Created by Assoc. Prof Dr Jaafar Jantan aka Dr JJ, Applied Sciences, UiTM, Shah Alam. April 2011

Newton's Law of Gravity on Earth for a free fall & its impact on an object's speed & vertical distance travelled

Determining height of fall as the clock ticks						Determining height of fall as the clock ticks				
acceleration due to gravity on Earth, m/s^2	clock reading, s	height of fall, m	speed of fall, m/s	speed of fall, km/h		acceleration due to gravity on Earth, m/s^2	clock reading, s	height of fall, m	speed of fall, m/s	speed of fall, km/h
10	0.1	0.1	1.0	3.6		10	5.1	130.1	51.0	183.6
10	0.2	0.2	2.0	7.2		10	5.2	135.2	52.0	187.2
10	0.3	0.5	3.0	10.8		10	5.3	140.5	53.0	190.8
10	0.4	0.8	4.0	14.4		10	5.4	145.8	54.0	194.4
10	0.5	1.3	5.0	18.0		10	5.5	151.3	55.0	198.0
10	0.6	1.8	6.0	21.6		10	5.6	156.8	56.0	201.6
10	0.7	2.5	7.0	25.2		10	5.7	162.5	57.0	205.2
10	0.8	3.2	8.0	28.8		10	5.8	168.2	58.0	208.8
10	0.9	4.1	9.0	32.4		10	5.9	174.1	59.0	212.4
10	1.0	5.0	10.0	36.0		10	6.0	180.0	60.0	216.0
10	1.1	6.1	11.0	39.6		10	6.1	186.1	61.0	219.6
10	1.2	7.2	12.0	43.2		10	6.2	192.2	62.0	223.2
10	1.3	8.5	13.0	46.8		10	6.3	198.5	63.0	226.8
10	1.4	9.8	14.0	50.4		10	6.4	204.8	64.0	230.4
10	1.5	11.3	15.0	54.0		10	6.5	211.3	65.0	234.0
10	1.6	12.8	16.0	57.6		10	6.6	217.8	66.0	237.6
10	1.7	14.5	17.0	61.2		10	6.7	224.5	67.0	241.2
10	1.8	16.2	18.0	64.8		10	6.8	231.2	68.0	244.8
10	1.9	18.1	19.0	68.4		10	6.9	238.1	69.0	248.4
10	2.0	20.0	20.0	72.0		10	7.0	245.0	70.0	252.0
10	2.1	22.1	21.0	75.6		10	7.1	252.1	71.0	255.6
10	2.2	24.2	22.0	79.2		10	7.2	259.2	72.0	259.2
10	2.3	26.5	23.0	82.8		10	7.3	266.5	73.0	262.8
10	2.4	28.8	24.0	86.4		10	7.4	273.8	74.0	266.4
10	2.5	31.3	25.0	90.0		10	7.5	281.3	75.0	270.0

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Determining height of fall as the clock ticks						Determining height of fall as the clock ticks				
acceleration due to gravity on Earth, m/s^2	clock reading, s	height of fall, m	speed of fall, m/s	speed of fall, km/h		acceleration due to gravity on Earth, m/s^2	clock reading, s	height of fall, m	speed of fall, m/s	speed of fall, km/h
10	2.6	33.8	26.0	93.6		10	7.6	288.8	76.0	273.6
10	2.7	36.5	27.0	97.2		10	7.7	296.5	77.0	277.2
10	2.8	39.2	28.0	100.8		10	7.8	304.2	78.0	280.8
10	2.9	42.1	29.0	104.4		10	7.9	312.1	79.0	284.4
10	3.0	45.0	30.0	108.0		10	8.0	320.0	80.0	288.0
10	3.1	48.1	31.0	111.6		10	8.1	328.1	81.0	291.6
10	3.2	51.2	32.0	115.2		10	8.2	336.2	82.0	295.2
10	3.3	54.5	33.0	118.8		10	8.3	344.5	83.0	298.8
10	3.4	57.8	34.0	122.4		10	8.4	352.8	84.0	302.4
10	3.5	61.3	35.0	126.0		10	8.5	361.3	85.0	306.0
10	3.6	64.8	36.0	129.6		10	8.6	369.8	86.0	309.6
10	3.7	68.5	37.0	133.2		10	8.7	378.5	87.0	313.2
10	3.8	72.2	38.0	136.8		10	8.8	387.2	88.0	316.8
10	3.9	76.1	39.0	140.4		10	8.9	396.1	89.0	320.4
10	4.0	80.0	40.0	144.0		10	9.0	405.0	90.0	324.0
10	4.1	84.1	41.0	147.6		10	9.1	414.1	91.0	327.6
10	4.2	88.2	42.0	151.2		10	9.2	423.2	92.0	331.2
10	4.3	92.5	43.0	154.8		10	9.3	432.5	93.0	334.8
10	4.4	96.8	44.0	158.4		10	9.4	441.8	94.0	338.4
10	4.5	101.3	45.0	162.0		10	9.5	451.3	95.0	342.0
10	4.6	105.8	46.0	165.6		10	9.6	460.8	96.0	345.6
10	4.7	110.5	47.0	169.2		10	9.7	470.5	97.0	349.2
10	4.8	115.2	48.0	172.8		10	9.8	480.2	98.0	352.8
10	4.9	120.1	49.0	176.4		10	9.9	490.1	99.0	356.4
10	5.0	125.0	50.0	180.0		10	10.0	500.0	100.0	360.0

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Determining how long it takes to fall a certain height.

acceleration due to gravity on Earth, m/s^2	height of fall, m	time to fall, s	speed of fall, m/s	speed of fall, km/h
10	1	0.4472	4.5	16.1
10	2	0.6325	6.3	22.8
10	3	0.7746	7.7	27.9
10	4	0.8944	8.9	32.2
10	5	1.0000	10.0	36.0
10	6	1.0954	11.0	39.4
10	7	1.1832	11.8	42.6
10	8	1.2649	12.6	45.5
10	9	1.3416	13.4	48.3
10	10	1.4142	14.1	50.9
10	11	1.4832	14.8	53.4
10	12	1.5492	15.5	55.8
10	13	1.6125	16.1	58.0
10	14	1.6733	16.7	60.2
10	15	1.7321	17.3	62.4
10	16	1.7889	17.9	64.4
10	17	1.8439	18.4	66.4
10	18	1.8974	19.0	68.3
10	19	1.9494	19.5	70.2
10	20	2.0000	20.0	72.0
10	21	2.0494	20.5	73.8
10	22	2.0976	21.0	75.5
10	23	2.1448	21.4	77.2
10	24	2.1909	21.9	78.9
10	25	2.2361	22.4	80.5

Determining how long it takes to fall a certain height.

acceleration due to gravity on Earth, m/s^2	height of fall, m	time to fall, s	speed of fall, m/s	speed of fall, km/h
10	51	3.1937	31.9	115.0
10	52	3.2249	32.2	116.1
10	53	3.2558	32.6	117.2
10	54	3.2863	32.9	118.3
10	55	3.3166	33.2	119.4
10	56	3.3466	33.5	120.5
10	57	3.3764	33.8	121.5
10	58	3.4059	34.1	122.6
10	59	3.4351	34.4	123.7
10	60	3.4641	34.6	124.7
10	61	3.4928	34.9	125.7
10	62	3.5214	35.2	126.8
10	63	3.5496	35.5	127.8
10	64	3.5777	35.8	128.8
10	65	3.6056	36.1	129.8
10	66	3.6332	36.3	130.8
10	67	3.6606	36.6	131.8
10	68	3.6878	36.9	132.8
10	69	3.7148	37.1	133.7
10	70	3.7417	37.4	134.7
10	71	3.7683	37.7	135.7
10	72	3.7947	37.9	136.6
10	73	3.8210	38.2	137.6
10	74	3.8471	38.5	138.5
10	75	3.8730	38.7	139.4

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Determining how long it takes to fall a certain height.					Determining how long it takes to fall a certain height.				
acceleration due to gravity on Earth, m/s^2	height of fall, m	time to fall, s	speed of fall, m/s	speed of fall, km/h	acceleration due to gravity on Earth, m/s^2	height of fall, m	time to fall, s	speed of fall, m/s	speed of fall, km/h
10	26	2.2804	22.8	82.1	10	76	3.8987	39.0	140.4
10	27	2.3238	23.2	83.7	10	77	3.9243	39.2	141.3
10	28	2.3664	23.7	85.2	10	78	3.9497	39.5	142.2
10	29	2.4083	24.1	86.7	10	79	3.9749	39.7	143.1
10	30	2.4495	24.5	88.2	10	80	4.0000	40.0	144.0
10	31	2.4900	24.9	89.6	10	81	4.0249	40.2	144.9
10	32	2.5298	25.3	91.1	10	82	4.0497	40.5	145.8
10	33	2.5690	25.7	92.5	10	83	4.0743	40.7	146.7
10	34	2.6077	26.1	93.9	10	84	4.0988	41.0	147.6
10	35	2.6458	26.5	95.2	10	85	4.1231	41.2	148.4
10	36	2.6833	26.8	96.6	10	86	4.1473	41.5	149.3
10	37	2.7203	27.2	97.9	10	87	4.1713	41.7	150.2
10	38	2.7568	27.6	99.2	10	88	4.1952	42.0	151.0
10	39	2.7928	27.9	100.5	10	89	4.2190	42.2	151.9
10	40	2.8284	28.3	101.8	10	90	4.2426	42.4	152.7
10	41	2.8636	28.6	103.1	10	91	4.2661	42.7	153.6
10	42	2.8983	29.0	104.3	10	92	4.2895	42.9	154.4
10	43	2.9326	29.3	105.6	10	93	4.3128	43.1	155.3
10	44	2.9665	29.7	106.8	10	94	4.3359	43.4	156.1
10	45	3.0000	30.0	108.0	10	95	4.3589	43.6	156.9
10	46	3.0332	30.3	109.2	10	96	4.3818	43.8	157.7
10	47	3.0659	30.7	110.4	10	97	4.4045	44.0	158.6
10	48	3.0984	31.0	111.5	10	98	4.4272	44.3	159.4
10	49	3.1305	31.3	112.7	10	99	4.4497	44.5	160.2
10	50	3.1623	31.6	113.8	10	100	4.4721	44.7	161.0