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4 A student investigates how much pressure she exerts on the ground when she is standing up.

(a) The weight of the student is 520 N.

(i) State the formula linking weight, mass and gravitational field strength (*g*).

(1)

(ii) Calculate the mass of the student.

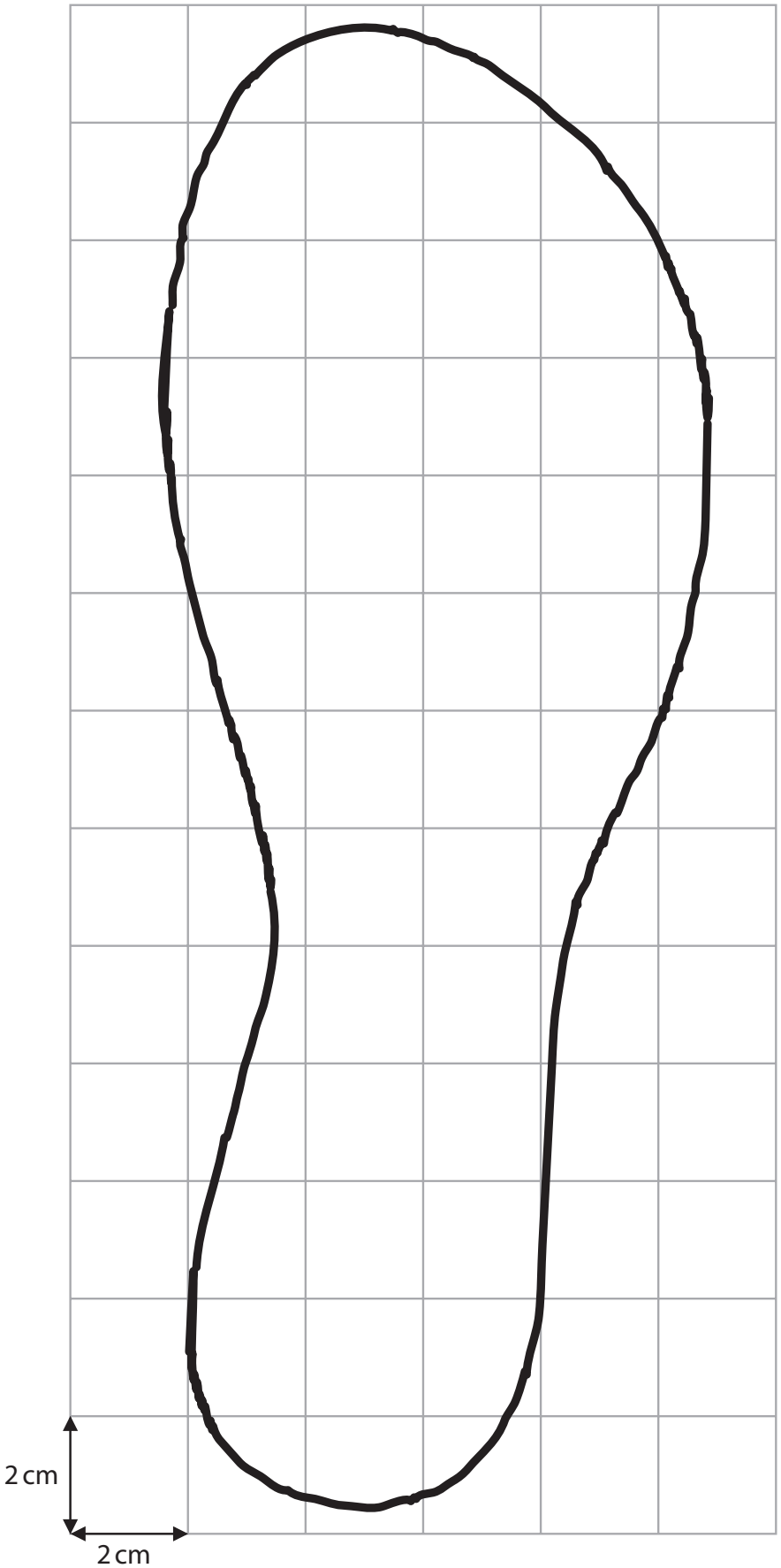
(2)

mass = ... kg

(b) The student measures the area of one of her feet when it is in contact with the ground.

She draws around her foot on a piece of squared paper.

grid not to scale



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(i) The squares on the paper have a side length of 2 cm.

Estimate the area of the student's foot in contact with the ground.

(4)

area = ... cm^2

(ii) State the formula linking pressure, force and area.

(1)

(iii) The weight of the student is 520 N.

Calculate the pressure the student exerts on the ground when she is standing on **both** feet.

Give the unit.

(3)

pressure = ... unit .....

(Total for Question 4 = 11 marks)