

Teaching Material



Worksheet (see next pages)

Worksheet

thermal expansion

In summer time, you should not fill a car gas tank up to the top? Why is that reasonable?

Discuss in your group



On the table you see:

- A pillar containing a liquid
- A water boiler
- A beaker
- A temperature measuring device

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

To the experiment:

1. Measure the temperature of the water in the beaker. Mark the height of the pillar with a pencil. This height is your zero position.
2. Boil some water and pour a small amount of water in the beaker. **Caution: scalding!** Put the pillar in water. What do you notice? Is there a relationship to filling up a gas tank in summer?

Now we examine this phenomenon with concrete measuring values.

3. Measure the height of the pillar from your zero position at 6 different temperatures at least. You get different temperatures by adding small amounts of hot water in the beaker. **Caution: scalding!** Write down your position and the difference of temperature to your initial temperature in the table below

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.

The **ScienceMath** project: **Thermal Expansion and Concept of Variable**
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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?