

Using Springs

- **WALT: Describe the relationship between a mass and the stretch of a spring holding it**
- I must be able to describe the relationship between a mass and the stretch of a spring
- I should be able to correctly record my results in a table and draw a graph
- I could describe what happens when more than one spring is placed in parallel or series

Last lesson we learnt that.....

- A force is
- That mass and weight are different. How are they different? Explain in pairs.
- We learnt that newtonmeters measure force. Newtonmeters have springs in.
- Today, we will look at how those springs work.....

Let's read p. 374 together: 'Stretching the Limits'

1. The amount of stretch in a spring is proportional to the mass added
2. When the mass is taken off, the spring will return to its original position.

Now, explain what is meant by elastic limit and what happens if the mass is so heavy that it pushes the spring beyond its elastic limit.

Prep

- Complete question 4 of page 376-377. You will need graph paper and the handout sheet to save you drawing out the table.

You will have a range of springs and weights

- Measure the length of spring with:
 - No weight
 - 100g (1N)
 - 200g
 - 300g
 - 400g
 - 500g
- Record your results in a table. GIVE THE TABLE 4 COLUMNS
- You must convert your mass in grams to the weight in newtons (= mass in kg X 10)

Your table might look like this

**You must at least
do points 1 to 3
below**

Mass in grams	Weight of mass in newtons	Length of spring (cm)	Extension of spring (cm)
0	0		
100	1		
200			
300			
400			
500			

- 1) Work out the extension of the spring (the length that the spring has stretched minus its original length with no weight on it)
- 2) Answer this question: what are the input and output variables of our experiment?
- 3) Try this again with two springs side by side holding the same weight. Try again with 2 springs hung one below the other holding a weight at the bottom. Note down what you observed about the extension of the spring.
- 4) Draw a graph of your results like the one at the bottom of p. 374 of Extension against Added Weight

Using more than one spring

- Springs side-by-side will only extend by half the length they would alone
- Springs that are one below the other will extend by double the length they would alone

Plenary

- What did you expect your results to show?
- Did they confirm what you thought?