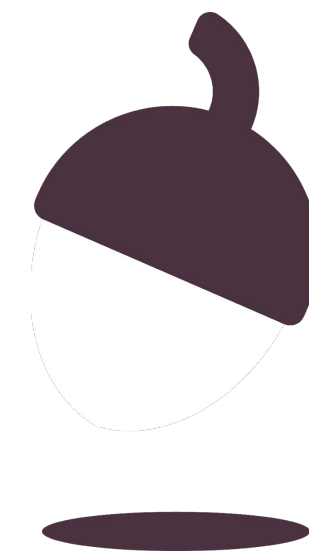


Combined Science - Physics - Key Stage 4 - Forces

Forces and Elasticity 2

Mr Saville



OAK
NATIONAL
ACADEMY

Warm up - Independent task

1. In our investigation into springs and stretching, what was independent variable? (the thing we change)
2. What was the dependent variable? (the thing we measure)
3. What sort of relationship did we find?
4. What does this mean in terms of the spring's behaviour every time the force is increased?
5. What is the symbol for directly proportional?



You do - Independent Practice

1. A spring has a spring constant of 5 N/m and extends by 0.3 metres . Calculate the force needed to make this happen. ($F = k \times e$)
2. A spring has a spring constant of 7.5 N/m and extends by 0.25 metres . Calculate the force needed to make this happen. Give your answer to 2 significant figures.
3. A spring has a spring constant of 13 N/m and compresses by 70 centimetres . Calculate the force needed to make this happen.
4. A spring has a force of 2.1 N applied to it and a spring constant of 0.3 N /cm . Calculate the extension.
5. A spring has a force of 4.6 N applied to it and a spring constant of 4.3 N / m . Calculate the extension. Give your answer to 3 significant figures.

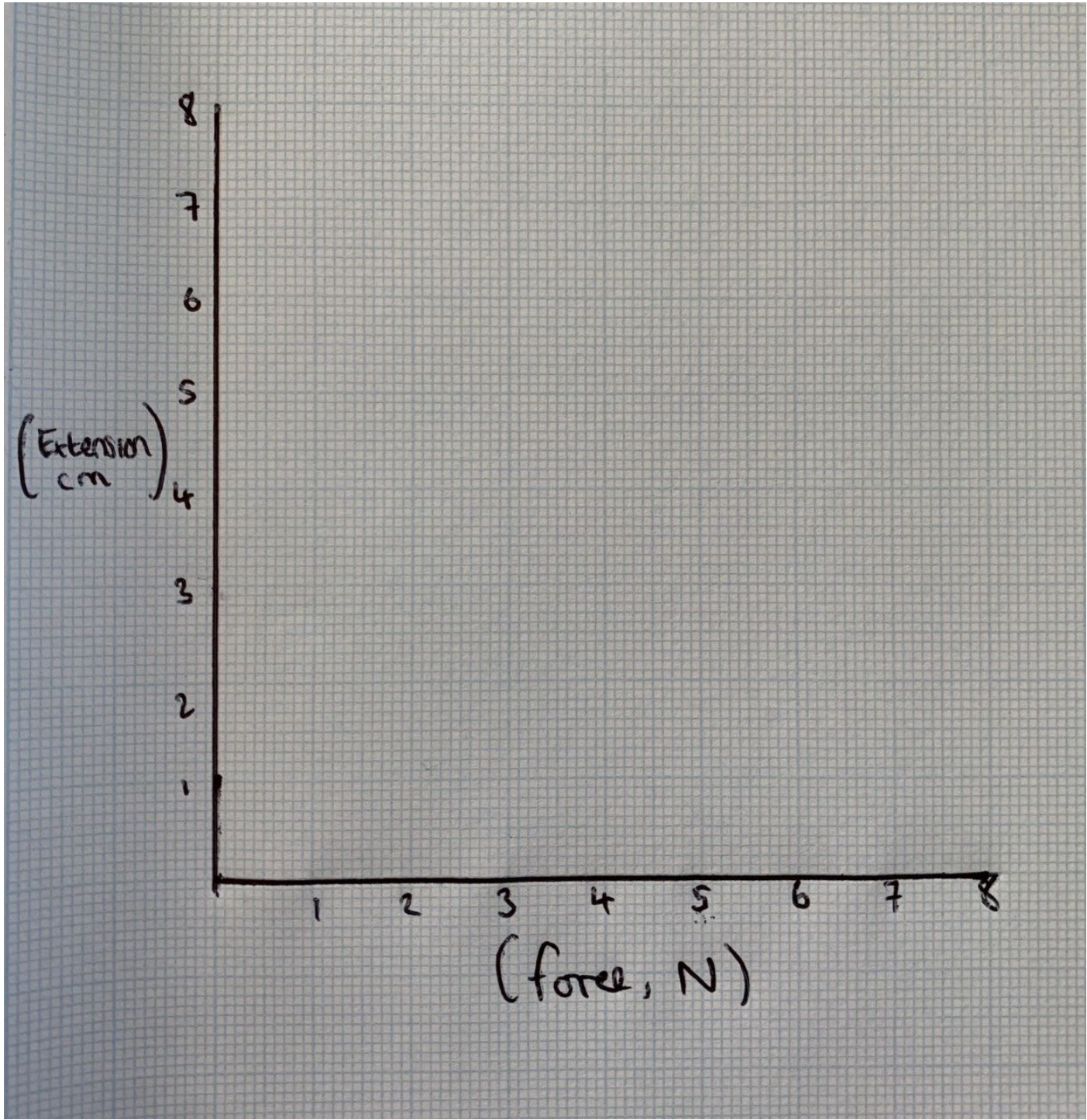


Force (N)	Extension (cm)			
	Test 1	Test 2	Test 3	Mean
1	0.5	0.6	0.4	$(0.5+0.6+0.4) / 3 = 0.5$
2	1.0	1.9	1.0	$(1.0+1.0) / 2 = 1.0$
3	1.6	1.4	1.5	
4	2.1	5.1	1.9	
5	2.4	2.5	2.5	
6	3.0	3.1	4.7	
7	3.5	3.4	3.6	
8	5.6	5.5	5.4	



Independent Practice

Use the results from our secondary data to plot a graph.



Force (N)	Mean Extension (cm)
1	0.5
2	1.0
3	1.5
4	2.0
5	2.5
6	3.0
7	3.5
8	5.5



Calculating EPE - You do

1. A spring has a spring constant of 9.4 N/m and extends by 0.1 metres. Calculate the elastic potential energy stored in the spring.
2. A spring has a spring constant of 15.5 N/m and extends by 0.5 metres. Calculate the elastic potential energy stored in the spring.
3. A 0.2m spring stretches to 0.6 m when a force is applied. The spring has a spring constant of 2 N/m . Calculate the elastic potential energy stored in the spring.

Values

Equation

Substitute

Rearrange

Answer

Units

