

## Learning activity: the thermometer

Instrument to measure

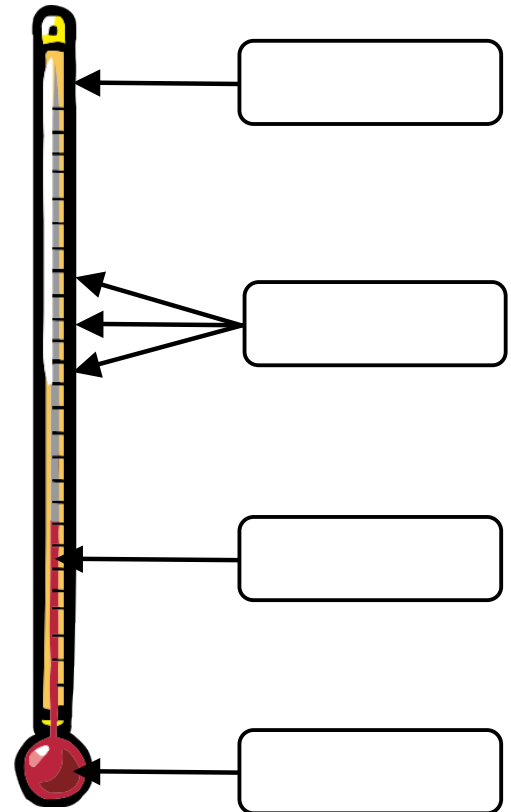
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A – The glass tube

B – The reservoir

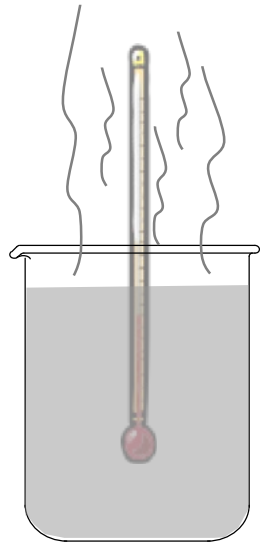
C – The liquid (column)

D – The graduations

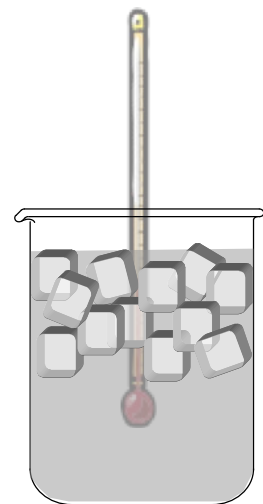


What does the column of liquid do?

Hot water



Water +  
Ice cubes

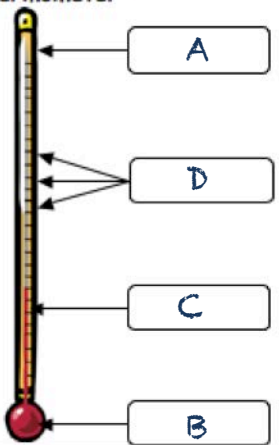


## Suggestions for animations around the thermometer

**Learning activity: the thermometer**

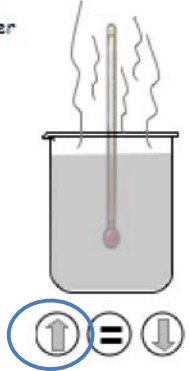
Instrument to measure  
temperature

A – The glass tube  
B – The reservoir  
C – The liquid (column)  
D – The graduations

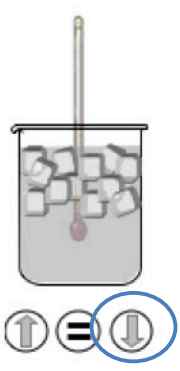


What does the column of liquid do?

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Water + Ice cubes



The thermometer – Learning activity – cycle 1  
Spring 2013

Centre de développement pédagogique  
pour la formation générale  
en science et technologie

### 1. The object and its manipulation

The thermometer is made out of glass. It is breakable and it is normal for one to break from time to time. As a security measure, it is recommended the students wear safety glasses when working with a thermometer.



The thermometer is cylindrical and therefore rolls. To limit this effect, some thermometers are equipped with triangular rubber cursors. If yours don't feature these cursors, we recommend that you wrap a rubber elastic several times around the tube.

The reservoir is an important part of the thermometer to measure the temperature. Avoid touching it in order not to affect the results.

### 2. Its operation

The thermometer works using a property of alcohol (the red or blue liquid). When the thermometer is placed in or on a hotter substance, the

alcohol dilates, takes more space and therefore rises in the column. If the thermometer is placed in or on a colder substance, the opposite effect occurs. The alcohol contracts, takes less space and gets lower in the column.

It is possible for the students to experience this demonstration. It would be an excellent opportunity to ask them to suggest a hypothesis for each situation.

For optimum effect, be sure to place the reservoir of the thermometer directly in or on the substance for which you want to measure the temperature.

### 3. Units of measure

In first cycle, the primary objective is to work on developing a sense of measurement. The thermometer should first be used in situations where student will notice temperature differences and illustrate them using your tool of choice. Within the framework of *Nice, but hot!*, for example, you need only use strips of paper or adhesive tape that the student can then glue in his booklet in the results section (see *Suggestions for materials* in this LES for details on this technique).

#### 4. Measuring temperature on an everyday basis

During the experiment in the *Nice, but Hot!* LES, there was a marked difference between students from rural and urban backgrounds in regards to the use of the thermometer. Many students in first cycle from rural backgrounds are already aware of various types of thermometers because they regularly consult the ones at home. In class, these students were already able to correctly read the measurement on a thermometer.

As a result of this observation, we strongly recommend the daily use of a thermometer to find the temperature inside, in class and outside.