

**INITIAL SPEED CALCULATIONS VS. SLIDE-TO-STOP DISTANCES, TIME AND MU-VALUES (VARIOUS COMBINATIONS)**



Speed in mph vs. Stopping Distance & Tire/Road mu-value

		Stopping Distance in feet									
		20	40	60	80	100	120	140	160	180	200
Tire/Road mu-value, dimensionless	0.1	7.78	11.00	13.47	15.56	17.39	19.05	20.58	22.00	23.33	24.60
	0.2	11.00	15.56	19.05	22.00	24.60	26.94	29.10	31.11	33.00	34.79
	0.3	13.47	19.05	23.33	26.94	30.12	33.00	35.64	38.11	40.42	42.60
	0.4	15.56	22.00	26.94	31.11	34.79	38.11	41.16	44.00	46.67	49.19
	0.5	17.39	24.60	30.12	34.79	38.89	42.60	46.02	49.19	52.18	55.00
	0.6	19.05	26.94	33.00	38.11	42.60	46.67	50.41	53.89	57.15	60.25
	0.7	20.58	29.10	35.64	41.16	46.02	50.41	54.45	58.21	61.74	65.08
	0.8	22.00	31.11	38.11	44.00	49.19	53.89	58.21	62.23	66.00	69.57
	0.9	23.33	33.00	40.42	46.67	52.18	57.16	61.74	66.00	70.00	73.79
	1.0	24.60	34.79	45.02	49.19	55.00	60.25	65.08	69.57	73.79	77.78

Stopping Distance in ft vs. Initial Speed and Tire/Road mu-value

		Initial Speed in mph										
		10	20	30	40	50	60	70	80	90	100	
Tire/Road mu-value, dimensionless	0.1	33.33	133.33	300.00	533.33	833.33	1200.00	1633.33	2133.33	2700.00	3333.33	
	0.2	16.67	66.67	150.00	266.67	416.67	600.00	816.67	1066.67	1350.00	1666.67	
	0.3	11.11	44.44	100.00	177.78	277.78	400.00	544.44	711.11	900.00	1111.11	
	0.4	8.33	33.33	75.00	133.33	208.33	300.00	408.33	533.33	675.00	833.33	
	0.5	6.67	26.67	60.00	106.67	166.67	240.00	326.67	426.67	540.00	666.67	
	0.6	5.56	22.22	50.00	88.89	138.89	200.00	272.22	355.56	450.00	555.56	
	0.7	4.76	19.05	42.86	76.19	119.05	171.43	233.33	304.76	385.71	476.19	
	0.8	4.17	16.67	37.50	66.67	104.17	150.00	204.17	266.67	337.50	416.67	
	0.9	3.70	14.81	33.33	59.26	92.59	133.33	181.48	237.04	300.00	370.37	
	1.0	3.33	13.33	30.00	53.33	83.33	120.00	163.33	213.33	270.00	333.33	

Speed in ft/sec vs. Stopping Distance & Tire/Road mu-value

		Stopping Distance in feet									
		20	40	60	80	100	120	140	160	180	200
Tire/Road mu-value dimensionless	0.1	11.41	16.13	19.76	22.82	25.51	27.94	30.18	32.27	34.22	36.08
	0.2	16.13	22.82	27.94	32.27	36.08	39.52	42.68	45.63	48.40	51.02
	0.3	19.76	27.94	34.22	39.52	44.18	48.40	52.28	55.89	59.28	62.48
	0.4	22.82	32.27	39.52	45.63	51.02	55.89	60.37	64.53	68.45	72.15
	0.5	25.51	36.08	44.18	51.02	57.04	62.48	67.49	72.15	76.53	80.67
	0.6	27.94	39.52	48.40	55.89	62.48	68.45	73.93	79.04	83.83	88.37
	0.7	30.18	42.68	52.28	60.37	67.49	73.93	79.86	85.37	90.55	95.45
	0.8	32.27	45.63	55.89	64.53	72.15	79.04	85.37	91.26	96.80	102.04
	0.9	34.22	48.40	59.28	68.45	76.53	83.83	90.55	96.80	102.67	108.23
	1.0	36.08	51.02	60.03	72.15	80.67	88.37	95.45	102.04	108.23	114.08

Tire/Road mu-value vs. Initial Speed and Stopping Distance

		Stopping Distance in feet.										
		20	40	60	80	100	120	140	160	180	200	
Initial Speed, mph	10	0.167	0.083	0.056	0.042	0.033	0.028	0.024	0.021	0.019	0.017	
	20	0.667	0.333	0.222	0.167	0.133	0.111	0.095	0.083	0.074	0.067	
	30	1.500	0.750	0.500	0.375	0.300	0.250	0.214	0.188	0.167	0.150	
	40	2.667	1.333	0.889	0.667	0.533	0.444	0.381	0.333	0.296	0.267	
	50	4.167	2.083	1.389	1.042	0.833	0.694	0.595	0.521	0.463	0.417	
	60	6.000	3.000	2.000	1.500	1.200	1.000	0.857	0.750	0.660	0.600	
	70	8.167	4.083	2.722	2.042	1.633	1.361	1.167	1.021	0.907	0.817	
	80	10.667	5.333	3.556	2.667	2.133	1.778	1.524	1.333	1.185	1.067	
	90	13.500	6.750	4.500	3.375	2.700	2.250	1.929	1.688	1.500	1.350	
	100	16.667	8.333	5.556	4.167	3.333	2.778	2.381	2.083	1.852	1.667	

Numbers shown in salmon color cannot be reached by passenger car tires

Speed in mph vs. Stopping Distance & mu-value, including 15% lost KE

		Stopping Distance in feet									
		20	40	60	80	100	120	140	160	180	200
Tire/Road mu-value dimensionless	0.1	8.34	11.80	14.45	16.68	18.65	20.43	22.07	23.59	25.02	26.38
	0.2	11.80	16.68	20.43	23.59	26.38	28.98	31.21	33.36	35.39	37.30
	0.3	14.45	20.43	25.02	28.98	32.31	35.39	38.22	40.86	43.34	45.69
	0.4	16.68	23.59	28.98	33.36	37.30	40.86	44.14	47.18	50.05	52.75
	0.5	18.65	25.47	32.31	37.30	41.71	45.69	49.35	52.75	55.95	58.98
	0.6	20.43	28.98	35.39	40.86	45.69	50.05	54.06	57.79	61.29	64.61
	0.7	22.07	31.21	38.22	44.14	49.35	54.06	58.39	62.42	66.21	69.79
	0.8	23.59	33.36	40.86	47.18	52.75	57.79	62.42	66.73	70.78	74.61
	0.9	25.02	35.39	43.34	50.05	55.95	61.29	66.21	70.78	75.07	79.13
	1.0	26.38	37.30	45.28	52.75	58.98	64.61	69.79	74.61	79.13	83.41

Time to stop in sec vs. Tire/Road mu-value & Initial Speed in mph

		Speed in mph										
		10	20	30	40	50	60	70	80	90	100	
Tire/Road mu-value, dimensionless	0.1	4.555	9.110	13.665	18.219	22.774	27.329	31.884	36.439	40.994	45.549	
	0.2	2.277	4.555	6.832	9.110	11.387	13.665	15.942	18.219	20.497	22.774	
	0.3	1.518	3.037	4.555	6.073	7.591	9.110	10.628	12.146	13.665	15.183	
	0.4	1.139	2.277	3.416	4.555	5.694	6.832	7.971	9.110	10.248	11.387	
	0.5	0.911	1.822	2.733	3.644	4.555	5.466	6.377	7.288	8.199	9.110	
	0.6	0.759	1.518	2.277	3.037	3.796	4.555	5.314	6.073	6.832	7.591	
	0.7	0.651	1.301	1.952	2.603	3.253	3.904	4.555	5.206	5.856	6.507	
	0.8	0.569	1.139	1.708	2.277	2.847	3.416	3.986	4.555	5.124	5.694	
	0.9	0.506	1.012	1.518	2.024	2.530	3.037	3.543	4.049	4.555	5.061	
	1.0	0.455	0.911	1.366	1.822	2.277	2.733	3.188	3.644	4.099	4.555	

Perception/Reaction Distance, ft. @ 1.5 sec

Initial Speed, mph	Distance, ft.
10	22
15	33
20	44
25	55
30	66
35	77
40	88
45	99
50	110
55	121
60	132
65	143
70	154
75	165
80	176
85	187
90	198
95	209
100	220