

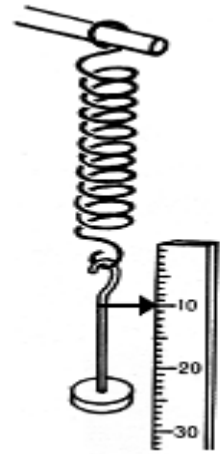
Force, work,
power- exam
questions

2012 - Higher

- Define the Watt, the unit of power.
- Name a force that can act without contact.
- Give one important effect of the force that you have named.

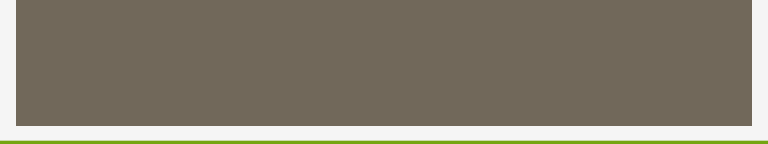
2012 - Ordinary

An investigation was carried out on the **relationship between the extension of a spring and the force applied to it.**



Use the data in the table to draw a graph of **Extension** (y-axis) against **Force** (x-axis) using the grid above.

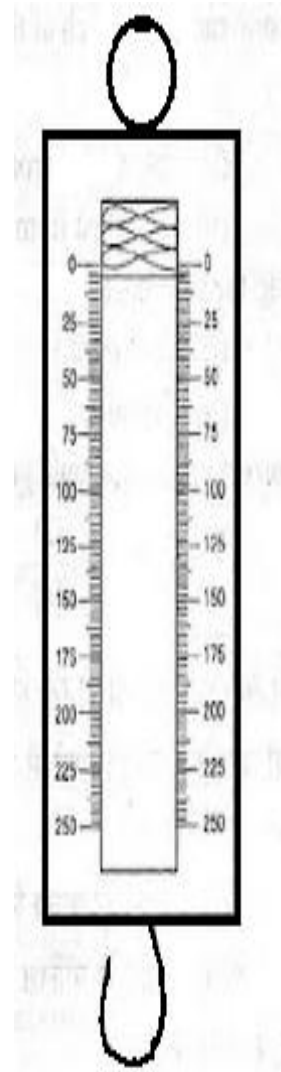
Force n	0	2	4	6	8
Extension cm	0	4	8	12	16



on

Use the graph to estimate what force results in a 14 cm extension of the spring.

Name the instrument shown on the right that can be used to measure force.



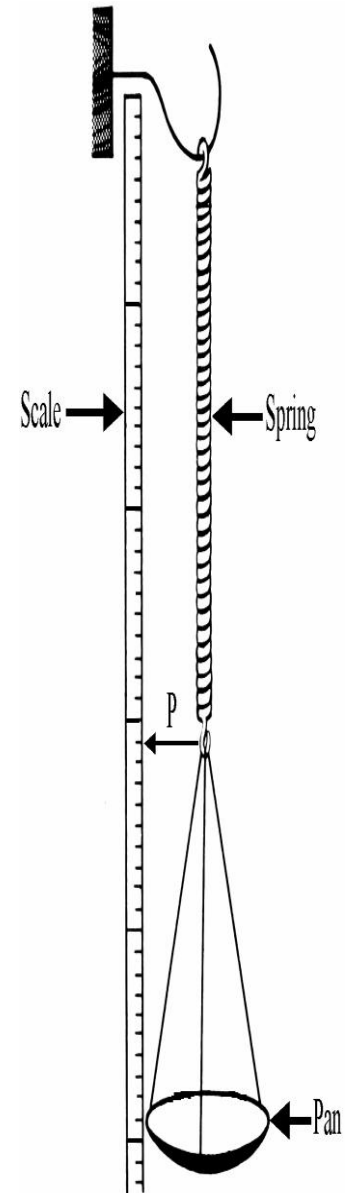
2011 - Higher

- Explain the term *friction*.
- How can friction be reduced?

2010 - Ordinary

A pupil used the apparatus shown in the diagram to investigate the relationship between the force applied and the extension produced in the spring by that force.

Pointer, P, was used to read the scale. Weights were added to the pan to apply forces to the spring.

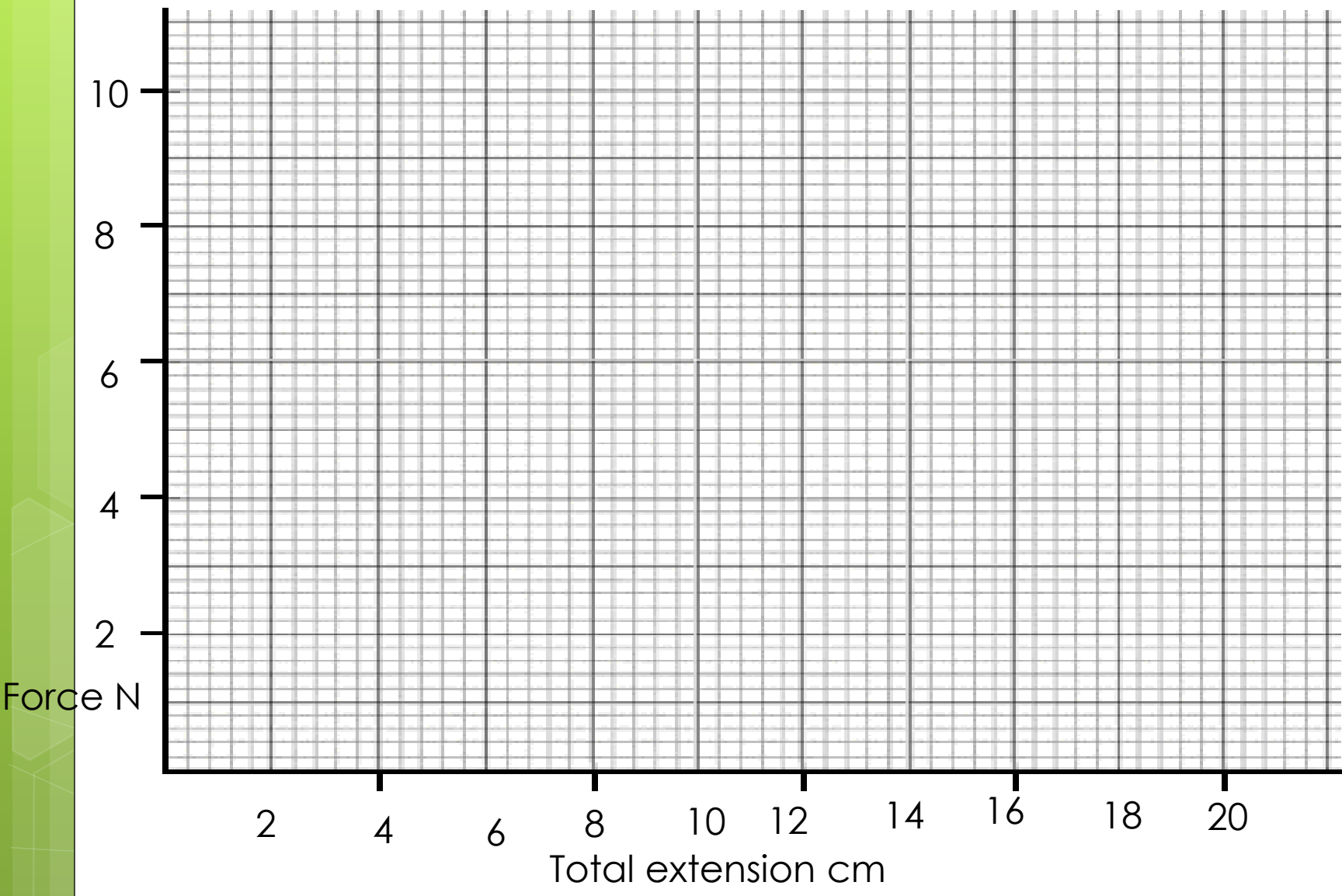
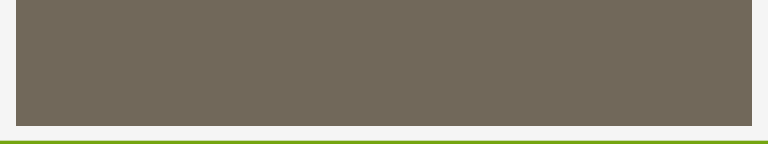


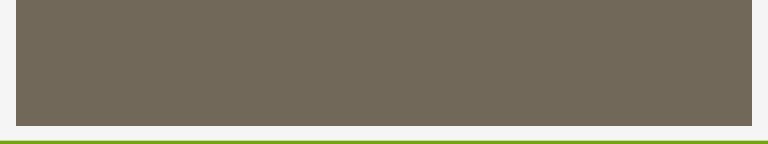
The data recorded is in the table.

Calculate the **total extension** for each force and enter them in the table.

Force n	Scale reading cm	Total extension cm
0	31.0	0
2	35.0	
4	39.0	
6	43.0	
8	47.0	
10	51.0	

Draw a **graph** of force against total extension in the grid below.





What **conclusion** can be drawn from the graph regarding the relationship between the force applied to the spring and the extension produced by it?

Use the graph to **determine the weight** of a stone that produced an extension of 14 cm in the spring.

2009 - Ordinary

Friction can be useful when driving a car.

Name one way in which **friction is useful** when driving a car.

Name one possible way to **reduce friction**.

2009 – Ordinary

A student investigated the **relationship between the extension of a spring and the force applied to it**. The equipment shown in the diagram was used.

The data collected is shown in the table.

The student then drew the graph shown below.



Force n	0	2	4	6	8
Extension cm	0	4	8	12	16

- Need to scan in graph

- **Name** an instrument used to measure the force in this investigation.
- **Describe** how the student could have measured the extension of the spring.
- What **conclusion** would you draw from this investigation?

2008 - Higher

Give **two effects** that gravity has on your everyday life.

2007 - Higher

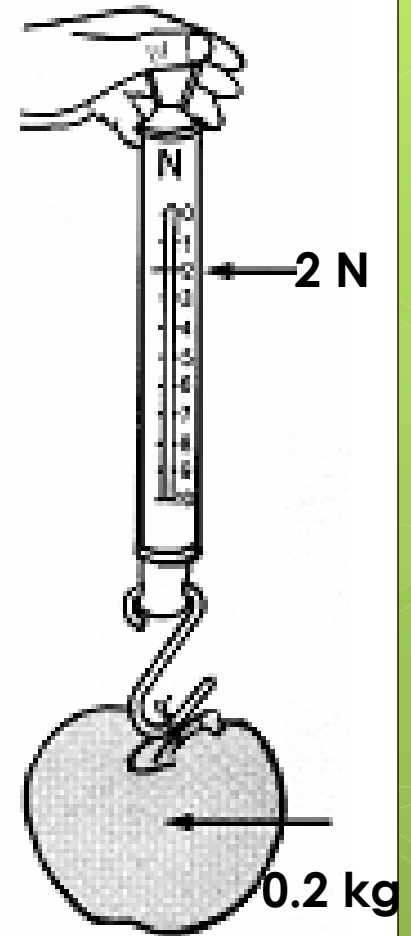
The driver of a moving car applied the brakes. The brakes produced an average stopping force of 8 kN (8000 N) and the car stopped having travelled 20 m after the brakes were applied.

Calculate the **work done** in stopping the car.

2006 - Higher

A pupil measured the **weight** of an apple of **mass** 0.2 kg using a spring balance and got a reading of 2 N.

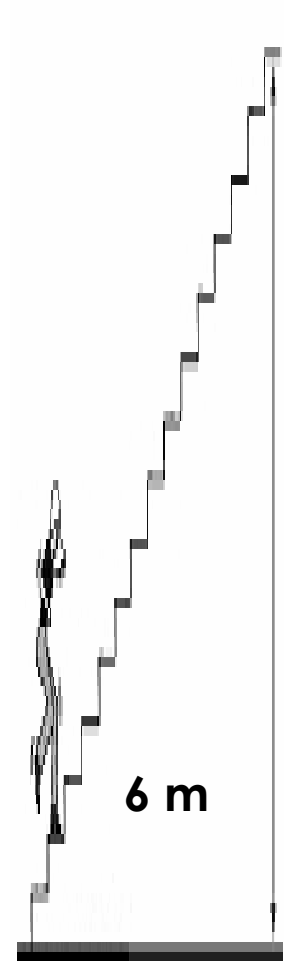
Distinguish between **weight** and **mass**.



2006 - Higher

A girl of mass 60 kg (weight 600 N) climbed a 6 m high stairs in 15 seconds.

Calculate the **work** she did and the average **power** she developed while climbing the stairs.





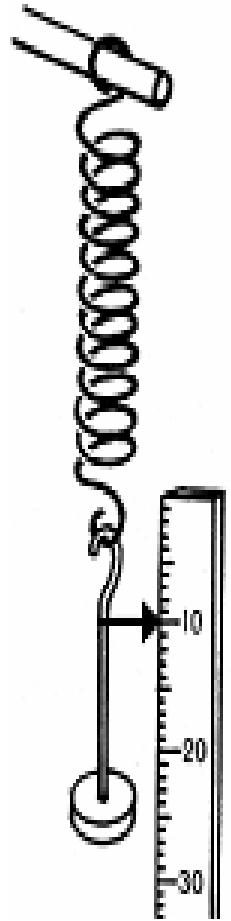
2006 - Higher

State Hooke's law.

2006 - Higher

A student was given a box of identical springs and asked to analyse them so that they could be used as newton meters.

The student performed an experiment, using the apparatus shown in the diagram, on one of the springs.



In the experiment the student measured the increase in length of the spring caused by a number of weights. The spring was tested to destruction (that is weights were added until the spring was damaged).

The data from the experiment is given in the table.

Weight n	0.0	0.4	0.8	1.2	1.6	2.0	2.4
Extension cm	0.0	2.0	4.0	6.0	8.0	8.5	8.6

Plot a **graph of extension** (increase in length) **against weight** (x-axis).

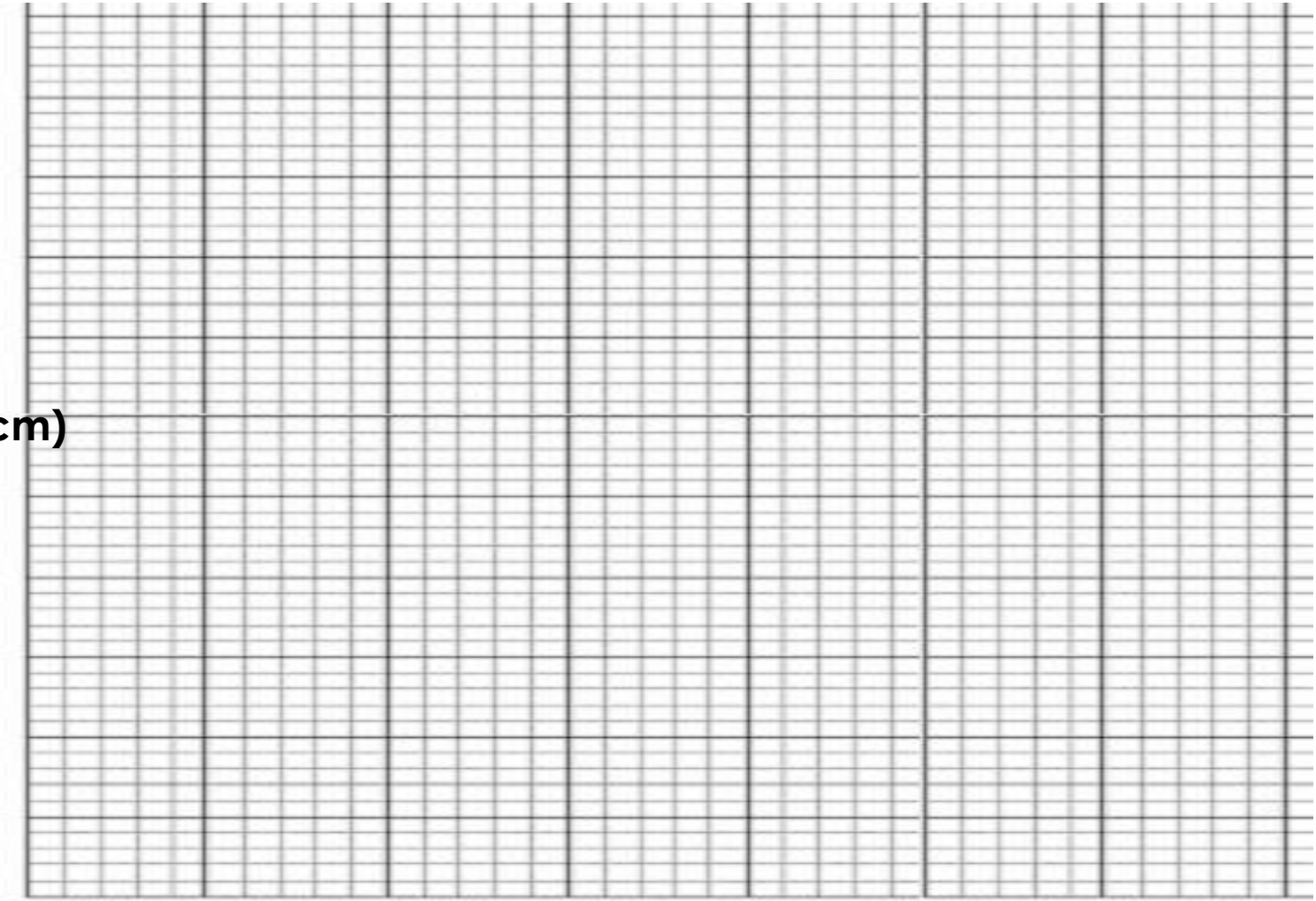
Use the graph to find the **weight** that would produce an **extension** of 5 cm in the spring.

Study your graph carefully. The spring obeys Hooke's law for the earlier extensions and then when the spring becomes damaged it does not appear to do so.

Estimate, from your graph, **the weight after the addition of which the law seems no longer to apply.**



Extension (cm)



Weight (N)

2006 - Ordinary

Friction is an example of a **force**.

Give **another example** of a force.

Give one way to **reduce** friction.

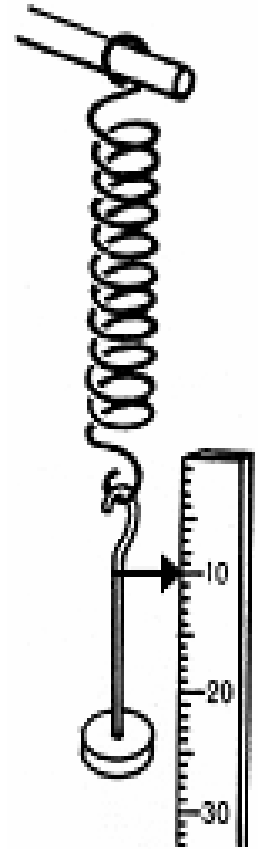
After what scientist is the **unit** of force named?

2006 - Ordinary

A student carried out an investigation to examine the **relationship** between the **extension** (increase in length) **of a spring** and the **force applied** to it.

The diagram shows the apparatus used.

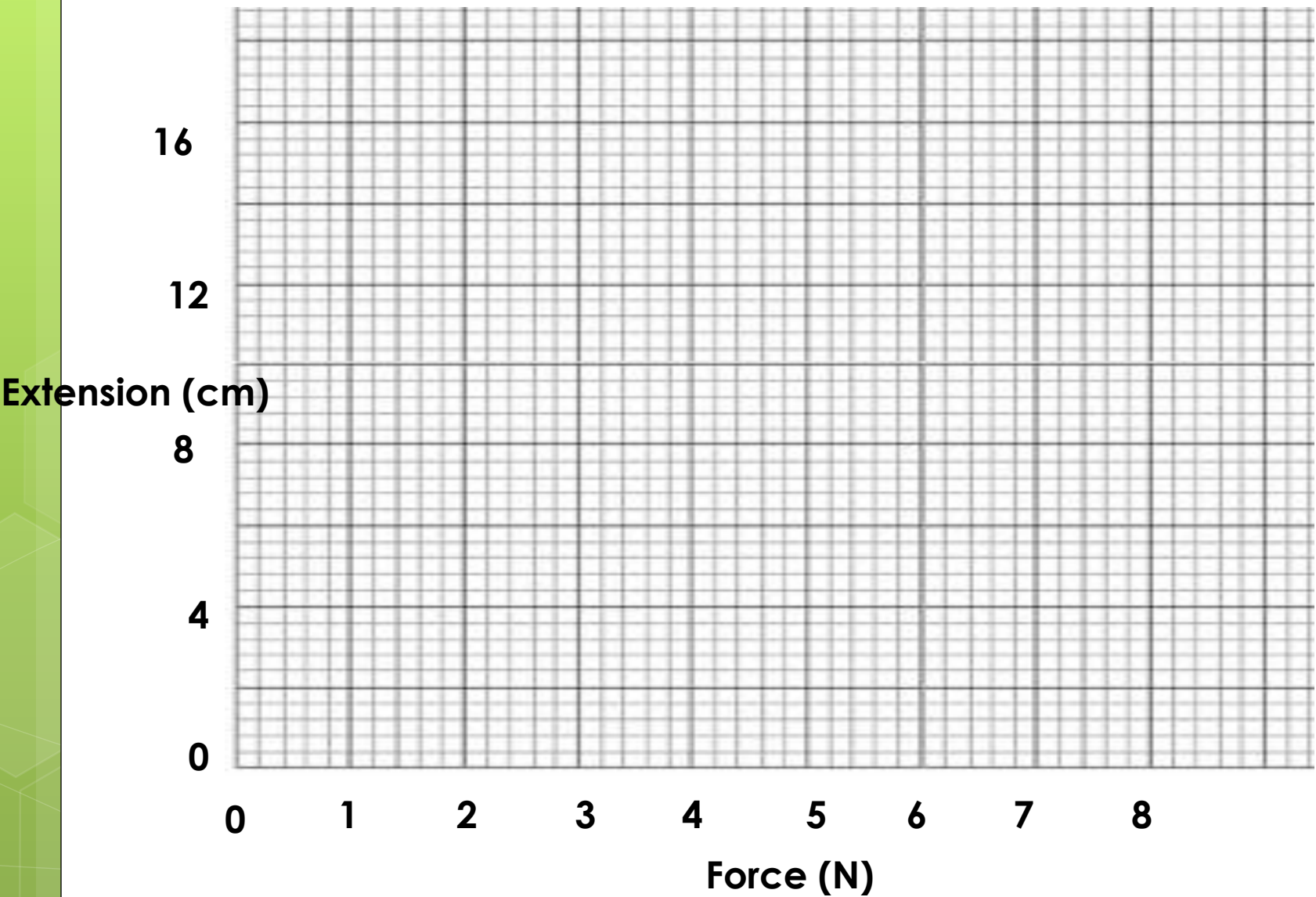
The table shows the data collected by the student.



Force N	0	2	4	6	8
Extensions cm	0	4	8	12	16

Describe how the student could have taken any one of these measurements.

Draw a graph of the extension (y-axis) against the force in the grid provided on the right.





What force results in a **6 cm** extension of the spring?