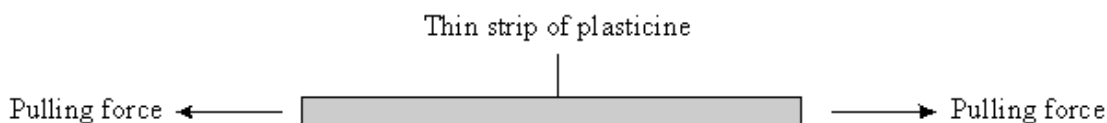**Q1.**   The diagrams show pairs of forces acting on different objects. In each case describe what happens when the forces are increased. Then describe what happens when the forces are removed.
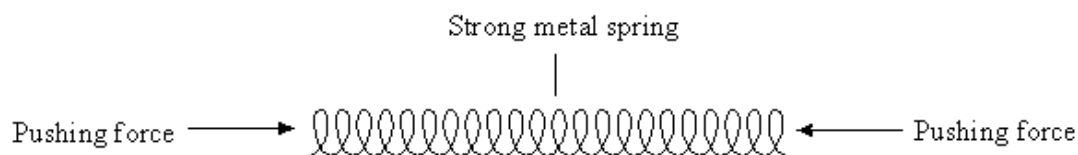
(a)

Thin strip of plasticine

Pulling force ← ——— [▭] ——— → Pulling force

When the forces are increased ....

....

When the forces are removed ....

....

(2)

(b)

Strong metal spring

Pushing force ——— → 00000000000000000000000 ← ——— Pushing force

When the forces are increased ....

....

When the forces are removed ....

....

(2)
(Total 4 marks)

Q2.   (a)   The diagrams below show pairs of forces acting on different objects. In each case describe what happens when the forces are increased. Then describe what happens when the forces are removed.

(i)

Thin strip of plasticine

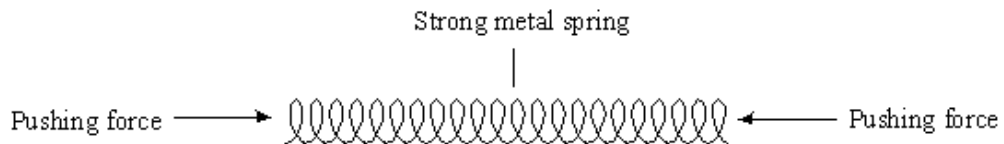Pulling force ← ——— [▭] ——— → Pulling force

When the forces are increased

....

....

When the forces are removed

....

....

(ii)

Strong metal spring

Pushing force ⟶ 〰〰〰〰〰〰〰〰〰〰〰〰〰〰〰 ⟵ Pushing force

When the forces are increased

....

....

When the forces are removed

....

....

(iii)

Thin plastic ruler

Pushing force ⟶ ▱▱▱▱▱▱▱▱ ⟵ Pushing force

When the forces are increased

....

....
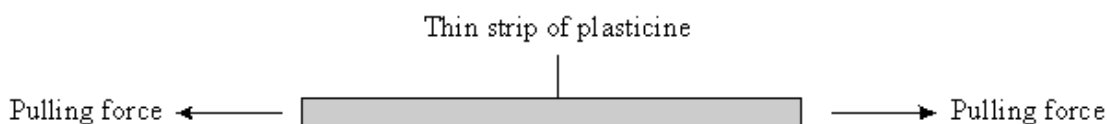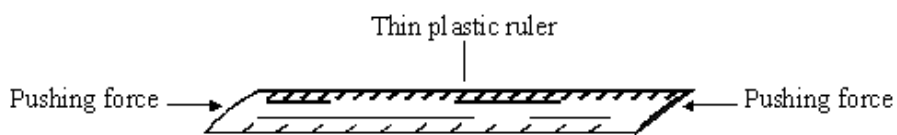
When the forces are removed

....

....
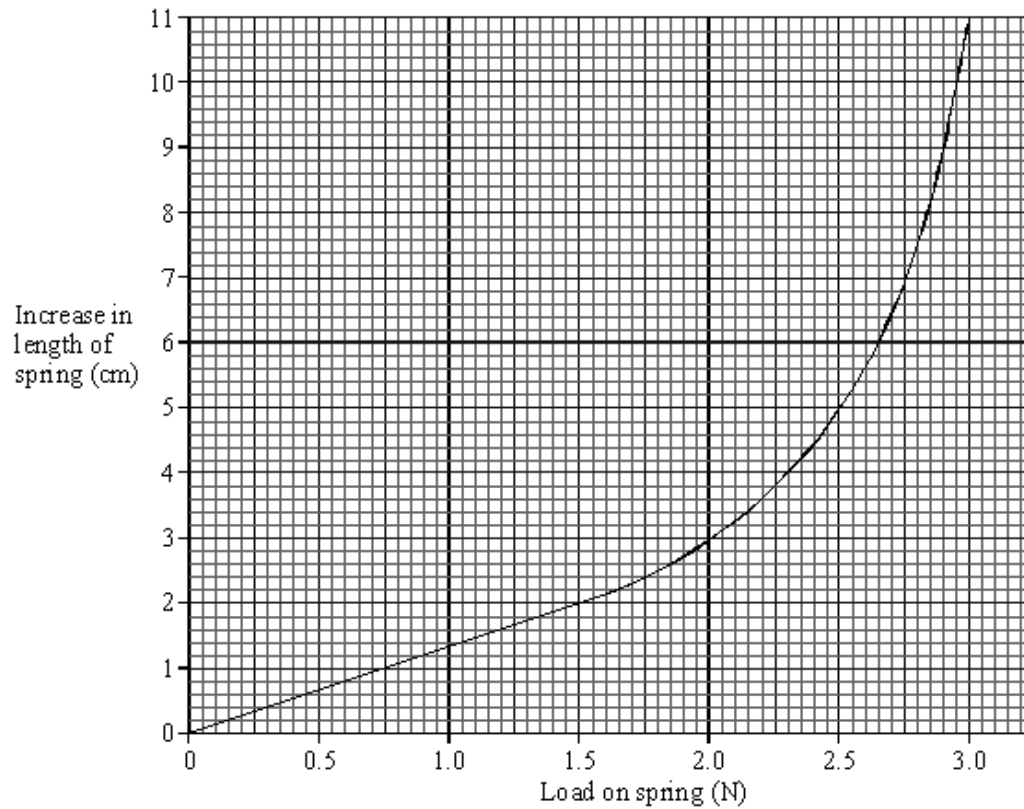
(6)

(b)   The graph shows the increase in length of a spring against **load** (force).

The length of the spring with no load was 15 cm.

Use the graph to find:

(i)   The load needed to produce an increase in length of 2 cm.

....

(ii)   The increase in length produced by a load of 2.3 N.

....

(iii)   The **length** of the spring when the load was 2.3 N.

....
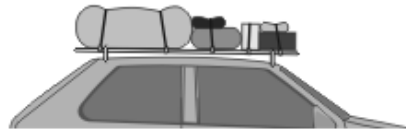
(3)
(Total 9 marks)

Q3. (a) The pictures show four objects. Each object has had its shape changed.

Bent metal ruler
A

Stretched bungee cords
B

Springs on a playground ride
C

Moulded plastic model car body
D

Which of the objects are storing elastic potential energy?

....

Explain the reason for your choice or choices.

....

....

....

....

....

....
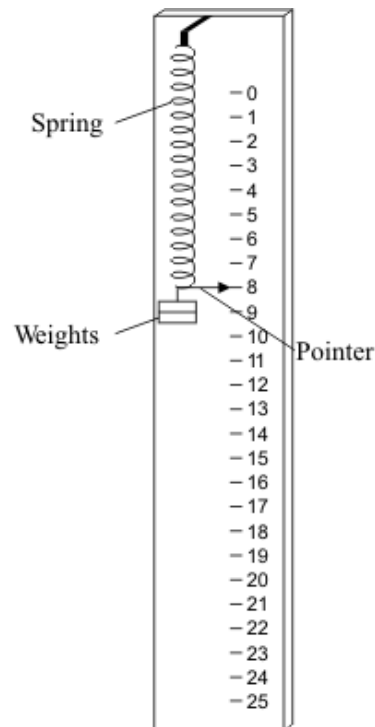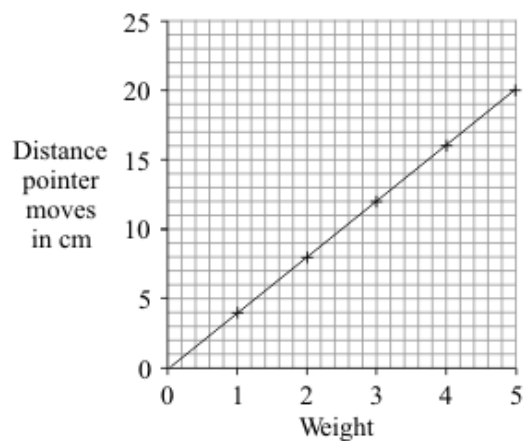
(3)

(b) A student makes a simple spring balance. To make a scale, the student uses a range of weights. Each weight is put onto the spring and the position of the pointer marked

The graph below shows how increasing the weight made the pointer move further.

(i) Which **one** of the following is the unit of weight?.

Draw a ring around your answer.

      joule   kilogram   newton   watt

(1)

(ii) What range of weights did the student use?

....

(1)

(iii) How far does the pointer move when 4 units of weight are on the spring?

....

(1)

(iv)   The student ties a stone to the spring. The spring stretches 10 cm.

What is the weight of the stone?

....

(1)
(Total 7 marks)