5 A student wants to use a weighing scale to find the weight of her school bag.

She has a weighing scale marked in kilograms instead of newtons.

The weighing scale is not working properly.

With nothing hanging from it, the weighing scale shows 1.5 kg.

(a) What is the weight of a 1.5 kg mass?

(1)

Weight = ... N

(b) The student decides to check the weighing scale.

She has no accurate weights.

Instead, she puts some tins of beans in a plastic bag and hangs it from the scale.

Her readings are shown in the table.

Number of tins of beans	0	1	2	3	4	5	6
Scale reading (in kg)	1.5	2.0	2.3	2.8	3.7	3.5	3.9

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(i) Draw a graph to show how the scale reading varies with the number of tins of beans.

(5)
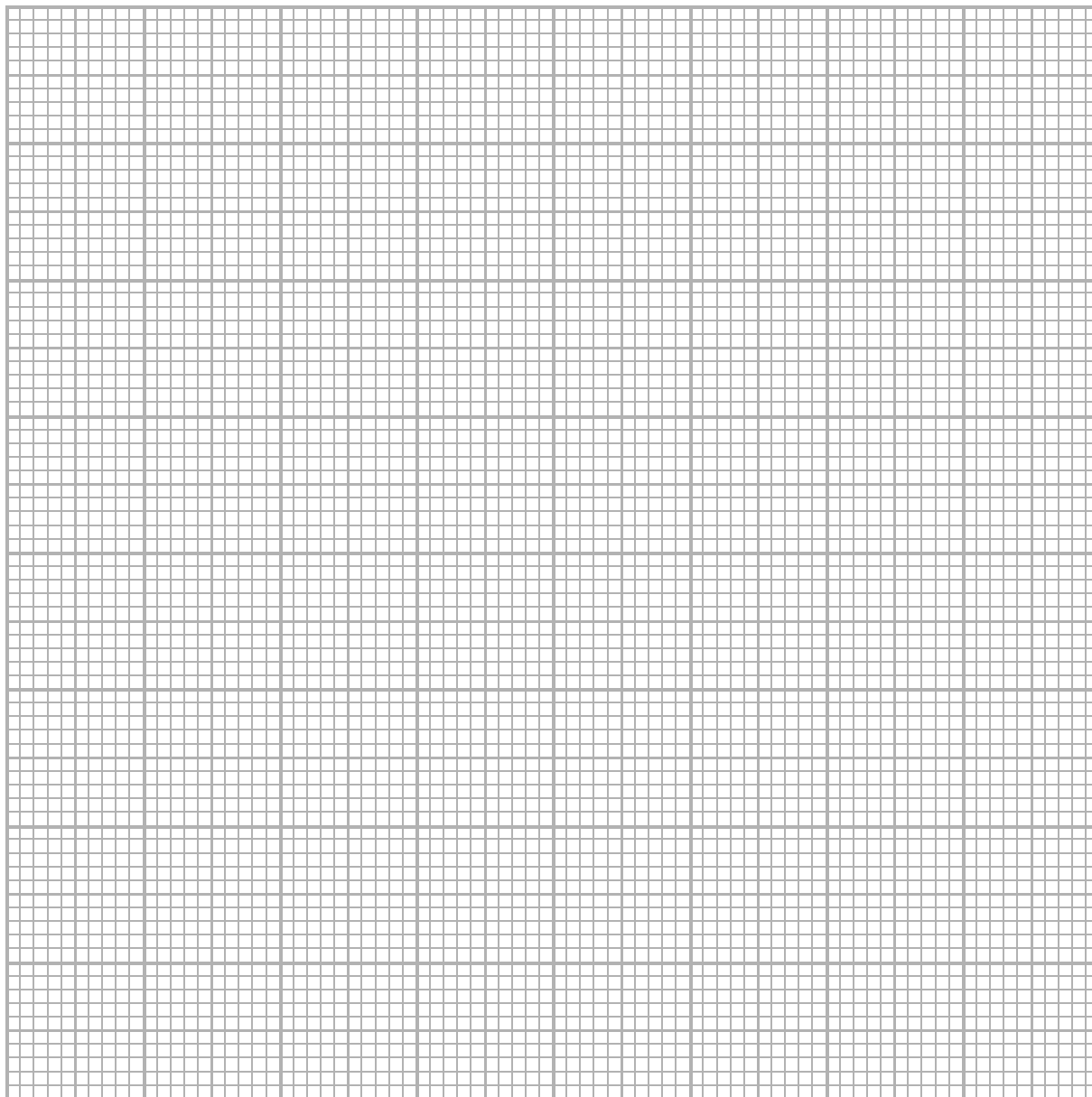
(ii) Circle the anomalous point on your graph.

(1)

(c) The student notices that the label on each tin says 'contains 0.4 kg of beans'.

She remembers that six tins of beans gave a scale reading of 3.9 kg.

She thinks:

Six tins of beans, so…

mass = 6 x 0.4 = 2.4 kg

and…

3.9 – 1.5 = 2.4 kg

She concludes:

I can use this scale as normal! All I need to do is to subtract 1.5 kg from each reading to get the right answer.

She hangs her school bag from the weighing scale.
The scale reading is 5.0 kg.
She also concludes that her school bag must have a mass of exactly 3.5 kg.

Suggest reasons why the student's conclusions might be **incorrect**.

(4)

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(Total for Question 5 = 11 marks)

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