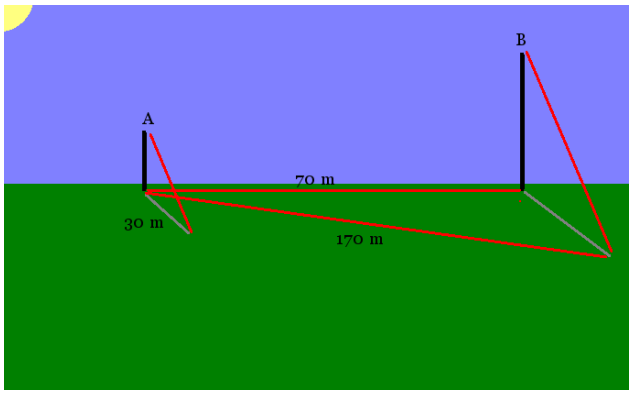
NCEA Level 1 Mathematics (Trigonometry)

Reading

Questions

1. Consider two flagpoles a distance 70 m apart.



The angle of the sun above the scene is 30°; the shadow of flagpole A is 30 m long, and the distance from the base of flagpole A and the end of the shadow of flagpole B is 170 m.

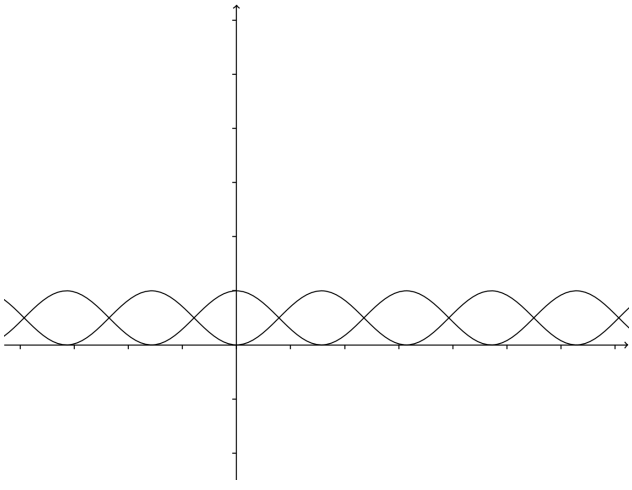
(a) Calculate the heights of flagpoles A and B.

(b) Round your solution to part (a) to the correct number of significant figures; justify your choice.

2. In this question, we will prove that for all angles x,

$$(\sin x)^2 + (\cos x)^2 = 1.$$

In other words, the sum of the two waves in the following diagram is constant.



(a) Draw a right angled triangle with hypotenuse 1.

(b) Pick an acute angle and call it x.

(c) Find the lengths of the two non-hypotenuse sides using the trig ratios.

(d) Apply the Pythagorean theorem.