EduSahara™ Learning Center Assignment

Grade : Class X, ICSE
Chapter : Heights and Distances
Name : Heights and Distances using Tables

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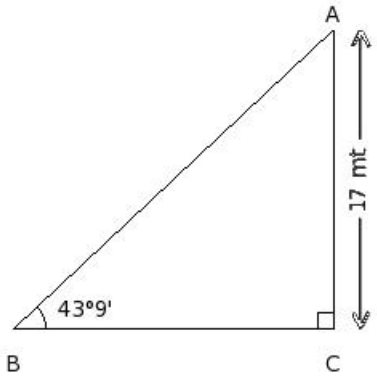
1. A chimney stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the chimney is found to be 43°9'. If the height of the chimney is 17 mt, find the distance between the observation point and the top of the chimney

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
43	0.9325	0.9358	0.9391	0.9424	0.9457	0.9490	0.9523	0.9556	0.9590	0.9623	6	11	17	22	28

From Table of Natural Sines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
43	0.6820	0.6833	0.6845	0.6858	0.6871	0.6884	0.6896	0.6909	0.6921	0.6934	2	4	6	9	11



(i) 29.86 mt (ii) 24.86 mt (iii) 21.86 mt

(iv) 19.86 mt (v) 27.86 mt

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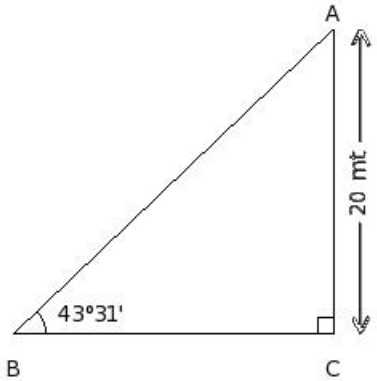
2. A building stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the building is found to be 43°31'. If the height of the building is 20 mt, find the distance between the observation point and the foot of the building

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
43	0.9325	0.9358	0.9391	0.9424	0.9457	0.9490	0.9523	0.9556	0.9590	0.9623	6	11	17	22	28

From Table of Natural Sines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
43	0.6820	0.6833	0.6845	0.6858	0.6871	0.6884	0.6896	0.6909	0.6921	0.6934	2	4	6	9	11



(i) 24.06 mt (ii) 18.06 mt (iii) 16.06 mt

(iv) 21.06 mt (v) 26.06 mt

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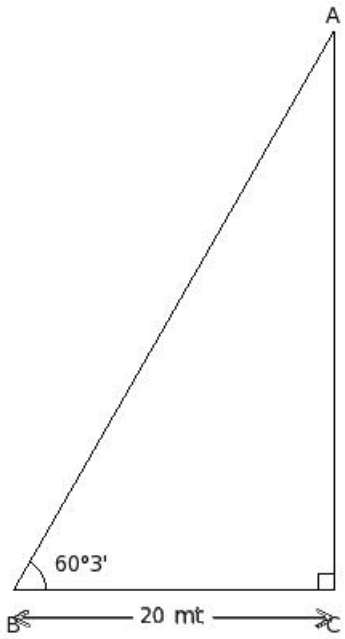
3. A pole stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the pole is found to be 60°3'. If the distance between the observation point and the foot of the pole is 20 mt, find the distance between the observation point and the top of the pole

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
60	1.7321	1.7391	1.7461	1.7532	1.7603	1.7675	1.7747	1.7820	1.7893	1.7966	12	24	36	48	60

From Table of Natural Cosines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
60	0.5000	0.4985	0.4970	0.4955	0.4939	0.4924	0.4909	0.4894	0.4879	0.4863	3	5	8	10	13



(i) 43.06 mt (ii) 40.06 mt (iii) 35.06 mt

(iv) 45.06 mt (v) 37.06 mt

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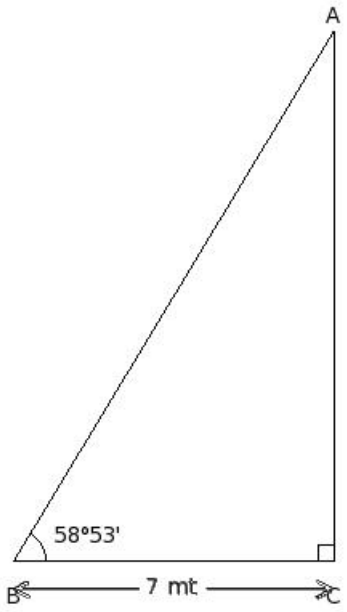
4. A chimney stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the chimney is found to be 58°53'. If the distance between the observation point and the foot of the chimney is 7 mt, find the height of the chimney

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
58	1.6003	1.6066	1.6128	1.6191	1.6255	1.6319	1.6383	1.6447	1.6512	1.6577	11	21	32	43	53

From Table of Natural Cosines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
58	0.5299	0.5284	0.5270	0.5255	0.5240	0.5225	0.5210	0.5195	0.5180	0.5165	2	5	7	10	12



(i) 14.60 mt (ii) 11.60 mt (iii) 16.60 mt

(iv) 8.60 mt (v) 6.60 mt

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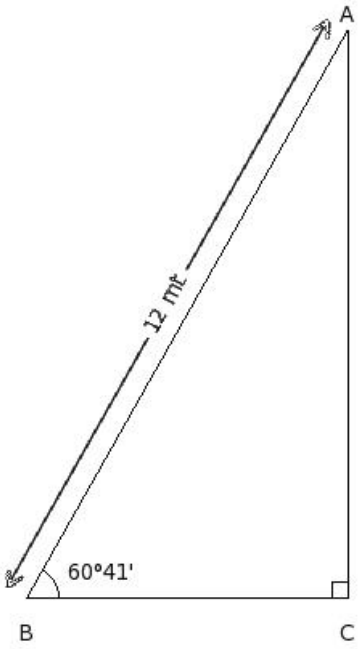
5. A radio tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the radio tower is found to be 60°41'. If the distance between the observation point and the top of the radio tower is 12 mt, find the height of the radio tower

From Table of Natural Sines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
60	0.8660	0.8669	0.8678	0.8686	0.8695	0.8704	0.8712	0.8721	0.8729	0.8738	1	3	4	6	7

From Table of Natural Cosines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
60	0.5000	0.4985	0.4970	0.4955	0.4939	0.4924	0.4909	0.4894	0.4879	0.4863	3	5	8	10	13



(i) 15.46 mt (ii) 7.46 mt (iii) 5.46 mt

(iv) 10.46 mt (v) 13.46 mt

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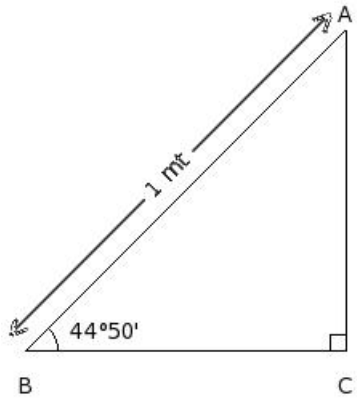
6. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower

is found to be 44°50'. If the distance between the observation point and the top of the tower is 1 mt, find the distance between the observation point and the foot of the tower

From Table of Natural Sines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
44	0.6947	0.6959	0.6972	0.6984	0.6997	0.7009	0.7022	0.7034	0.7046	0.7059	2	4	6	8	10

From Table of Natural Cosines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
44	0.7193	0.7181	0.7169	0.7157	0.7145	0.7133	0.7120	0.7108	0.7096	0.7083	2	4	6	8	10



(i) 8.71 mt (ii) 1.71 mt (iii) 2.71 mt

(iv) 0.71 mt (v) 7.71 mt

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7. The upper part of a tree is broken into two parts without being detatched. It makes an angle of 36°28' with the ground. The top of the tree touches the ground at a distance of 140 mt from the foot of the tree . Find the height of the tree before it was broken

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
36	0.7265	0.7292	0.7319	0.7346	0.7373	0.7400	0.7427	0.7454	0.7481	0.7508	5	9	14	18	23

From Table of Natural Cosines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
36	0.8090	0.8080	0.8070	0.8059	0.8049	0.8039	0.8028	0.8018	0.8007	0.7997	2	3	5	7	8

(i) 269.56 mt (ii) 292.56 mt (iii) 291.56 mt

(iv) 277.56 mt (v) 254.56 mt

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8. There are two temples one on each bank of a river, just opposite to each other. One of the temples is 110 mt high. As observed from the top of this temple, the angles of depression of the top and foot of the other temple are 44°47' and 62°56' respectively. Find the width of the river

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
44	0.9657	0.9691	0.9725	0.9759	0.9793	0.9827	0.9861	0.9896	0.9930	0.9965	6	11	17	23	28

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
62	1.8807	1.8887	1.8967	1.9047	1.9128	1.9210	1.9292	1.9375	1.9458	1.9542	14	27	41	55	68

(i) 53.21 mt (ii) 61.21 mt (iii) 59.21 mt

(iv) 56.21 mt (v) 51.21 mt

9. There are two temples one on each bank of a river, just opposite to each other. One of the temples is 10 mt high. As observed from the top of this temple, the angles of depression of the top and foot of the other temple are 37°43' and 47°6' respectively. Find the height of the other temple

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
37	0.7536	0.7563	0.7590	0.7618	0.7646	0.7673	0.7701	0.7729	0.7757	0.7785	5	9	14	19	23

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
47	1.0724	1.0761	1.0799	1.0837	1.0875	1.0913	1.0951	1.0990	1.1028	1.1067	6	13	19	25	32

(i) 3.81 mt (ii) 2.81 mt (iii) 1.81 mt

(iv) 0.81 mt (v) 4.81 mt

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10. An observer 1.7 mt tall, is 20 mt away from a tower . The angle of elevation of the top of the tower from her eyes is 40°36'. Find the height of the tower

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
40	0.8391	0.8421	0.8451	0.8481	0.8511	0.8541	0.8571	0.8601	0.8632	0.8662	5	10	15	20	25

(i) 13.84 mt (ii) 23.84 mt (iii) 18.84 mt

(iv) 21.84 mt (v) 15.84 mt

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11. An aeroplane is flying horizontally 1700 mt above the ground. From a point of observation, which lies exactly below the path of the aeroplane, the angle of elevation at a certain instant is 59°. After 40 sec , its elevation from the same point changes to 40°. Find the uniform speed of the aeroplane

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
40	0.8391	0.8421	0.8451	0.8481	0.8511	0.8541	0.8571	0.8601	0.8632	0.8662	5	10	15	20	25

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
59	1.6643	1.6709	1.6775	1.6842	1.6909	1.6977	1.7045	1.7113	1.7182	1.7251	11	23	34	45	56

(i) 95.41 kmph (ii) 93.41 kmph (iii) 85.41 kmph

(iv) 87.41 kmph (v) 90.41 kmph

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12. Two poles of equal height are standing opposite to each other on either side of a road which is 30 mt wide. From a point between them on the road, the angles of elevation of the top of the poles are 45°25' and 36°58' respectively. Find the height of each pole and the distances of the point from the two poles

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
45	1.0000	1.0035	1.0070	1.0105	1.0141	1.0176	1.0212	1.0247	1.0283	1.0319	6	12	18	24	30

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
36	0.7265	0.7292	0.7319	0.7346	0.7373	0.7400	0.7427	0.7454	0.7481	0.7508	5	9	14	18	23

(i) height = 11.96 mt , distances away = 16.22 mt , 11.78 mt

(ii) height = 10.96 mt , distances away = 15.22 mt , 10.78 mt

(iii) height = 12.96 mt , distances away = 17.22 mt , 12.78 mt

(iv) height = 14.96 mt , distances away = 19.22 mt , 14.78 mt

(v) height = 13.96 mt , distances away = 18.22 mt , 13.78 mt

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13. From the top of a light house which is 90 mt high from the sea level, the angles of depression of two ships are 37°23' and 29°31'. If one ship is exactly behind the other on the same side of the light house , find the distance between the two ships

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
37	0.7536	0.7563	0.7590	0.7618	0.7646	0.7673	0.7701	0.7729	0.7757	0.7785	5	9	14	19	23

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
29	0.5543	0.5566	0.5589	0.5612	0.5635	0.5658	0.5681	0.5704	0.5727	0.5750	4	8	12	15	19

(i) 38.17 mt

(ii) 44.17 mt

(iii) 46.17 mt

(iv) 41.17 mt

(v) 36.17 mt

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14. From the top of a 16 mt high building , the angle of elevation of the top of a cable tower is 46°43' and the angle of depression of its foot is 37°18'. Find the height of the cable tower

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
46	1.0355	1.0392	1.0428	1.0464	1.0501	1.0538	1.0575	1.0612	1.0649	1.0686	6	12	18	25	31

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
37	0.7536	0.7563	0.7590	0.7618	0.7646	0.7673	0.7701	0.7729	0.7757	0.7785	5	9	14	19	23

(i) 33.30 mt

(ii) 43.30 mt

(iii) 35.30 mt

(iv) 41.30 mt

(v) 38.30 mt

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15. The angle of elevation of the top of a building from the foot of a tower is 26°49'. The angle of elevation of the top of the tower from the foot of the building is 38°21'. If the height of the tower is 75 mt, find the height of the building

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
26	0.4877	0.4899	0.4921	0.4942	0.4964	0.4986	0.5008	0.5029	0.5051	0.5073	4	7	11	15	18

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
38	0.7813	0.7841	0.7869	0.7898	0.7926	0.7954	0.7983	0.8012	0.8040	0.8069	5	9	14	19	23

(i) 47.92 mt

(ii) 44.92 mt

(iii) 52.92 mt

(iv) 50.92 mt

(v) 42.92 mt

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16. A flag is hoisted at the top of a building . From a point on the ground, the angle of elevation of the top of the flag staff is 25°22' and the angle of elevation of the top of the building is 21°15'. If the height of the building is 12 mt, find the height of the flag staff

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
21	0.3839	0.3859	0.3879	0.3899	0.3919	0.3939	0.3959	0.3979	0.4000	0.4020	3	7	10	13	17

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
25	0.4663	0.4684	0.4706	0.4727	0.4748	0.4770	0.4791	0.4813	0.4834	0.4856	4	7	11	14	18

(i) 1.63 mt

(ii) 3.63 mt

(iii) 2.63 mt

(iv) 4.63 mt

(v) 0.63 mt

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17. A flag is hoisted at the top of a building . From a point on the ground, the angle of elevation of the top of the flag staff is 45°39' and the angle of elevation of the top of the building is 42°13'. If the height of the flag staff is 18 mt, find the height of the building

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
42	0.9004	0.9036	0.9067	0.9099	0.9131	0.9163	0.9195	0.9228	0.9260	0.9293	5	11	16	21	27

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
45	1.0000	1.0035	1.0070	1.0105	1.0141	1.0176	1.0212	1.0247	1.0283	1.0319	6	12	18	24	30

(i) 126.02 mt

(ii) 143.02 mt

(iii) 141.02 mt

(iv) 159.02 mt

(v) 127.02 mt

Assignment Key

1) (ii)
2) (iv)
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16) (iii)
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