NAME: ....

SCHOOL:..

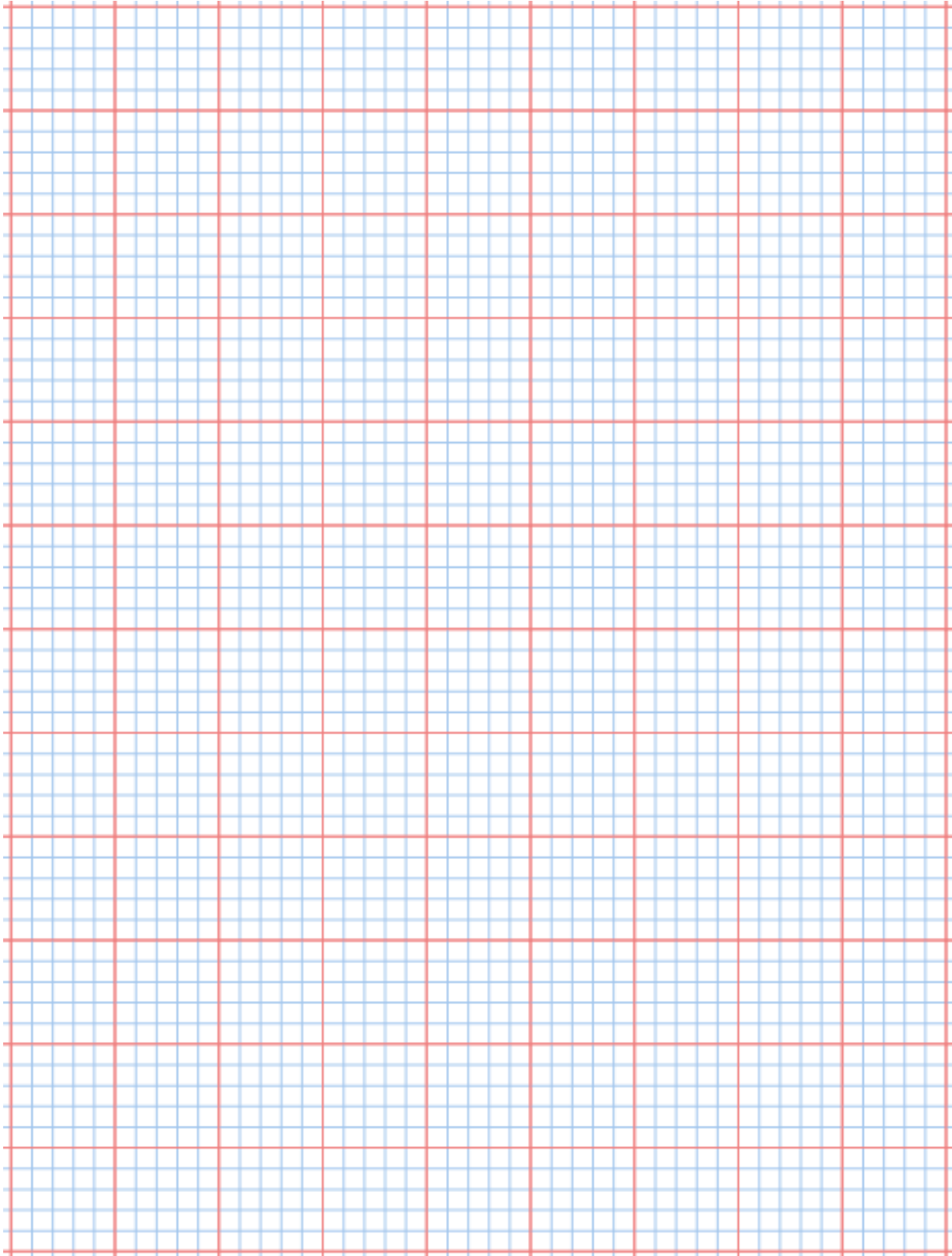DATE: ....

HOOKE'S LAW

INSTRUCTIONS TO CANDIDATES

Answer **ALL** *questions in this paper in the spaces provided.*

1. Define **Hooke's Law**

2. In a Hooke's Law experiment, the following results were obtained.

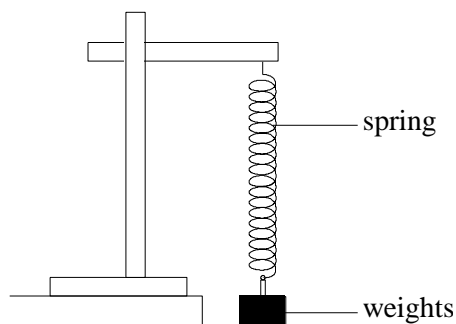| Load/N	Extension/cm
0.0	0.0
1.0	1.0
2.0	2.0
3.0	3.0
4.0	4.0
5.0	5.0
6.0	**6.4**

Plot a graph of **Load against Extension**

On your graph, show
a) Region where Hooke's Law is obeyed
b) The elastic limit

How would the spring constant be determined?

3. Sketch a diagram showing how you would arrange your apparatus to investigate the Force-extension relationship of a spring

4. (a) A spring extends by 10 cm when a mass of 100 g is attached to it. What is the spring constant?

   (b) What will be the extension of this spring if the load is 75 g?
   (c) If an identical spring were connected in parallel (do a sketch), what mass would need to be attached to produce an extension of 15 cm?
   (d) What mass would be needed if two of these springs were placed in series (do a sketch) and an extension of 30 cm was required?

5. The load on a spring is increased by adding weights.

   The extension for each load is shown in the table.

Load (N)	0	10	20	30	40
Extension (cm)	0	2	4	6	8

   (a) Use the information in the table to draw a graph on the grid below.

Extension in centimetres (y-axis, 0 to 16)
Load in newtons (x-axis, 0 to 100)
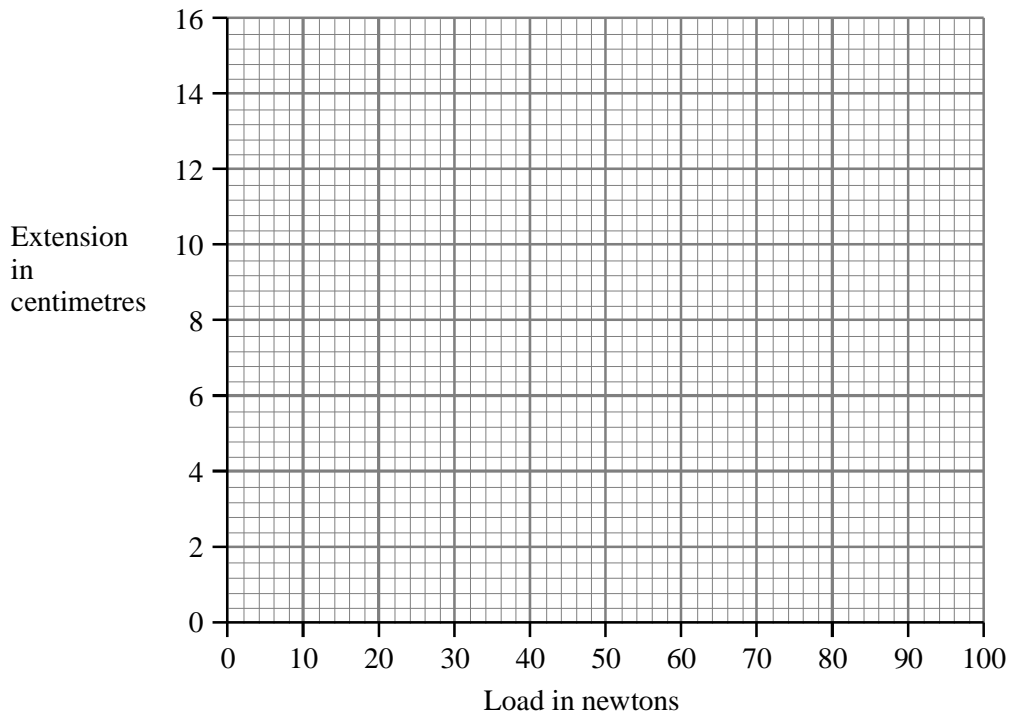
(2)

(b) More weights are added to the spring.

(i) Continue the line on your graph to show the shape when more weights are added.

(1)

(ii) Explain why the graph is the shape you have drawn.

....
....

(1)

(Total 4 marks)