

I. Hot! Cold! Warm!

Key Question: Can you believe your senses?



Student name:

Class:

.....



<http://www.cma-science.nl>

Activity 1 – Feeling temperature

- For this exploration you need three pans. One with cold water, one with lukewarm water, and one with water that is as hot as your hand can bear.
- Put your left hand in the cold water and the right hand in the hot water. Wait for two minutes.
- Put both hands in the lukewarm water.

1. Does it feel the same to both hands? Yes No

2. Describe the feeling of the lukewarm water as sensed by each hand.

The right hand:

The left hand:

3. How would you measure the temperature of water?

Activity 2 – Measuring water temperature

You are going to measure temperature with the temperature sensor. This is a kind of thermometer. The temperature sensor should be connected to the €Sense interface and €Sense should be connected to the computer.

- When the temperature sensor is properly connected to €Sense then the measured temperature value is shown on the sensor icon in the Coach program and on the digital meter (as shown in the right picture) on the computer screen.

Temperature
24.5 °C

4. In which unit the temperature is measured?

- Place the temperature sensor in a cup with lukewarm water.
Warning! Remember to keep water far from the computer.
- Measure the temperature. Hold to the sensor to ensure that it does not tip over the cup. Wait a little until the measurement stops changing. Write down the measured temperature in the table below.
- In similar way measure the temperatures of the hot and cold water. Write your results in the table.

I MEASURE IN	TEMPERATURE °C
lukewarm water	
cold water	
hot water	

Activity 3 - Measuring temperature of different objects

In this investigation you are going to measure the temperature of air and a few other things.

- First try to predict the temperature of the air in the room, called room temperature. I think room temperature is _____ °C.
- Now measure the air temperature. Do not touch the metal part of the sensor. You will need to wait a little until the measurement stops changing. Measured room temperature is _____ °C.
- Predict the temperature of the skin of your arm. I think the temperature of the skin of my arm is _____ °C.
- Measure your arm temperature. Hold the temperature sensor against your skin with your finger. Again you will need to wait a little until the measurements stops changing. Measured temperature of the skin of my arm is _____ °C.
- Compare the temperature of your skin with the temperature of the skin of your classmate. How big is the difference? The temperature difference is _____ °C.
- Measure the temperatures of a few other things – whatever you think is interesting. First always “feel” an object temperature and predict its temperature. Then measure its temperature. Write your predictions and measured temperatures in the table.

OBJECT	I PREDICT ITS TEMPERATURE °C	I MEASURE ITS TEMPERATURE °C

5. Which object feels the coldest?

Is its temperature the lowest temperature you measured?

6. Which object feels the warmest?

Is its temperature the highest temperature you measured?

7. Are there objects, which have almost the same temperature?

If yes, write down which objects and what temperatures they have.

Questions

- A.** Your sense of temperature and a temperature sensor seem to measure differently. Is one more correct than the other? Explain.

- B.** Your feeling of temperature can change when the measurement temperature does not change. For example in the Activity 1, your hands feel different temperatures in the lukewarm water. How can you explain this?

- C.** If you were doing a science experiment, which would be better for measuring temperature?

Your hand Thermometer Temperature sensor

Why?

- D.** Each time you measure with the temperature sensor the sensor needs a little time to adjust its temperature, how can you see that?