Experiment 15 Date:

Aim: Determine the heat capacity of a solid.

Variable:

Independent variable (Which is changed.)	**Dependent variable** (Which is measured.)	**Controlled variable(s)** (Which remain(s) the same.)

Chemicals:
- Cold tap water
- 150 g lead shot
  or 150 g copper turning
  or 150 g clean sand
  or 150 g cat litter

Apparatus:
- Balance scale
- Thermometer
- Polystyrene/paper cup
- Glass beaker
- Measuring cylinder
- Bunsen burner/stove plate
- Tripod stand
- Gauze

Method:
1. Measure approximately 150 g of one of the solids and place it in the polystyrene/paper cup. Note the precise mass.
2. Measure exactly 100 mℓ cold tap water using the measuring cylinder and pour it into glass beaker. (1mℓ water has a mass of 1 g)
3. Place the beaker with water on the gauze on top of the tripod stand and heat the water to a temperature of approximately 45°C.
4. Use the thermometer and measure the temperature of the solid accurately. Record the temperature.
5. Use the same thermometer and measure the temperature of the hot water. Record the temperature.
6. Immediately add the hot water to the solid, mix it thoroughly using the thermometer and determine the highest temperature at which the mixture stabilises. Record the temperature.
7. Repeat using one of the other solids if you have time.

Results:

	Mass (kg)	Initial temperature (°C)	Final temperature (°C)	Change in temperature (°C)
Water				
Solid				

1. Calculate the amount of heat given off by the water.

2. How much heat energy is absorbed by the solid? Motivate your answer.

3. Calculate the heat capacity of the solid.

Conclusion:
Explain why the temperature of the water decreases whilst the temperature of the solid increases.