	41	94	66	2423	60	1	1	Middle	Medium	2.29268
132	075_190	75	Steel	42	70	64	3100	120	0	1	Middle	Medium	1.66667
133	027_171	27	Steel	45	56	47	635	66	1	1	Middle	Short	1.24444
134	072_189	72	Steel	46	70	62	1250	.	1	1	Middle	Short	1.52174
135	015_147	15	Wood	47	80	75	2750	75	0	0	Middle	Medium	1.70213
136	038_155	38	Wood	50	84	78	3360	105	0	0	Middle	Medium	1.68000
137	066_142	66	Wood	50	55	52	2650	105	0	0	Middle	Medium	1.10000
138	046_168	46	Wood	50	70	70	2272	.	0	0	Middle	Medium	1.40000
139	085_067	85	Wood	52	92	90	2680	.	0	0	Fast	Medium	1.76923
140	075_074	75	Wood	53	98	88	4000	150	0	0	Fast	Medium	1.84906
141	087_049	87	Wood	53	100	95	4230	133	0	0	Fast	Long	1.88679
142	043_186	43	Wood	55	70	95	2887	90	0	0	Fast	Medium	1.27273
143	075_069	75	Steel	55	115	95	2170	125	1	1	Fast	Medium	2.09091
144	054_069	54	Wood	55	70	76	2640	.	0	0	Fast	Medium	1.27273
145	025_030	25	Steel	55	83	75	1942	75	1	1	Fast	Medium	1.50909
146	075_101	75	Steel	55	115	95	2170	125	1	1	Fast	Medium	2.09091
147	075_163	75	Steel	55	115	95	2170	125	1	1	Fast	Medium	2.09091
148	075_164	75	Steel	55	100	90	2900	120	1	1	Fast	Medium	1.81818
149	060_188	60	Steel	55	138	138	985	90	1	1	Fast	Short	2.50909
150	056_180	56	Wood	55	101.5	100	3800	120	0	0	Fast	Medium	1.84545
151	078_051	78	Steel	60.3	137.8	124.67	2559.1	108	0	1	Fast	Medium	2.28524
152	085_096	85	Steel	55	115	95	2170	125	1	1	Fast	Medium	2.09091
153	075_114	75	Wood	62	110	92	3872	150	0	0	Fast	Medium	1.77419
154	075_150	75	Wood	62	125	115	4325	150	0	0	Fast	Long	2.01613
155	017_008	17	Steel	63	163	128	2682	108	1	1	Fast	Medium	2.58730
156	075_151	75	Steel	63	150	141	3985	180	1	1	Fast	Medium	2.38095
157	075_031	75	Steel	63	154	144	4155	180	1	1	Fast	Long	2.44444
158	060_014	60	Wood	64.8	105	141	7400	220	0	0	Fast	Long	1.62037
159	075_083	75	Wood	65	143	137	4920	150	0	0	Fast	Long	2.20000
160	069_035	69	Steel	65	150	150	3700	180	0	1	Fast	Medium	2.30769
161	075_079	75	Steel	65	156	146	4370	180	1	1	Fast	Long	2.40000
162	075_037	75	Wood	65	179.5	124	5080	146	0	0	Fast	Long	2.76154
163	087_198	87	Steel	65	117	115	3470	150	1	1	Fast	Medium	1.80000
164	075_056	75	Steel	65	150	150	3937	195	1	1	Fast	Medium	2.30769
165	011_196	11	Wood	65	161	155	5427	193	0	0	Fast	Long	2.47692
166	069_032	69	Steel	65	149	144	4177	219	1	1	Fast	Long	2.29231
167	018_098	18	Wood	65	95	151	4000	135	0	0	Fast	Medium	1.46154
168	075_147	75	Steel	65	157	148	4210	.	1	1	Fast	Long	2.41538
169	071_089	71	Steel	66	120	155	3073	136	1	1	Fast	Medium	1.81818
170	075_097	75	Wood	66	127	147	4650	143	0	0	Fast	Long	1.92424
171	075_065	75	Wood	66.3	122	150	5051	.	0	0	Fast	Long	1.84012
172	059_043	59	Steel	67	203	144	4777	160	1	1	Fast	Long	3.02985
173	080_115	80	Steel	67	110	105	3700	135	1	1	Fast	Medium	1.64179
174	009_149	9	Steel	67	195	170	3828	190	1	1	Fast	Medium	2.91045
175	075_082	75	Steel	68	173	155	3800	140	1	1	Fast	Medium	2.54412
176	060_007	60	Steel	70	155	80	2757	.	1	1	Fast	Medium	2.21429

Obs	Coaster_ID	Park_ID	Material_Used	MPH	Elevation	Fall_Distance	Distance_Traveled	Ride_Length_Time	Loops	Type	SpeedGroup	LengthGroup	Ratio
177	075_169	75	Steel	70	188	171	3830	150	1	1	Fast	Medium	2.68571
178	011_010	11	Steel	72	205	194.6	5106	120	0	1	Fast	Long	2.84722
179	075_130	75	Steel	73	208	205	5400	200	0	1	Fast	Long	2.84932
180	075_141	75	Wood	73	179.5	166.5	5080	146	0	0	Fast	Long	2.45890
181	075_159	75	Steel	73	202	208	5057	150	0	1	Fast	Long	2.76712
182	009_084	9	Steel	73	170	210	4882	135	0	1	Fast	Long	2.32877
183	081_130	81	Steel	74	207	196	5460	180	0	1	Fast	Long	2.79730
184	018_175	18	Steel	75	200	205	5600	180	0	1	Fast	Long	2.66667
185	087_120	87	Steel	75	205	205	5600	180	0	1	Fast	Long	2.73333
186	075_010	75	Steel	76	175	215	3610	.	1	1	Fast	Medium	2.30263
187	075_111	75	Steel	77	208	221	5400	155	0	1	Fast	Long	2.70130
188	060_001	60	Wood	78.4	218	214	7032	.	1	0	Fast	Long	2.78061
189	043_174	43	Steel	80	160	225	3000	.	1	1	Fast	Medium	2.00000
190	075_060	75	Steel	80	230	215	5394	240	0	1	Fast	Long	2.87500
191	060_084	60	Steel	80	165	133	1560	.	0	1	Fast	Short	2.06250
192	008_026	8	Steel	80	209	225	5843	163	0	1	Fast	Long	2.61250
193	045_100	45	Steel	82	205	130	2202	62	0	1	Fast	Medium	2.50000
194	043_022	43	Steel	82	160	228	3200	.	0	1	Fast	Medium	1.95122
195	075_128	75	Steel	85	245	255	5312	210	0	1	Fast	Long	2.88235
196	075_036	75	Steel	85	235	255	4500	180	0	1	Fast	Long	2.76471
197	011_155	11	Steel	93	310	300	6595	165	0	1	Fast	Long	3.33333
198	075_103	75	Steel	100	415	328.1	1235	.	0	1	Fast	Short	4.15000
199	011_054	11	Steel	120	420	400	2800	.	0	1	Fast	Medium	3.50000
200	075_127	75	Steel	65.6	191.5	177	1204	92	1	1	Fast	Short	2.91921

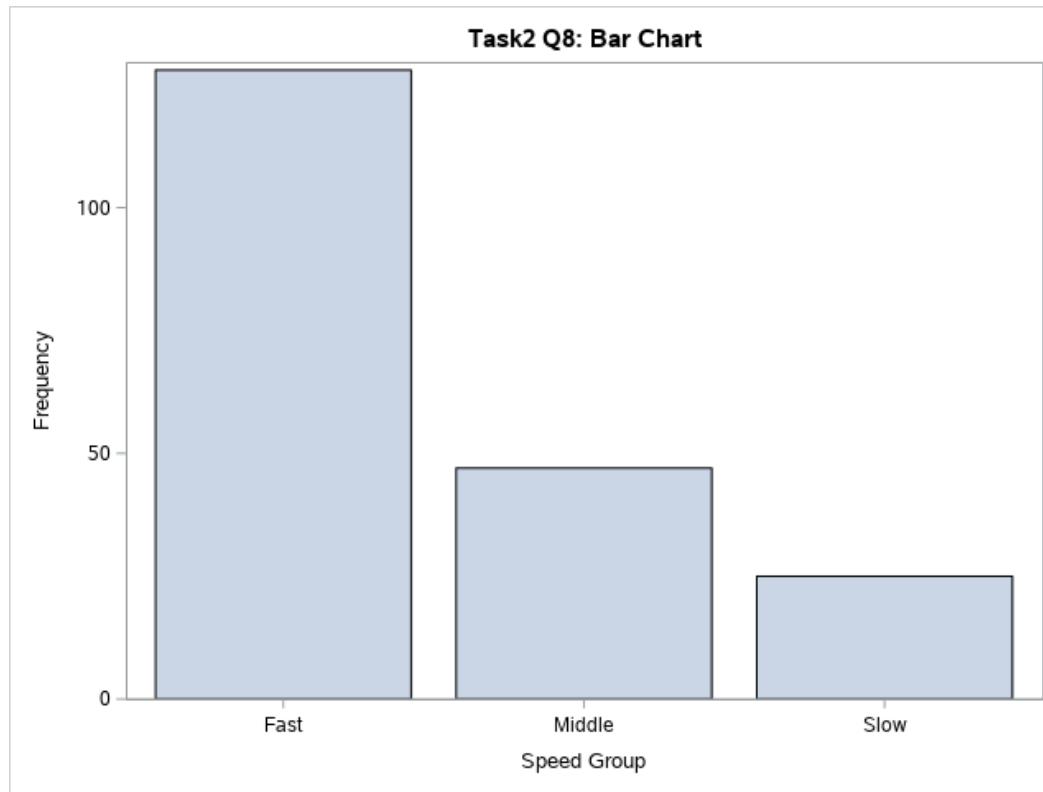
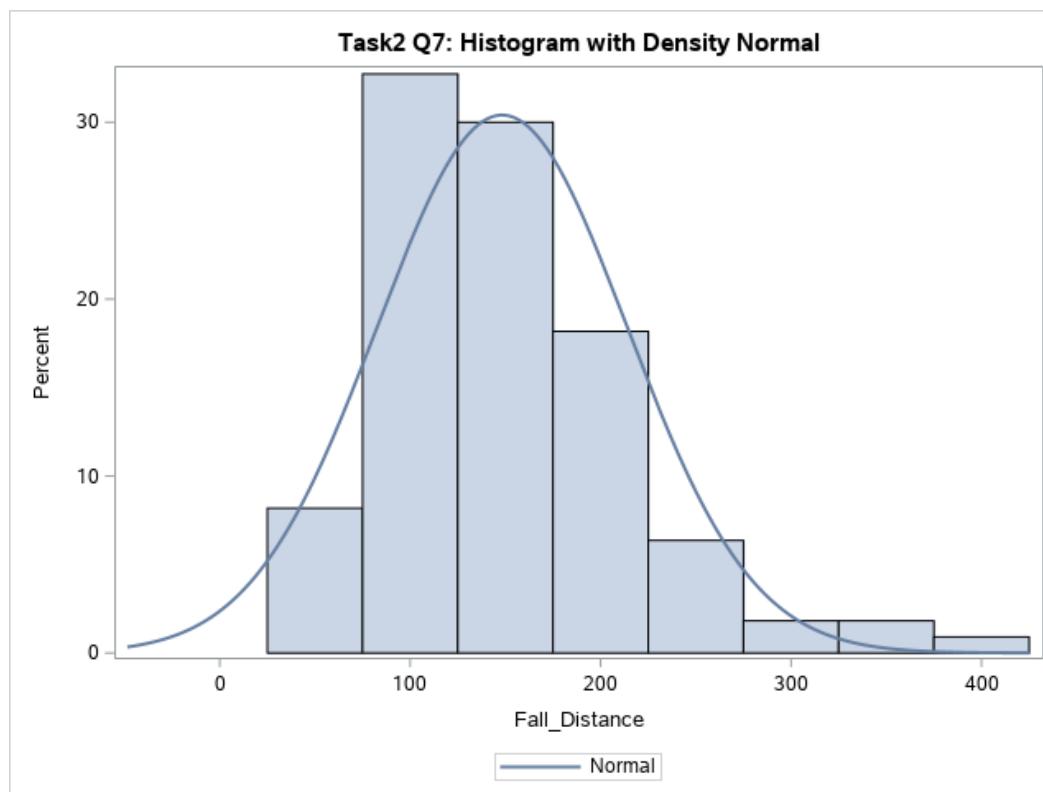
Task1 Q5: Create Dataset High_Ratio

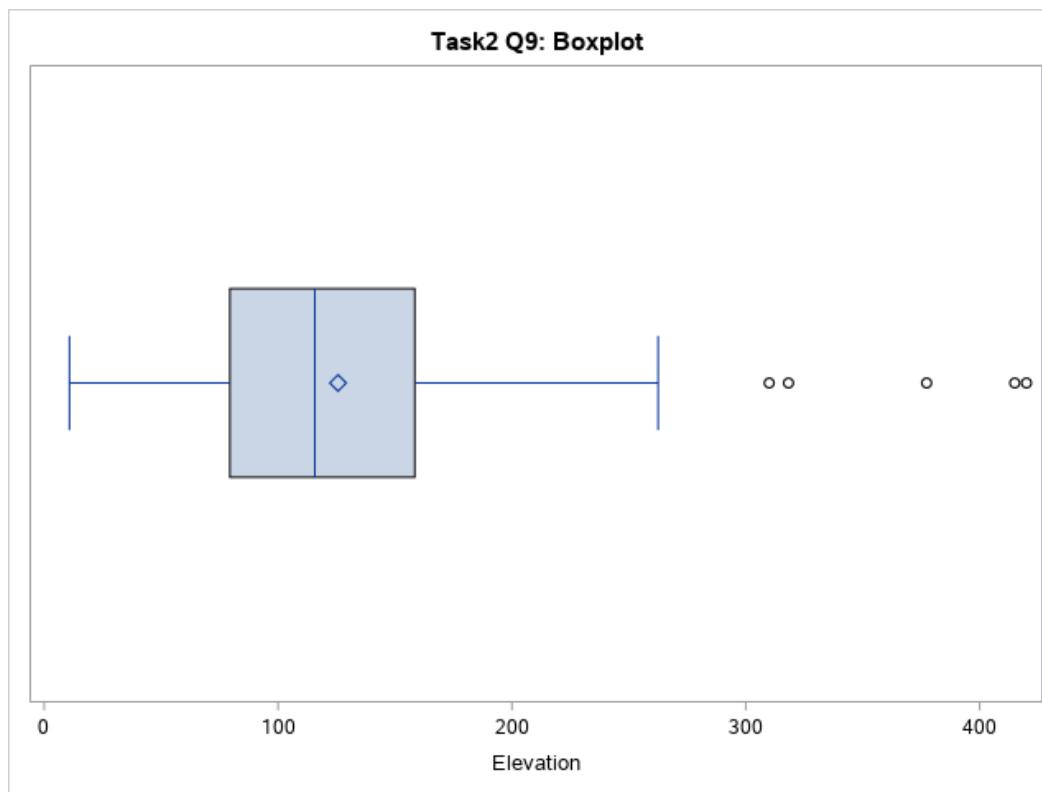
Obs	Material_Used	MPH	Elevation	Fall_Distance
1	Steel	47	131.3	0
2	Steel	37.3	116.5	0
3	Steel	80	230	215
4	Steel	47	131.3	0
5	Steel	37	107	0
6	Steel	65.6	191.6	177
7	Steel	83.3	249.3	255.9
8	Steel	65.6	191.6	177
9	Steel	65.6	191.6	177
10	Steel	80.8	262.5	218.1
11	Steel	80.8	259.2	229.7
12	Steel	95	318.25	306.75
13	Steel	100	377.33	328.1
14	Wood	65	179.5	124
15	Steel	67	203	144
16	Steel	67	195	170
17	Steel	72	205	194.6
18	Steel	73	208	205
19	Steel	73	202	208
20	Steel	74	207	196
21	Wood	78.4	218	214
22	Steel	80	230	215
23	Steel	85	245	255
24	Steel	85	235	255
25	Steel	93	310	300
26	Steel	100	415	328.1
27	Steel	120	420	400
28	Steel	65.6	191.5	177

Task2 Q6: Summary Statistics

The MEANS Procedure

Analysis Variable : Ride_Length_Time					
Mean	Median	Std Dev	Quartile Range	N	N Miss
124.0948905	125.0000000	44.9267186	60.0000000	137	63



**Task3 Q10, Q11: Inference**

The TTEST Procedure

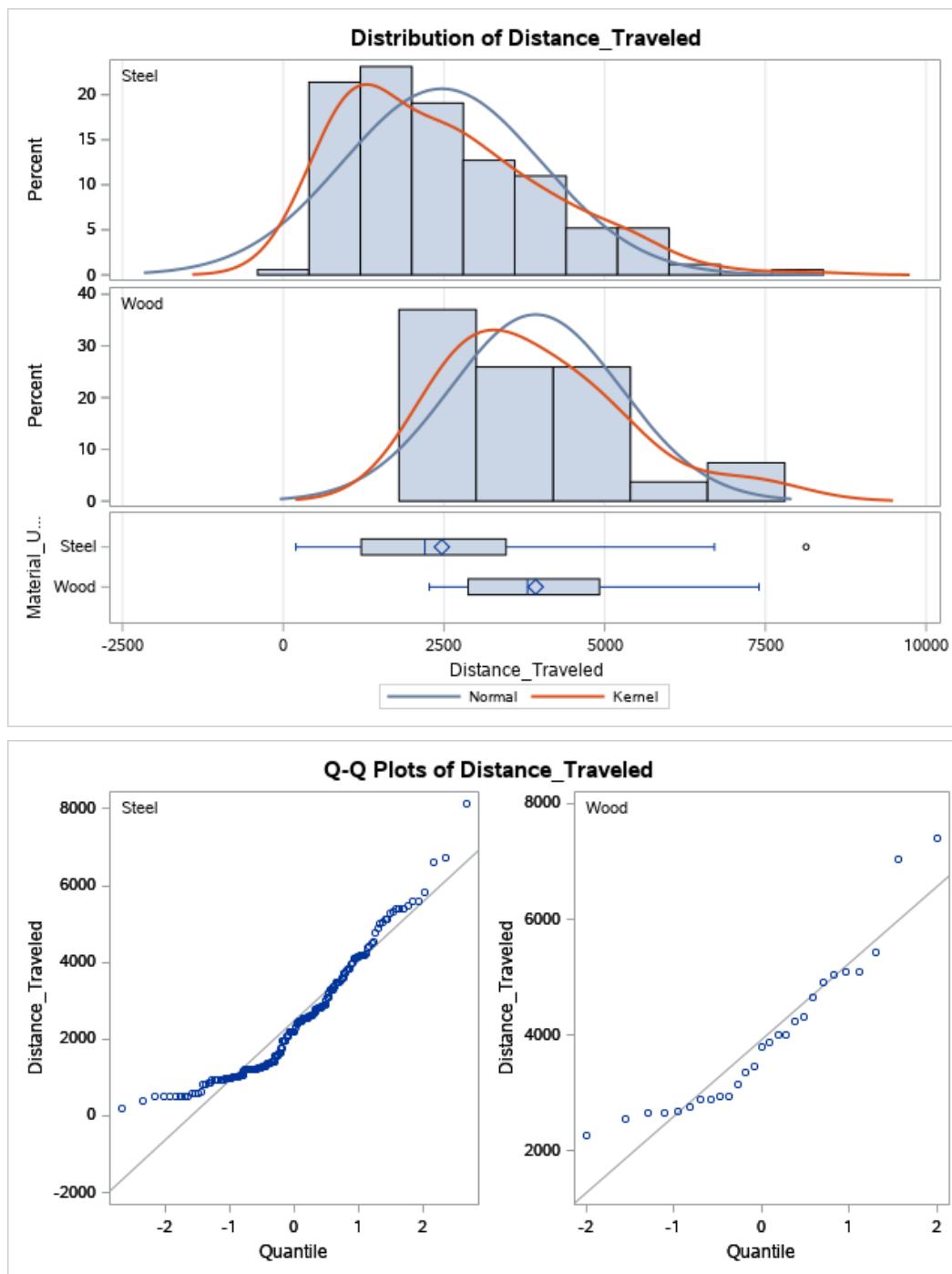
Variable: Distance_Traveled

Material_Used	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Steel		173	2467.6	1544.9	117.5	197.5	8133.1
Wood		27	3926.3	1327.3	255.4	2272.0	7400.0
Diff (1-2)	Pooled		-1458.7	1518.1	314.1		
Diff (1-2)	Satterthwaite		-1458.7		281.2		

Material_Used	Method	Mean	97.4% CL Mean	Std Dev	97.4% CL Std Dev
Steel		2467.6	2203.8	2731.4	1544.9
Wood		3926.3	3323.2	4529.4	1327.3
Diff (1-2)	Pooled	-1458.7	-2163.3	-754.1	1518.1
Diff (1-2)	Satterthwaite	-1458.7	-2110.1	-807.2	1365.0

Method	Variances	DF	t Value	Pr > t
Pooled	Equal	198	-4.64	<.0001
Satterthwaite	Unequal	37.901	-5.19	<.0001

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	172	26	1.35	0.3650



Task3 Q10, Q11: Inference

The TTEST Procedure

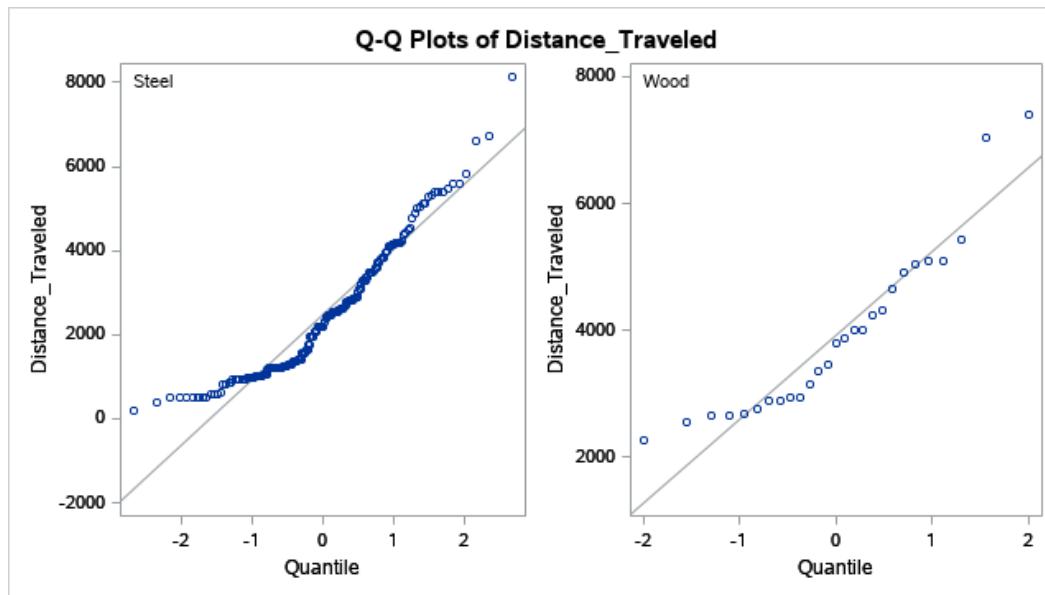
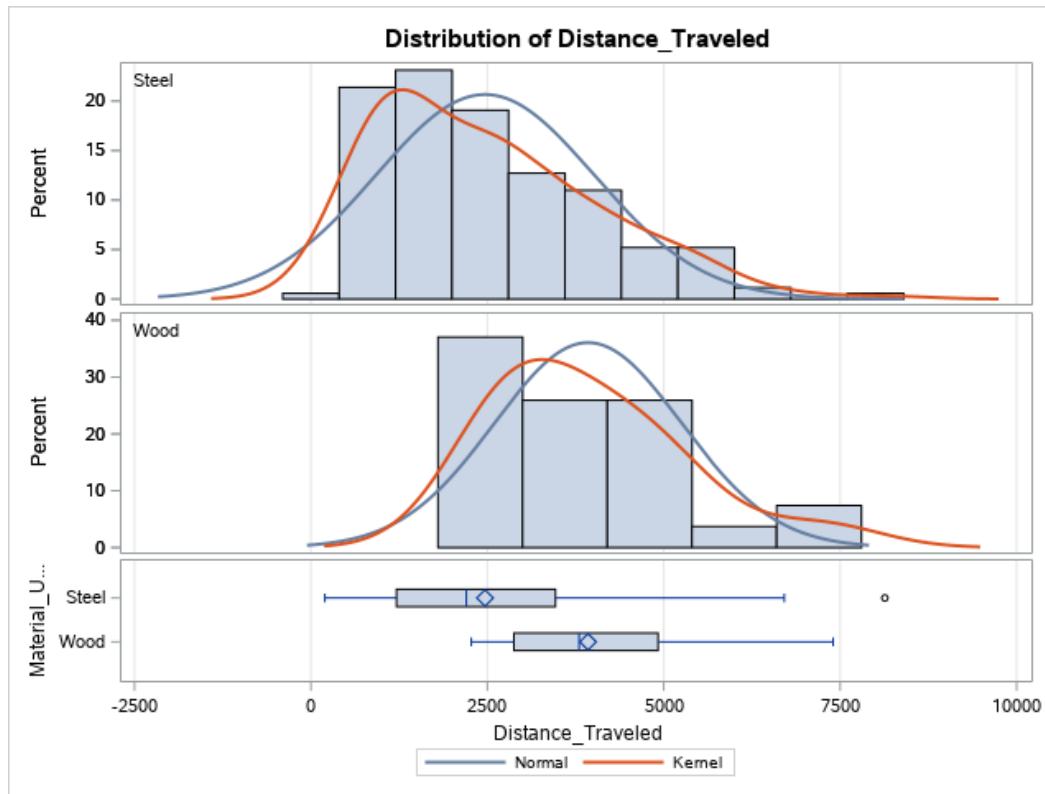
Variable: Distance_Traveled

Material_Used	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Steel		173	2467.6	1544.9	117.5	197.5	8133.1
Wood		27	3926.3	1327.3	255.4	2272.0	7400.0
Diff (1-2)	Pooled		-1458.7	1518.1	314.1		
Diff (1-2)	Satterthwaite		-1458.7		281.2		

Material_Used	Method	Mean	97.4% CL Mean	Std Dev	97.4% CL Std Dev
Steel		2467.6	2203.8	2731.4	1544.9
Wood		3926.3	3323.2	4529.4	1327.3
Diff (1-2)	Pooled	-1458.7	-2072.8	Infny	1518.1
Diff (1-2)	Satterthwaite	-1458.7	-2022.8	Infny	1365.0

Method	Variances	DF	t Value	Pr > t
Pooled	Equal	198	-2.02	0.9775
Satterthwaite	Unequal	37.901	-2.25	0.9850

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	172	26	1.35	0.3650



Task4 Q12: Multiple Linear Regression

The REG Procedure
Model: MODEL1
Dependent Variable: Ride_Length_Time

Number of Observations Read	200
Number of Observations Used	137
Number of Observations with Missing Values	63

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	188346	94173	146.47	<.0001
Error	134	86158	642.96676		
Corrected Total	136	274504			

Root MSE	25.35679	R-Square	0.6861
Dependent Mean	124.09489	Adj R-Sq	0.6814
Coeff Var	20.43339		

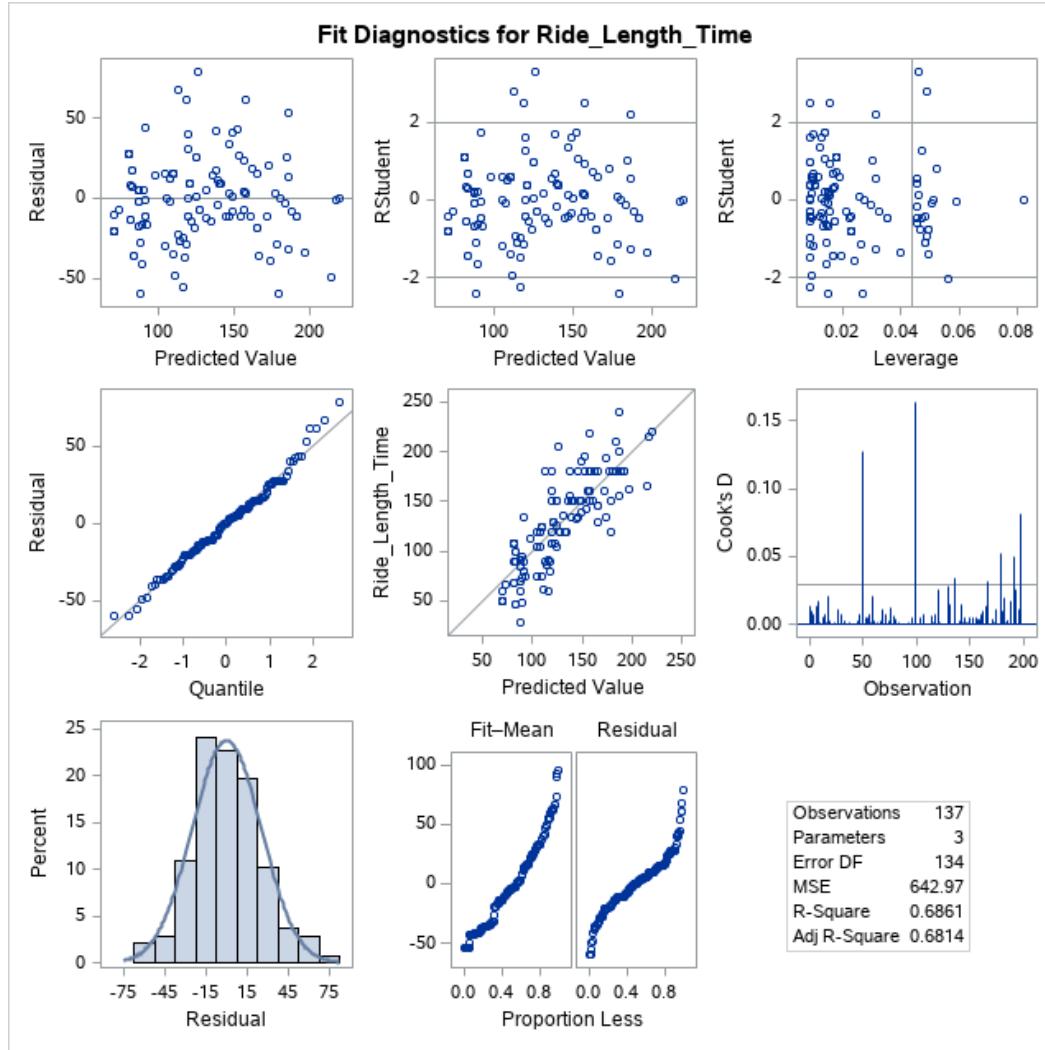
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t
Intercept	1	44.60286	7.70983	5.79	<.0001
Distance_Traveled	1	0.02367	0.00140	16.90	<.0001
Type	1	14.09045	6.16284	2.29	0.0238

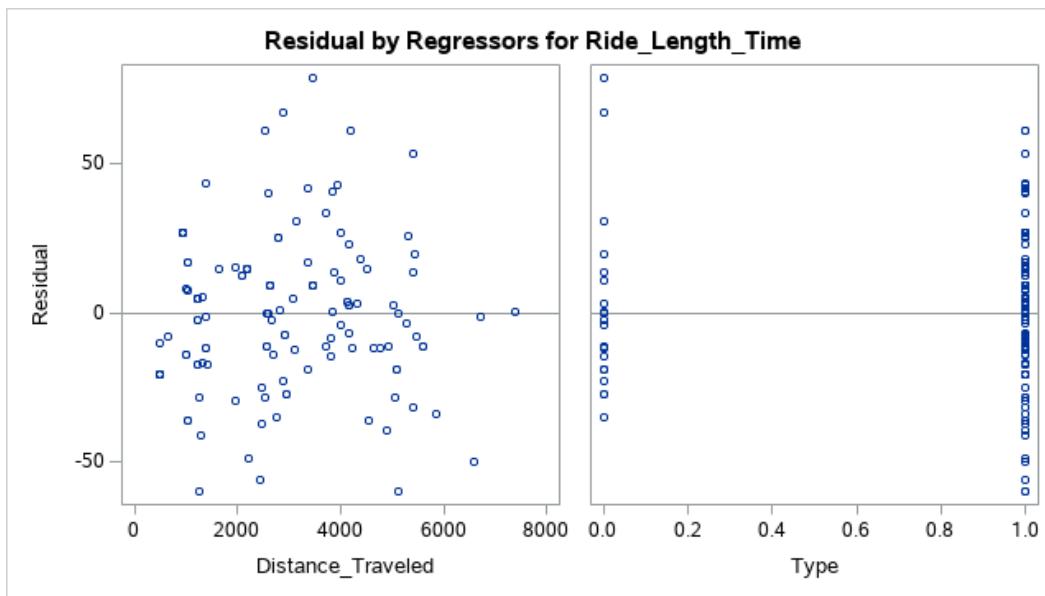
Task4 Q12: Multiple Linear Regression

The REG Procedure

Model: MODEL1

Dependent Variable: Ride_Length_Time

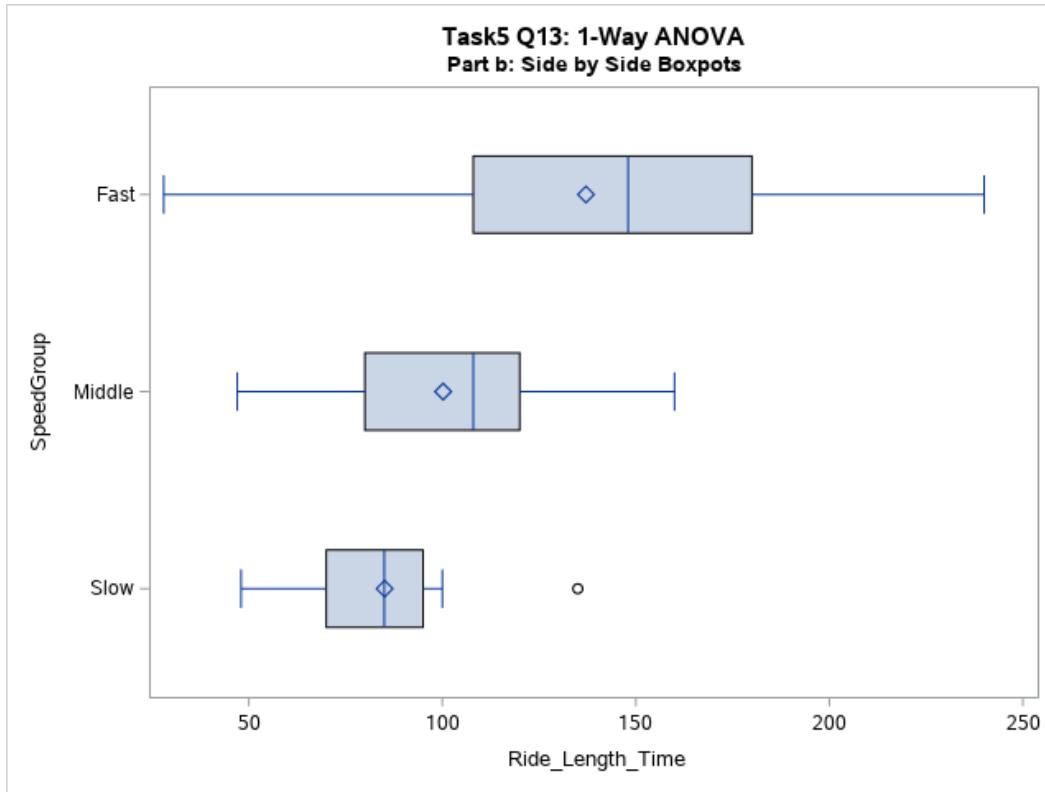




Task5 Q13: 1-Way ANOVA
Part a: Mean Duration for each Group

The MEANS Procedure

Analysis Variable : Ride_Length_Time						
SpeedGroup	N Obs	N	Mean	Std Dev	Minimum	Maximum
Fast	128	94	137.1170213	45.8730967	28.0000000	240.0000000
Middle	47	30	100.2000000	26.5348177	47.0000000	160.0000000
Slow	25	13	85.0769231	21.4494038	48.0000000	135.0000000



Task5 Q13: 1-Way ANOVA
Part c: Run a 1-way ANOVA model

The GLM Procedure

Class Level Information		
Class	Levels	Values
SpeedGroup	3	Fast Middle Slow

Number of Observations Read	200
Number of Observations Used	137

Task5 Q13: 1-Way ANOVA
Part c: Run a 1-way ANOVA model

The GLM Procedure

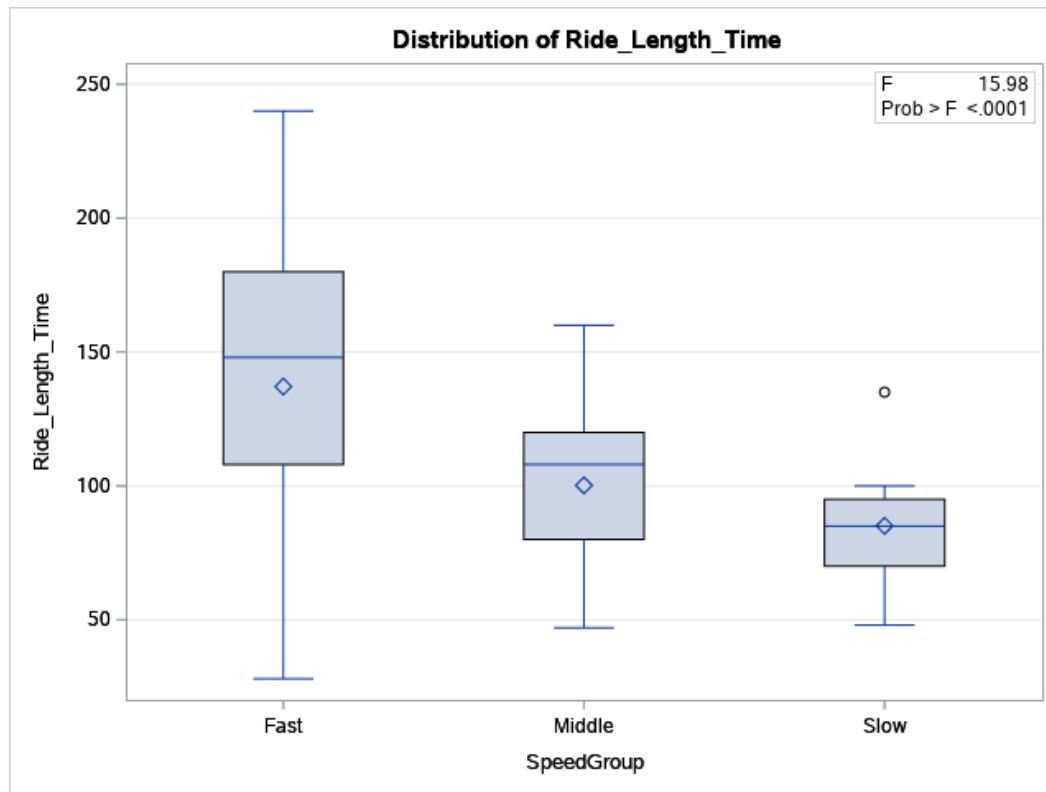
Dependent Variable: Ride_Length_Time

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	52860.3306	26430.1653	15.98	<.0001
Error	134	221643.4358	1654.0555		
Corrected Total	136	274503.7664			

R-Square	Coeff Var	Root MSE	Ride_Length_Time Mean
0.192567	32.77337	40.67008	124.0949

Source	DF	Type I SS	Mean Square	F Value	Pr > F
SpeedGroup	2	52860.33058	26430.16529	15.98	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
SpeedGroup	2	52860.33058	26430.16529	15.98	<.0001



Task5 Q13: 1-Way ANOVA
Part c: Run a 1-way ANOVA model

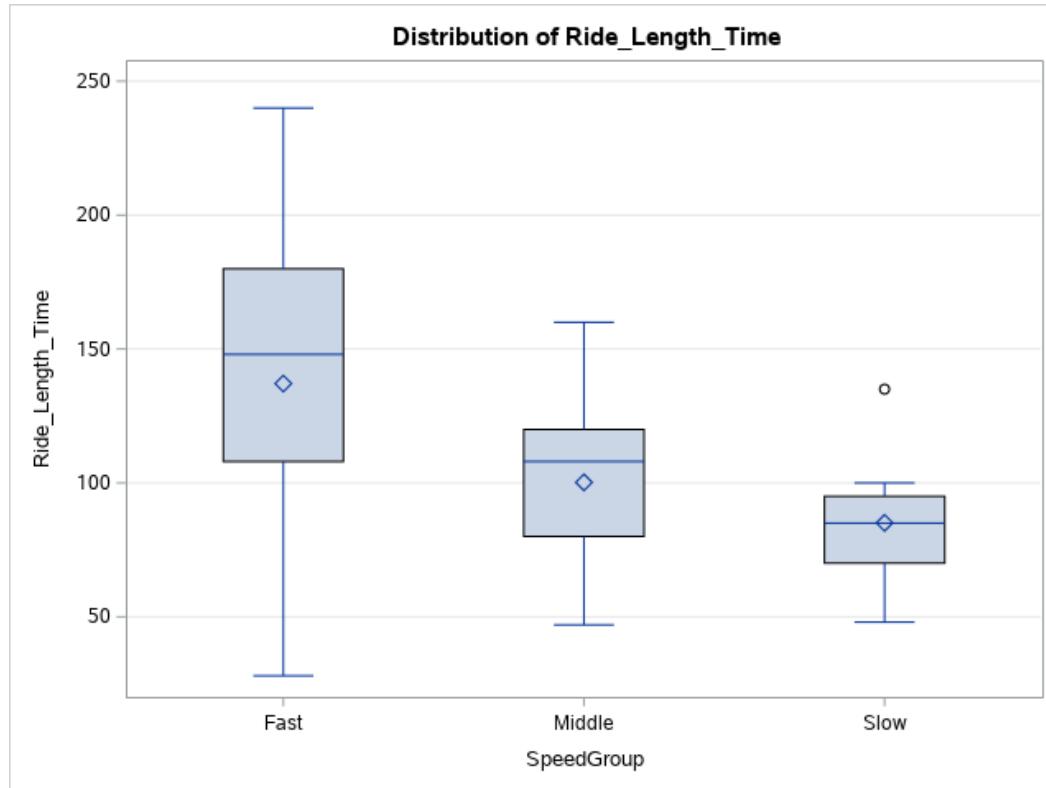
The GLM Procedure

Levene's Test for Homogeneity of Ride_Length_Time Variance ANOVA of Squared Deviations from Group Means					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F

Levene's Test for Homogeneity of Ride_Length_Time Variance ANOVA of Squared Deviations from Group Means					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
SpeedGroup	2	65105871	32552935	6.45	0.0021
Error	134	6.765E8	5048513		

Task5 Q13: 1-Way ANOVA
Part c: Run a 1-way ANOVA model

The GLM Procedure



Task5 Q13: 1-Way ANOVA
Part c: Run a 1-way ANOVA model

The GLM Procedure

Tukey's Studentized Range (HSD) Test for Ride_Length_Time

Note: This test controls the Type I experimentwise error rate.

Alpha	0.03
Error Degrees of Freedom	134
Error Mean Square	1654.055
Critical Value of Studentized Range	3.63625

Comparisons significant at the 0.03 level are indicated by ***.				
SpeedGroup Comparison	Difference Between Means	Simultaneous 97% Confidence Limits		
		Lower Limit	Upper Limit	
Fast - Middle	36.917	14.989	58.845	***
Fast - Slow	52.040	21.097	82.984	***
Middle - Fast	-36.917	-58.845	-14.989	***
Middle - Slow	15.123	-19.600	49.846	
Slow - Fast	-52.040	-82.984	-21.097	***
Slow - Middle	-15.123	-49.846	19.600	

Task5 Q13: 1-Way ANOVA

Part c: Run a 1-way ANOVA model**The GLM Procedure****Bonferroni (Dunn) t Tests for Ride_Length_Time**

Note: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than Tukey's for all pairwise comparisons.

Alpha	0.03
Error Degrees of Freedom	134
Error Mean Square	1654.055
Critical Value of t	2.61302

Comparisons significant at the 0.03 level are indicated by ***.				
SpeedGroup Comparison	Difference Between Means	Simultaneous 97% Confidence Limits		
Fast - Middle	36.917	14.632	59.202	***
Fast - Slow	52.040	20.594	83.487	***
Middle - Fast	-36.917	-59.202	-14.632	***
Middle - Slow	15.123	-20.164	50.410	
Slow - Fast	-52.040	-83.487	-20.594	***
Slow - Middle	-15.123	-50.410	20.164	

Task5 Q13: 1-Way ANOVA
Part d: Normality Test**The UNIVARIATE Procedure**
Variable: residual

Moments			
N	137	Sum Weights	137
Mean	0	Sum Observations	0
Std Deviation	40.3699287	Variance	1629.73115
Skewness	-0.3206937	Kurtosis	0.11582388
Uncorrected SS	221643.436	Corrected SS	221643.436
Coeff Variation	.	Std Error Mean	3.44903578

Basic Statistical Measures			
Location		Variability	
Mean	0.00000	Std Deviation	40.36993
Median	7.80000	Variance	1630
Mode	12.88298	Range	212.00000
		Interquartile Range	43.08298

Note: The mode displayed is the smallest of 2 modes with a count of 14.

Tests for Location: Mu0=0				
Test	Statistic	p Value		
Student's t	t	0	Pr > t	1.0000
Sign	M	7.5	Pr >= M	0.2315
Signed Rank	S	195.5	Pr >= S	0.6759

Tests for Normality				
Test	Statistic	p Value		
Shapiro-Wilk	W	0.979012	Pr < W	0.0329
Kolmogorov-Smirnov	D	0.094768	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.203058	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	1.136977	Pr > A-Sq	0.0056

Quantiles (Definition 5)	
Level	Quantile
100% Max	102.883
99%	82.883

Quantiles (Definition 5)	
Level	Quantile
95%	62.883
90%	42.883
75% Q3	22.883
50% Median	7.800
25% Q1	-20.200
10%	-53.200
5%	-87.117
1%	-87.117
0% Min	-109.117

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-109.117	129	72.883	195
-87.117	103	78.883	127
-87.117	96	81.883	166
-87.117	54	82.883	158
-87.117	53	102.883	190

Missing Values			
Missing Value	Count	Percent Of	
		All Obs	Missing Obs
.	63	31.50	100.00

