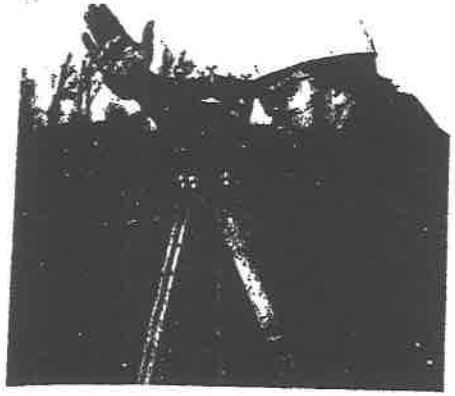
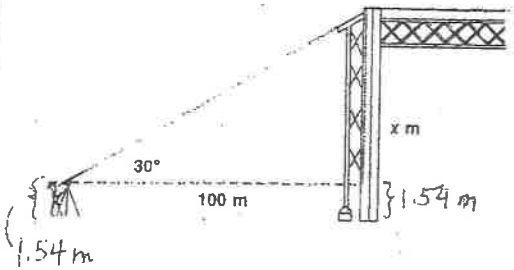
careers



Glenn Hatfield is a licensed surveyor. In addition to measuring land, he uses his surveying instruments to check building construction. Glenn frequently uses trigonometry in his work.



As shown above, Glenn has used his instrument to measure the angle of elevation and find the height from the top of the instrument to the top of the bridge.

$$\tan 30° = \frac{x}{100}$$

$$0.5774 \approx \frac{x}{100}$$

$$57.74 \approx x$$

Now if the instrument height is 1.54 m, what is the height of the bridge? 59.28 m

Exercises **Use trigonometry to find the heights of various objects for the following measurements.**

	Angle of Elevation	*Distance from Instrument*	*Instrument Height*
1.	35°	100 m	1.45 m
2.	26°	62.56 m	1.73 m
3.	11°	131.37 m	1.68 m
4.	3°	895 m	1.54 m

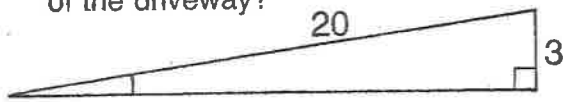
13. ***Ladder Problem*** The local fire department has a 6-meter ladder which must be placed against a building at a 6 degree angle. What height can the ladder reach?

14. ***Flagpole Problem*** At 3 p.m. the flagpole in front of your school casts a 12-foot shadow. The sun's angle of elevation is 58° 19′. How tall is the flagpole?

15. ***Polly Parrot Problem*** Your parrot has flown off of his outdoor perch to the top of a nearby house. You have a 12-foot ladder and need to reach a roof level that is 11 feet high. What angle will the ladder make with the ground?

16. ***Tower Problem*** The Tower of the Americas in San Antonio, Texas, is 750 feet tall. What is the angle of elevation of the sun when the tower's shadow is 25 feet?

(L) A driveway is built on an incline so that it rises 3 m over a distance of 20 m. What is the angle of elevation of the driveway?



(T) A train decreases its altitude by 8 m when traveling along 200 m of track. Find the angle of depression of the track.

(10) If a rocket flies 2° off course for 1000 miles, how far from the correct path will the rocket be?