Lab Protocols of your Experiments

Please insert your seven digit personal code below:

Your personal code:

In this booklet you will find some hypotheses about electromagnets and electric wires of other kids. Please plan und run experiments to test these hypotheses.

Keep in mind to write down what you found out in your experiments **and not** what you already know about the hypotheses.

But before you start, please have a quick look on the back of the booklet for guidelines how to fill out your lab protocols!

Electromagnet 1

	Time				
Start			:		
End			:		

Tina wants to manipulate the force of an electromagnet.

Her first hypothesis is:

Tina believes that the force of an electromagnet is stronger if the current through the magnet is bigger.

Please, test with an experiment if Tina's belief is correct. You can (but don't have to!) use all items from the "Electromagnet" box in your experiment!

Notice that in an experiment you should compare at least two cases.

Observation:

I found out that …

☐	Tina's hypothesis is incorrect.
☐	Tina's hypothesis is correct.

How sure are you that the outcome of your experiment is correct?

o	o	o	o
very unsure	**unsure**	**sure**	**very sure**

Why can you be sure that your conclusion about Tina's hypothesis is valid?

After you are finished with your experiment please put all items back into the box and write down the ending time.

Space for additional notes:

Electromagnet 2

	Time				
Start			:		
End			:		

Tina wants to manipulate the force of an electromagnet.

Her second hypothesis is:

Tina's second hypothesis is that the force of an electro magnet depends on the core material.

Please, test with an experiment if Tina's belief is correct. You can (but don't have to!) use all items from the "Electromagnet" box in your experiment!

Notice that in an experiment you should compare at least two cases.

Observation:

I found out that …

☐	Tina's hypothesis is incorrect.
☐	Tina's hypothesis is correct.

How sure are you that the outcome of your experiment is correct?

o	**o**	**o**	**o**
very unsure	**unsure**	**sure**	**very sure**

Why can you be sure that your conclusion about Tina's hypothesis is valid?

After you are finished with your experiment please put all items back into the box and write down the ending time.

Space for additional notes:

Electric wires 1

	Time				
Start			:		
End			:		

Peter wants to find out if the material of a wire influences his electrical properties.

His hypothesis is:

He believes that light bulbs connected with wires made of constantan will shin blither than light bulbs connected with cooper wires.

Please, test with an experiment if Tina's belief is correct. You can (but don't have to!) use all items from the "Wires" box in your experiment!

Notice that in an experiment you should compare at least two cases.

Observation:

I found out that …

☐	Peter's hypothesis is incorrect.
☐	Peter's hypothesis is correct.

How sure are you that the outcome of your experiment is correct?

o	o	o	o
very unsure	**unsure**	**sure**	**very sure**

Why can you be sure that your conclusion about Tina's hypothesis is valid?

After you are finished with your experiment please put all items back into the box and write down the ending time.

Space for additional notes:

Electric wires 2

	Time				
Start			:		
End			:		

Selma wants to know if the sizes of batteries influence the brightness of light bulbs.

Her hypothesis is:

She beliefs that light bulbs will shine brighter **if they are connected to bigger batteries.**

Please, test with an experiment if Tina's belief is correct. You can (but don't have to!) use all items from the "Wires" box in your experiment!

Notice that in an experiment you should compare at least two cases.

Observation:

I found out that …

☐	Selma's hypothesis is incorrect.
☐	Selma's hypothesis is correct.

How sure are you that the outcome of your experiment is correct?

o	o	o	o
very unsure	**unsure**	**sure**	**very sure**

Why can you be sure that your conclusion about Tina's hypothesis is valid?

After you are finished with your experiment please put all items back into the box and write down the ending time.

Space for additional notes:

Lab protocol instructions

a) Please write down the actual time into the table before you start working on an experiment.

	Time				
Start	1	2	:	4	3
End			:		

b) To document what your experiment showed write down what you observed in your experiment.

Observation

c) Additionally, document your experiment with a photograph. To do this raise your hand and ask the assistant to take a picture of your experiment. Remember, to first take a picture before you run your experiment.

d) After you have run the experiment, decide based on the outcome of your experiment if the hypothesis of the student is correct or incorrect by marking your decision in the check box.

Exempel:

Martin beliefs that you are currently reading this text.		
	☐	Martin's hypothesis is incorrect.
	☒	Martin's hypothesis is correct.

If accidently you marked a wrong check box, just fill out the wrong cheek box completely and mark the correct box.

Martin beliefs that you are currently reading this text.		
	■	Martin's hypothesis is incorrect.
	☒	Martin's hypothesis is correct.

e) Write down some arguments of why you think your experimental results are valid.

g) At the end write down the time you finished your experiment.

	time				
Start	1	2	:	4	3
End	1	2	:	5	5

Notice that in an experiment you should compare at least two cases. If you need additional space to take notes or write down your argument you can use the back page of the lab protocol.

Good luck and thank you very much for your cooperation!