

The **ScienceMath**-project: **buoyancy and concept of variable**
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Teaching Material

Worksheet (see: next pages)

worksheet

buoyancy

Imagine you are in a swimming pool. If you are going to jump up in water, will you get higher than in the air?



Discuss in your group.

Unfortunately, we cannot get a swimming pool into the classroom, but we want to examine this question further.

On your table you see

- Different masses
- Dynamometer
- A beaker filled with water

Have a closer look at these materials before you turn to the next page

To the experiment:

1. Take one mass and measure the force that the mass acts on the dynamometer. Then put the same mass into water and measure the force.

Be careful to keep the dynamometer out of the water !!

What happens? Is there a relationship to your experiences in a swimming pool?

2. Take a different mass, measure the forces in the air and in water? What do you notice?

Now we examine this phenomenon with concrete measuring values.

3. Measure the forces in the air and in water for at least 5 different values in the same way you have been doing before.

Be careful to keep the dynamometer out of the water !!

4. Look at the pairs of measuring values that are upside down. Use the back of this page and “play” with these pairs.
Do you find a relationship for all these pairs? Which?
Describe in complete sentences.

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In the dead sea an astonishing phenomenon appears. In that sea you can't get drowned. You can even read a newspaper in the sea.

What could be different compared to other seas?



8. How would your formula you have found in exercise no.5 change?

9. Find a formula that is valid for any fluid?
Which part of your formula changes?
Which values are possible for all your variables in that formula?

10. A friend in your class has been sick and has never seen such a formula.
How would you explain that formula? Write your explanation down.

11. Write a protocol, which contains all important facts of this experiment.

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Protocol

Write down all important results of the experiment. Highlight the most important results. It will be easier to present your experiment, if you do so.

What have you learned?