

Forces and Elasticity

Question Paper

Level	GCSE
Subject	Physics
Exam Board	AQA
Unit	P2
Topic	Forces and Elasticity
Difficulty Level	Bronze Level
Booklet	Question Paper

Time Allowed: 28 minutes

Score: /28

Percentage: /100

Q1.(a) When a force is applied to a spring, the spring extends by 0.12 m.
The spring has a spring constant of 25 N / m.

Calculate the force applied to the spring.

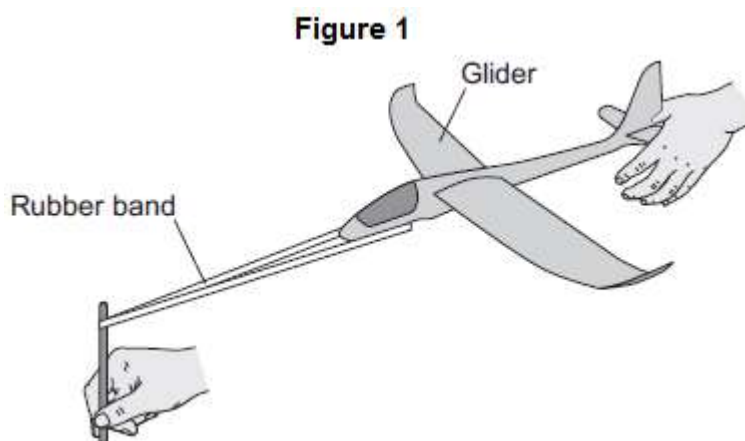
Use the correct equation from the Physics Equations Sheet.

.....
.....

Force = N

(2)

(b) **Figure 1** shows a toy glider. To launch the glider into the air, the rubber band and glider are pulled back and then the glider is released.



(i) Use the correct answers from the box to complete the sentence.

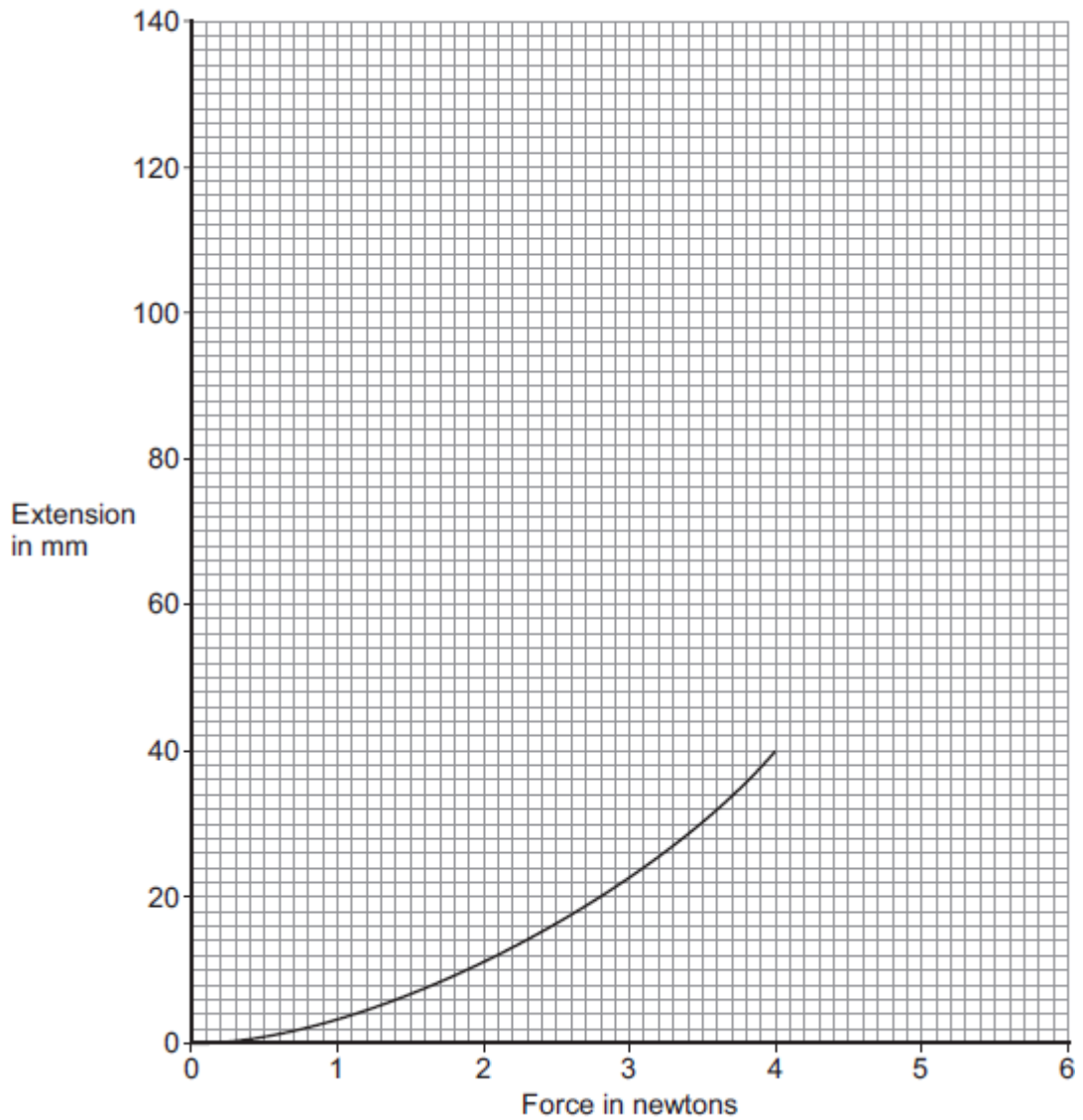
chemical	elastic potential	kinetic	thermal
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When the glider is released, the energy
stored in the rubber band decreases and the glider gains
..... energy.

(2)

(ii) **Figure 2** shows how the extension of the rubber band varies with the force applied to the rubber band.

Figure 2



What can you conclude, from **Figure 2**, would happen to the extension of the rubber band if the force applied to the rubber band was increased to 6 N?

The rubber band does **not** break.

.....

.....

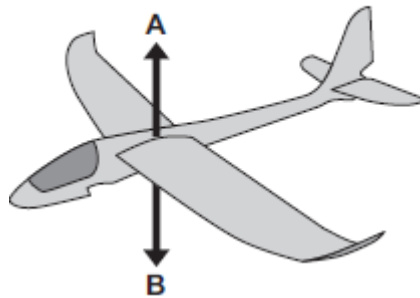
.....

.....

(2)

(c) **Figure 3** shows the vertical forces, **A** and **B**, acting on the glider when it is flying.

Figure 3



- (i) What name is given to the force labelled **B**?

Draw a ring around the correct answer.

drag

friction

weight

(1)

- (ii) Which **one** of the following describes the downward speed of the glider when force **B** is greater than force **A**?

Tick (✓) **one** box.

Downward speed increases

Downward speed is constant

Downward speed decreases

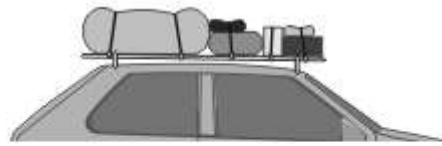
(1)
(Total 8 marks)

- Q2.** (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?

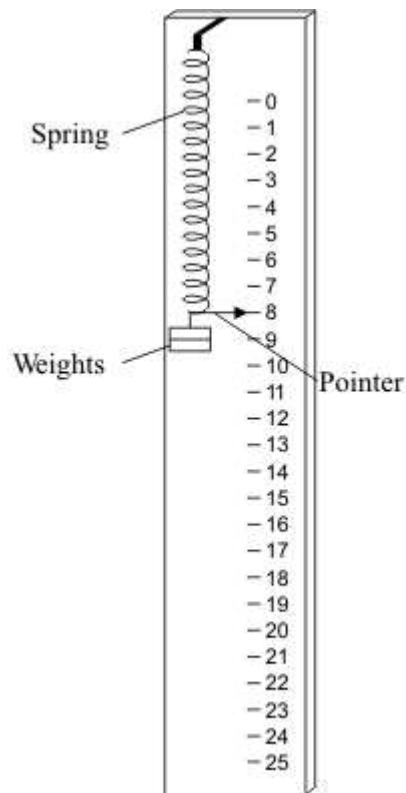
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Explain the reason for your choice or choices.

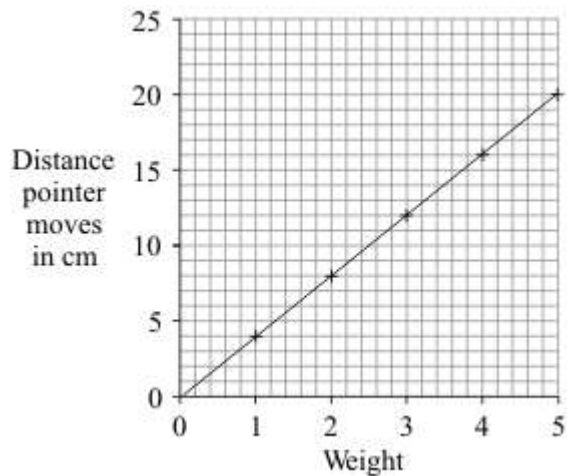
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(3)

- (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)

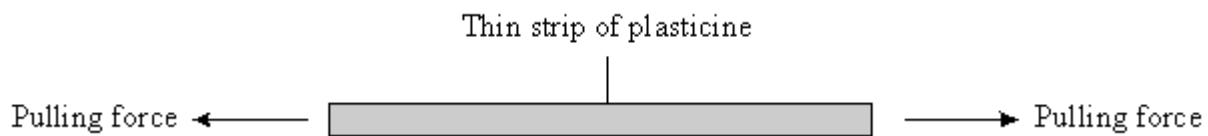
(iv) The student ties a stone to the spring. The spring stretches 10 cm.

What is the weight of the stone?

..... (1)
(Total 7 marks)

Q3. (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)



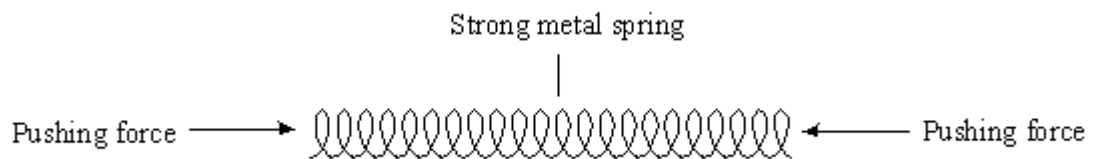
When the forces are increased

.....
.....

When the forces are removed

.....
.....

(ii)



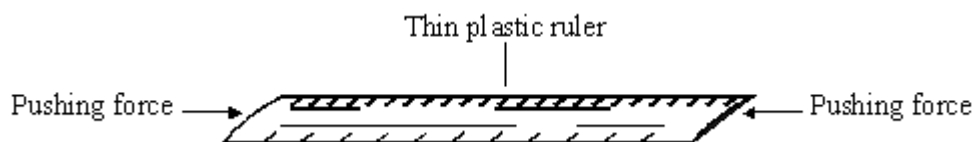
When the forces are increased

.....
.....

When the forces are removed

.....
.....

(iii)



When the forces are increased

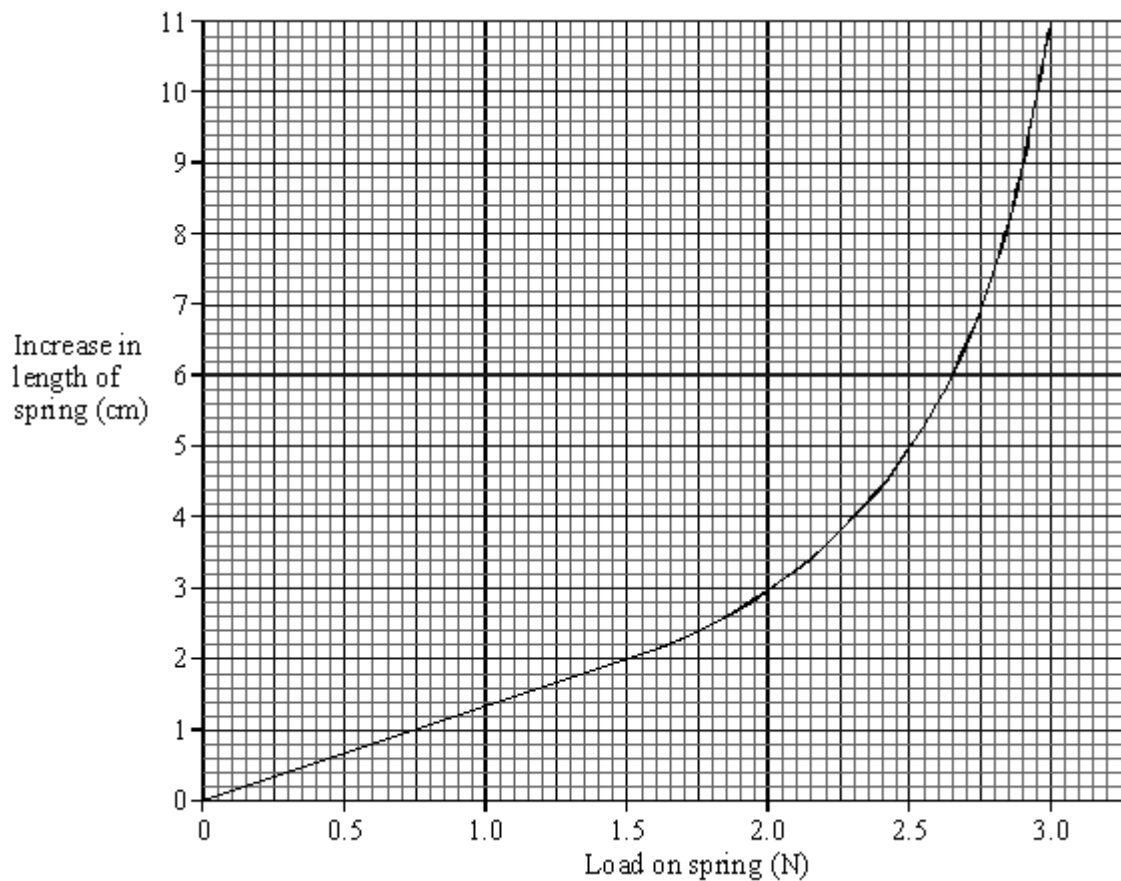
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When the forces are removed

.....
.....

(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.

.....

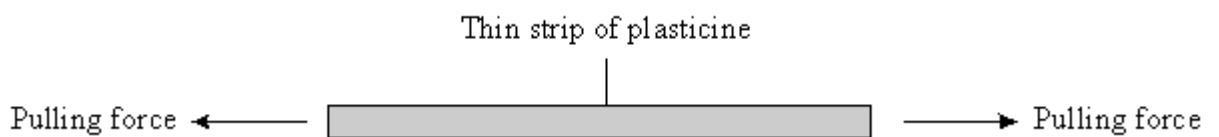
(iii) The **length** of the spring when the load was 2.3 N.

.....

(3)
(Total 9 marks)

Q4. 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)



When the forces are increased

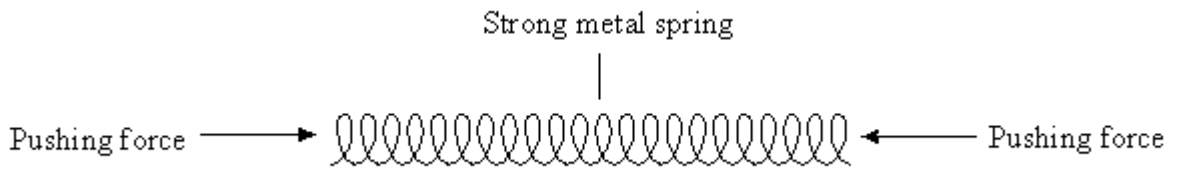
.....

When the forces are removed

.....

(2)

(b)



When the forces are increased

.....

When the forces are removed

.....

(2)
(Total 4 marks)