EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Some Applications of Trigonometry

Grade : CBSE Grade X

License : Non Commercial Use

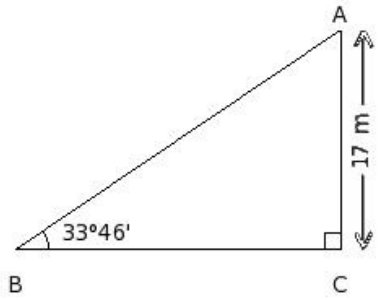
1. A radio tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the radio tower is found to be 33°46'. If the height of the radio tower is 17 m, find the distance between the observation point and the foot of the radio tower.

From Table of Natural Tangents

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
33	0.6494	0.6519	0.6544	0.6569	0.6594	0.6619	0.6644	0.6669	0.6694	0.6720	4	8	13	17	21

From Table of Natural Sines

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
33	0.5446	0.5461	0.5476	0.5490	0.5505	0.5519	0.5534	0.5548	0.5563	0.5577	2	5	7	10	12



(i) 30.43 m (ii) 28.43 m (iii) 20.43 m (iv) 22.43 m (v) 25.43 m

2. There are two temples one on each bank of a river, just opposite to each other. One of the temples is 120 m high. As observed from the top of this temple, the angles of depression of the top and foot of the other temple are 45° and 60° respectively. Find the width of the river .

(i) 66.28 m (ii) 69.28 m (iii) 74.28 m (iv) 72.28 m (v) 64.28 m

3. A boy standing on a vertical cliff in a jungle observes two rest houses in line with him on opposite sides deep in the jungle below. If their angles of depression are 45° and 30° and the distance between them is 105 m , find the height of the cliff.

(i) 38.43 m (ii) 33.43 m (iii) 41.43 m (iv) 43.43 m (v) 35.43 m

4. From the top of a light house which is 90 m high from the sea level, the angles of depression of two ships are 45° and 30°. If one ship is exactly behind the other on the same side of the light house , find the distance between the two ships.

(i) 62.87 m (ii) 68.87 m (iii) 65.87 m (iv) 60.87 m (v) 70.87 m

5. A man in a boat rowing away from a lighthouse 80 m high, takes 3 min to change the angle of elevation of the top of the lighthouse from 45° to 30°. Find the speed of the boat.

(i) 7.33 m/sec (ii) 0.33 m/sec (iii) 2.33 m/sec (iv) 1.33 m/sec (v) 8.33 m/sec

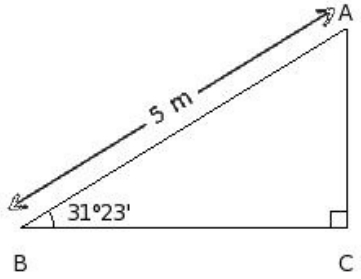
6. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be 31°23'. If the distance between the observation point and the top of the tower is 5 m, find the height of the tower.

From Table of Natural Sines

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
31	0.5150	0.5165	0.5780	0.5195	0.5210	0.5225	0.5240	0.5255	0.5270	0.5284	2	5	7	10	12

From Table of Natural Cosines

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
31	0.8572	0.8563	0.8554	0.8545	0.8536	0.8526	0.8517	0.8508	0.8499	0.8490	2	3	5	6	8



(i) 4.60 m (ii) 1.60 m (iii) 0.60 m (iv) 2.60 m (v) 3.60 m

7. 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 $\sec^{(-1)}(\frac{3}{2})$. If the distance between the point and the foot of the tower is 70 m, find the distance between the observation point and the top of the tower.

(i) 123.00 m (ii) 78.00 m (iii) 119.00 m (iv) 105.00 m (v) 100.00 m

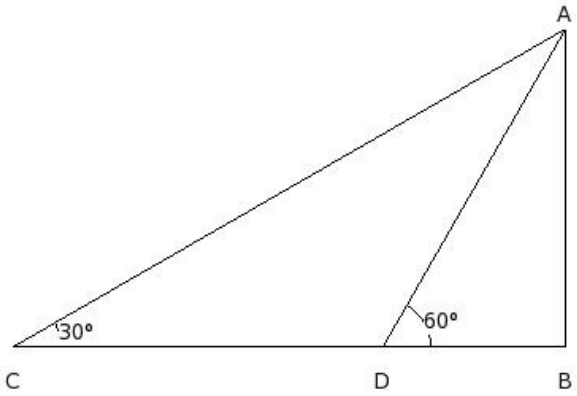
8. An observer 1.9 m tall, is 140 m away from a tower . The angle of elevation of the top of the tower from her eyes is 30°. Find the height of the tower .

(i) 82.74 m (ii) 79.74 m (iii) 87.74 m (iv) 77.74 m (v) 85.74 m

9. The angle of elevation of the top of a building from the foot of a tower is 30°. The angle of elevation of the top of the tower from the foot of the building is 45°. If the height of the tower is 40 m, find the height of the building .

(i) 20.10 m (ii) 18.10 m (iii) 28.10 m (iv) 26.10 m (v) 23.10 m

10. A person, walking 15 m from a point toward a flagpost , observes that its angle of elevation changes from 30° to 60°. Find the height of the flagpost .



(i) $\frac{15}{2}$ m (ii) $\frac{45}{4}\sqrt{2}$ m (iii) $\frac{15}{2}\sqrt{18}$ m (iv) $\frac{15}{2}\sqrt{3}$ m (v) $\frac{45}{2}$ m

11. From a point 180 m away from a vertical cliff, the angles of elevation of the top and the foot of a vertical pillar at the top of the cliff are 60° and 30° respectively. Find the height of the cliff.

(i) 115.93 m (ii) 103.93 m (iii) 96.93 m (iv) 79.93 m (v) 120.93 m

12. The upper part of a tree is broken into two parts without being detatched. It makes an angle of 52°42' with the ground. The top of the tree touches the ground at a distance of 140 m 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'
52	1.2799	1.2846	1.2892	1.2938	1.2985	1.3032	1.3079	1.3127	1.3175	1.3222	8	16	24	31	39

From Table of Natural Cosines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
52	0.6157	0.6143	0.6129	0.6115	0.6101	0.6088	0.6074	0.6060	0.6046	0.6032	2	5	7	9	12

(i) 436.80 m (ii) 408.80 m (iii) 400.80 m (iv) 414.80 m (v) 416.80 m

13. There are two temples one on each bank of a river, just opposite to each other. One of the temples is 200 m high. As observed from the top of this temple, the angles of depression of the top and foot of the other temple are 47°46' and 55°19' 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'
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

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
55	1.4281	1.4335	1.4388	1.4442	1.4496	1.4550	1.4605	1.4659	1.4715	1.4770	9	18	27	36	45

(i) 44.55 m (ii) 50.55 m (iii) 47.55 m (iv) 42.55 m (v) 52.55 m

14. 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 $\sin^{(-1)}(\frac{2}{3})$. If the distance between the point and the top of the tower is 100 m, find the height of the tower.

(i) 63.67 m (ii) 61.67 m (iii) 69.67 m (iv) 66.67 m (v) 71.67 m

15. The upper part of a tree is broken into two parts without being detatched. It makes an angle of 30° with the ground. The top of the tree touches the ground at a distance of 130 m from the foot of the tree . Find the height of the tree before it was broken.

(i) 237.18 m (ii) 225.18 m (iii) 239.18 m (iv) 212.18 m

16. Two poles of equal height are standing opposite to each other on either side of a road which is 35 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 28°44' and 29°9' 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'
28	0.5317	0.5340	0.5362	0.5384	0.5407	0.5430	0.5452	0.5475	0.5498	0.5520	4	8	11	15	19

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) height = 10.68 m, distances away = 18.35 m, 18.65 m

(ii) height = 11.68 m, distances away = 19.35 m, 19.65 m

(iii) height = 7.68 m, distances away = 15.35 m, 15.65 m

(iv) height = 8.68 m, distances away = 16.35 m, 16.65 m

(v) height = 9.68 m, distances away = 17.35 m, 17.65 m

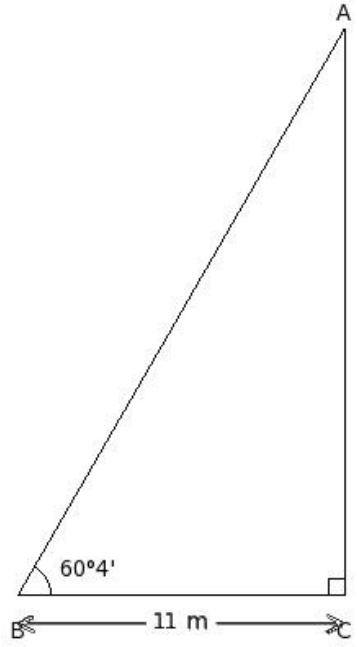
17. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be 60°4'. If the distance between the observation point and the foot of the tower is 11 m, find the distance between the observation point and the top of the tower.

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) 17.04 m (ii) 25.04 m (iii) 22.04 m (iv) 27.04 m (v) 19.04 m

18. 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 $\cot^{(-1)}(\frac{3}{4})$. If the height of the tower is 180 m, find the distance between the observation point and the foot of the tower.

(i) 135.00 m (ii) 121.00 m (iii) 129.00 m (iv) 147.00 m (v) 138.00 m

19. 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 $\cos^{(-1)}(\frac{1}{6})$. If the distance between the point and the foot of the tower is 100 m, find the distance between the observation point and the top of the tower.

(i) 588.00 m (ii) 615.00 m (iii) 577.00 m (iv) 600.00 m (v) 606.00 m

20. The angle of elevation of the top of a building from the foot of a tower is 33°33'. The angle of elevation of the top of the tower from the foot of the building is 35°8'. If the height of the tower is 95 m, find the height of the building .

From Table of Natural Tangents

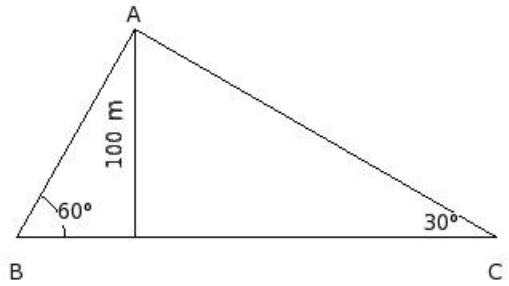
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
33	0.6494	0.6519	0.6544	0.6569	0.6594	0.6619	0.6644	0.6669	0.6694	0.6720	4	8	13	17	21

From Table of Natural Tangents

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
35	0.7002	0.7028	0.7054	0.7080	0.7107	0.7133	0.7159	0.7186	0.7212	0.7239	4	9	13	17	22

(i) 92.53 m (ii) 86.53 m (iii) 89.53 m (iv) 84.53 m (v) 94.53 m

21. Two boys are on opposite sides of a tower of 100 m height. They measure the angle of elevation of the top of the tower as 60° and 30° respectively. Find the distance between the two boys.



(i) $\frac{400}{3}$ m (ii) 400 m (iii) $\frac{400}{3}\sqrt{3}$ m (iv) $200\sqrt{2}$ m (v) $\frac{400}{3}\sqrt{18}$ m

22. From the top of a 11 m high building , the angle of elevation of the top of a cable tower is 42°10' and the angle of depression of its foot is 35°40'. 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'
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

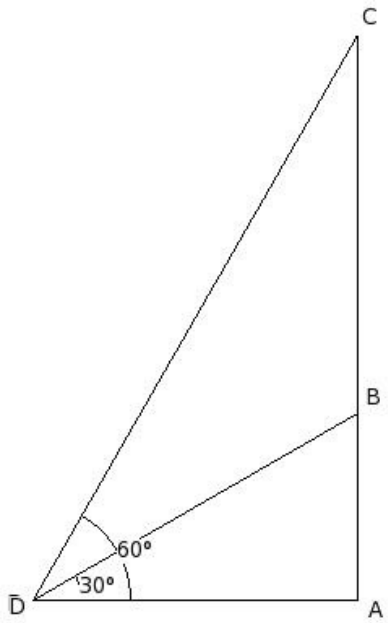
From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
35	0.7002	0.7028	0.7054	0.7080	0.7107	0.7133	0.7159	0.7186	0.7212	0.7239	4	9	13	17	22

(i) 27.88 m (ii) 21.88 m (iii) 19.88 m (iv) 24.88 m (v) 29.88 m

23. 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 $\operatorname{cosec}^{(-1)}\left(\frac{9}{7}\right)$. If the height of the tower is 90 m, find the distance between the observation point and the top of the tower.

(i) 102.71 m (ii) 137.71 m (iii) 115.71 m (iv) 100.71 m (v) 119.71 m

24. A flagstaff stands on the top of a building at a distance of 5 m away from the foot of building . The angle of elevation of the top of the flagstaff is 60° and the angle of elevation of the top of the building is 30°. Find the height of the flagstaff .



(i) $\frac{10}{3}\sqrt{3}$ m (ii) $\frac{10}{3}\sqrt{18}$ m (iii) $5\sqrt{2}$ m (iv) $\frac{10}{3}$ m (v) 10 m

25. An aeroplane is flying horizontally 900 m 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 66°. After 30 sec , its elevation from the same point changes to 38°. 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'
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

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
66	2.2460	2.2566	2.2673	2.2781	2.2889	2.2998	2.3109	2.3220	2.3332	2.3445	18	37	55	73	92

(i) 95.15 kmph (ii) 85.15 kmph (iii) 90.15 kmph (iv) 93.15 kmph (v) 87.15 kmph

Assignment Key

1) (v)	2) (ii)	3) (i)	4) (iii)	5) (ii)	6) (iv)
7) (iv)	8) (i)	9) (v)	10) (iv)	11) (ii)	12) (iv)
13) (iii)	14) (iv)	15) (ii)	16) (v)	17) (iii)	18) (i)
19) (iv)	20) (iii)	21) (iii)	22) (iv)	23) (iii)	24) (i)
25) (iii)					