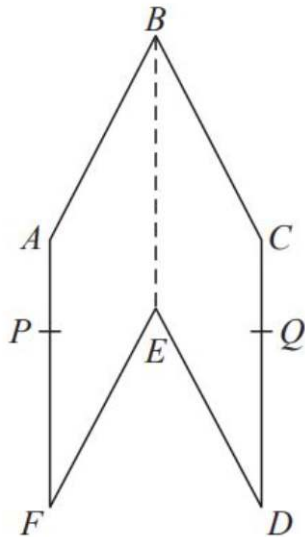# QT Tough Questions - Proving Cosine

The diagram shows a hexagon ABCDEF.

ABEF and CBED are congruent parallelograms where
AB = BC = x cm.
P is the point on AF and Q is the point on CD such that
BP = BQ = 10cm.

Given that angle ABC = 30^0, prove that

$$\cos PBQ = 1 \; - \; \frac{(2 - \sqrt{3})}{200}x^2$$