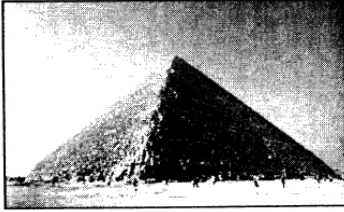


GREAT PYRAMID



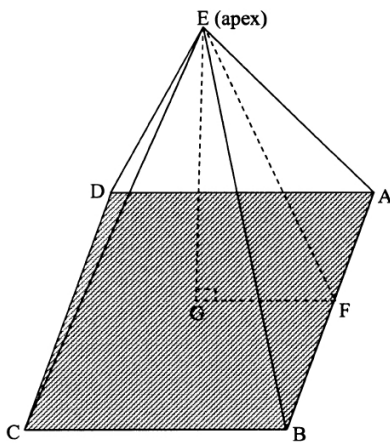
Great Pyramid at Giza in Egypt

The Great Pyramid at Giza in Egypt was built around 2500 BC. The pyramid has a square base ABCD with sides 232.6 metres long. The distance from each corner of the base to the apex E was originally 221.2 metres.

Draw a diagram of the pyramid to show two right angled triangles from which you can write down trigonometric equations to answer the following questions.



You may find it helpful to make a square based pyramid with rolled paper sticks and cut out a paper triangle like triangle EGF to fit inside.



1. If F is a point on AB such that EF is perpendicular to AB and G is vertically below the apex E, what can you say about triangles EFA and EGF?

2. Calculate the size of the angle at the apex of a face of the pyramid (for example angle AEB).

Can you find this by a different method?

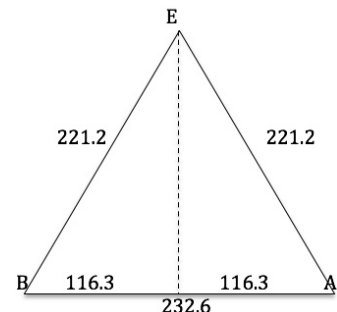
3. Calculate the angle each face makes with the base (for example angle EFG).

4. Calculate the height of the pyramid.

This question is from the South African National School Certificate Examination Mathematics Paper 2 November 2013 Qu. 13 Solution on page 4. Try to do the question without looking at the solution.

HELP

You will find it useful to draw this diagram so that it is easy to see the right-angled triangles.



NEXT

Find as many lengths and angles in the pyramid as possible, for example CG and angle ECG.