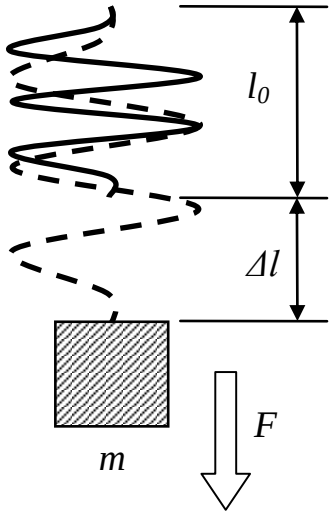
Spring - verze A

1 a) ***Reading***

A **spring** is an elastic object used to store mechanical energy. When a spring is compressed or stretched, the force causes a change in length. Find a relation between the change in length and the force.



1 b) ***Process:*** *(Fill in the sentences. Use a presentation.)*

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. Find a rate between the force and the change in length.
8. Specify a relation between these two quantities.

Measuring instrument:

Accuracy of measuring: (1/2 of the smallest scale division)

1 c) Results of measuring:

Number of weights	Weight mass	Force	Change in length	Force/change
0	g	N	m	
1	g	N	m	
2	g	N	m	
3	g	N	m	
4	g	N	m	

What is the relation between the pulling force and the spring length change?

Write in a mathematical form (if you can):

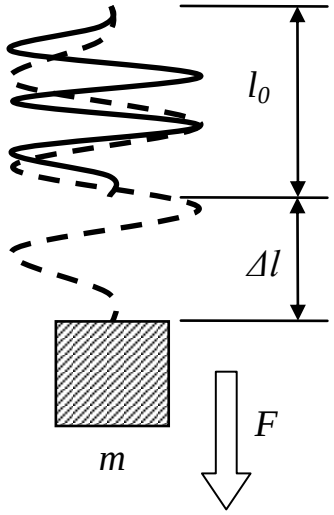
Your opinion about this laboratory work:

Made by: Date:

Spring - verze B

1 a) Reading:

A **spring** is an elastic object used to store mechanical energy. When a spring is compressed or stretched, the force causes a change in length. Find a relation between the change in length and the force.



1 b) ***Process:***

1. Fix the spring on a stand.
2. Hang one weight on the spring.
3. Measure a length change.
4. Continue with 2, 3, 4... weights.
5. Write it down into the table.
6. Draw a graph. Horizontal axis: force, vertical axis: change in length.
7. Find a rate between the force and the change in length.
8. Specify a relation between these two quantities.

Measuring instrument:

Accuracy of measuring: (1/2 of the smallest scale division)

1 c) Results of measuring:

Number of weights	Weight mass	Force	Change in length	Force/change
0	g	N	m	
1	g	N	m	
2	g	N	m	
3	g	N	m	
4	g	N	m	

What is the relation between the pulling force and the spring length change?

Write in a mathematical form (if you can):

Your opinion about this laboratory work:

Made by: Date:

WORKSHEET

Hooke´s Law:
F = k . Δl

Apply Hooke´s Law

2 a) Fill in the table:

k	***Δl***	***F***
50	0.08 m	4.0 N
50	0.06 m	N
400	0.02 m	N
400	m	0.08 N
	0.01 m	1.5 N

2 b) Explain the symbols. Fill in the gaps:

"*F*" is _____, "*k*" is the **spring constant** and "*Δl*" is _____.

2 c) Write the opposites:

stretch _____

pull _____

horizontal _____

Translate:

rate _____

direct proportion _____

axis _____

2 d) Complete the sentences below. Use "direct" or "directly", "indirect" or "indirectly".

The force is in _____ proportion to the measured change in length.

The force is _____ proportional to the measured change in length.

A change in length is _____ proportional to the spring constant.

A change in length is in _____ proportion to the spring constant.

WORKSHEET

Hooke´s Law:
$F = k \cdot \Delta l$

Apply Hooke´s Law

2 a) Fill in the table:

k	*Δl*	*F*
50	0.08 m	4.0 N
50	0.06 m	N
400	0.02 m	N
400	m	0.08 N
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2 d) Complete the sentences below. Use "direct" or "directly", "indirect" or "indirectly".

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