9.2 Investigation: Measuring Temperature

Aim
To test various thermometers for accuracy

1. Hand Thermometer

Make 3 Bowls of water
1. Hot (< 40°C)   2. Warm (~20°C) 3. Cold (~5°C)

Put them in that order beside each other. Now put your right hand in the Cold and your left hand in the hot. Hold them there for a few seconds and together place them in the warm water.
How does it feel?
Is your hand a good gauge for temperature?
Why?

2. Finding the Hotspot.

Use a digital or liquid Thermometer to find the hottest spot in your school.
Record just the highest temperature and the location.
Did you predict this. Why was it so hot?

3. Comparing Body temperature.

We can only measure skin temperatures with school thermometers.
Test your skin temp. on the scalp, arm , hand and leg.
What did you notice?

4. Cooling temperature of water and cooking oil

Use two small beakers and a temperature probe.
One with 100ml water. One with 100ml of cooking oil.

1. Heat the water up to 50°C in a hot water bath (or a large beaker)
Add the probe and start measuring the temperature over 5 minutes.
If you have a data logger you can record the data every 5 seconds and save the data.
Otherwise record 10seconds.

2. Now heat the oil up to 50°C in a hot water bath.
Safety- Do not heat oil with an open flame or allow the temperature to go higher than this. Wear gloves when using hot oils)
Add a clean probe and start measuring the temperature over 5 minutes.
If you have a data logger you can record the data every 5 seconds and save the data.
Otherwise record 10seconds

Compare the graphs or data. If you have data logging software you can overlay the graphs and compare the rate.
 Q. Which liquid cools quicker?
Q. What did you notice about the cooling rate over time?
Q. Why is water a good heat sink?