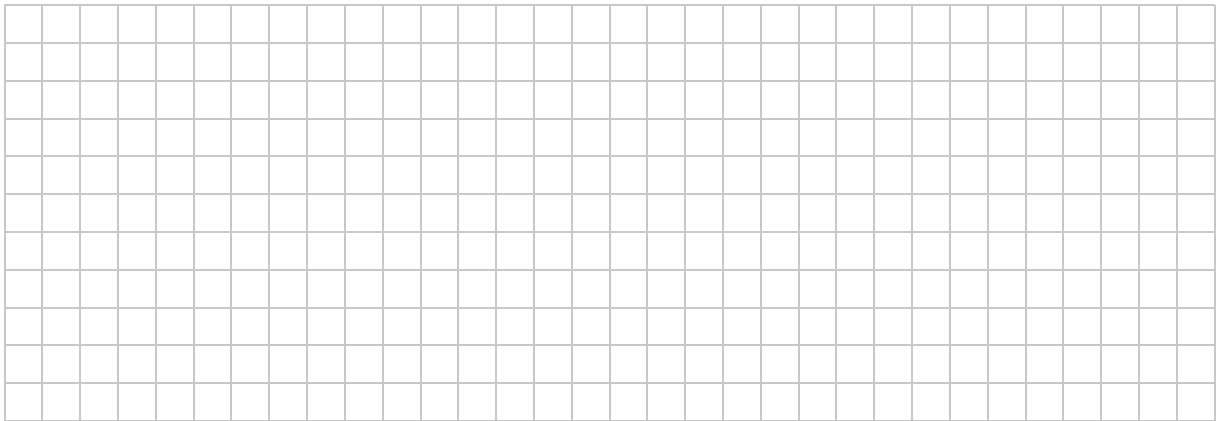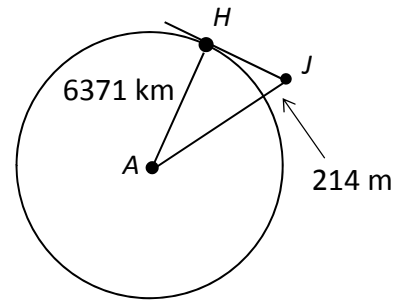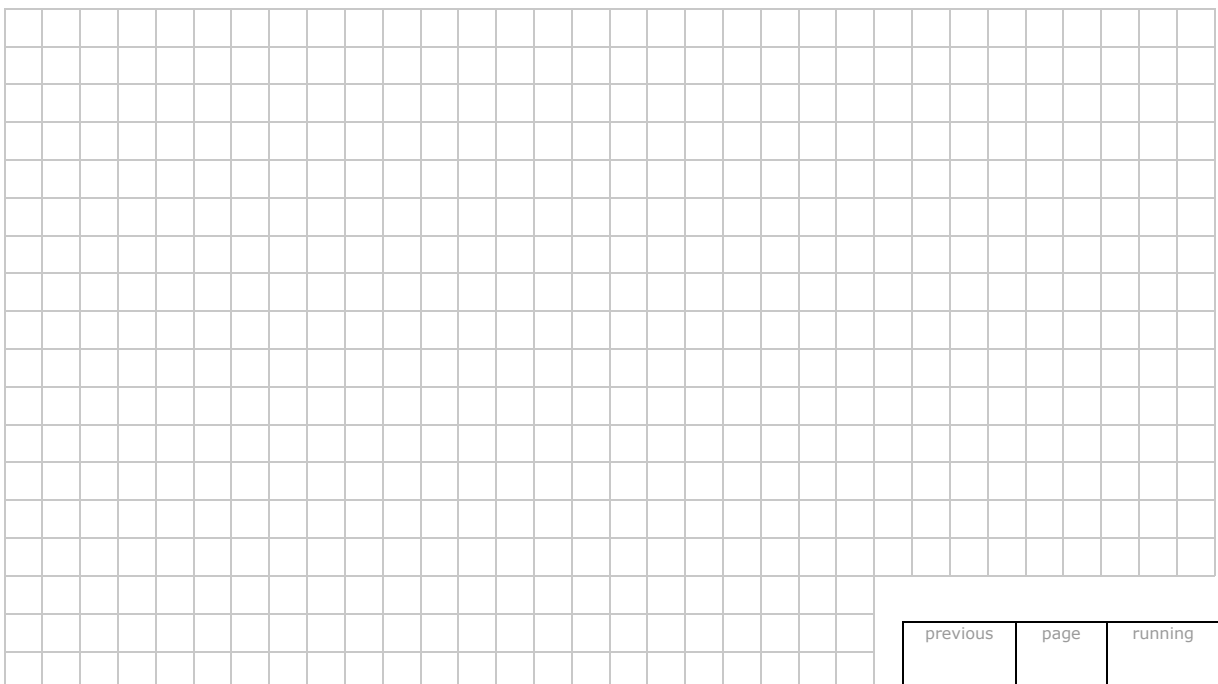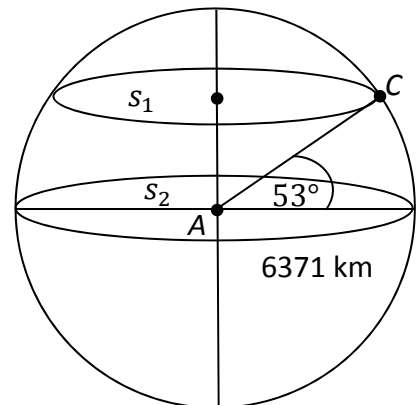**Question 6** (25 marks)

(a) Take the earth as a sphere with radius 6371 km.
Jack is standing on the Cliffs of Moher at the
point *J* which is 214 metres above sea level.
He is looking out to sea at a point *H* on the horizon.
Taking *A* as the centre of the earth, find $|JH|$,
the distance from Jack to the horizon.
Give your answer correct to the nearest km.

6371 km

H

J

A

214 m

(b) The Cliffs of Moher, at point *C*, are at latitude 53° north
of the equator.
On the diagram, s_1 represents the circle that is at
latitude 53°.
s_2 represents the equator (which is at latitude 0°).
A is the centre of the earth.
s_1 and s_2 are on parallel planes.
Find the length of the circle s_1.
Give your answer correct to the nearest km.

s_1

s_2

C

53°

A

6371 km

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