Answer **all** the questions in the spaces provided.

1 **(a)** Define *gravitational field strength*.

.....

.....[1]

(b) The mass of a spherical comet of radius 3.6 km is approximately 1.0×10^{13} kg.

(i) Assuming that the comet has constant density, calculate the gravitational field strength on the surface of the comet.

field strength = ... $N\,kg^{-1}$ [2]

(ii) A probe having a weight of 960 N on Earth lands on the comet.
Using your answer in **(i)**, determine the weight of the probe on the surface of the comet.

weight = ... N [2]

(c) A second comet has a length of approximately 4.5 km and a width of approximately 2.6 km. Its outline is illustrated in Fig. 1.1.

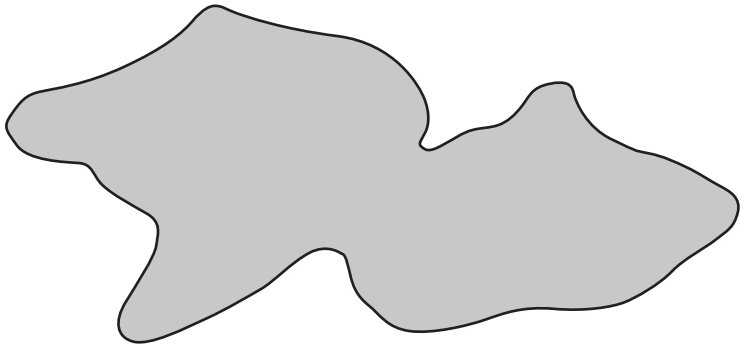

Fig. 1.1

Suggest one similarity and one difference between the gravitational fields at the surface of this comet and at the surface of the comet in **(b)**.

similarity: .....

.....

difference: .....

.....

[2]

[Total: 7]