How does changing the amount of water in a beaker affect the rate at which its temperature rises?

Name: _____

Aim: To see how varying the amount of water in a beaker affects the rate at which its temperature rises when it is heated.

Equipment: Electric hotplate, 2 250mL beakers, 2 thermometers, stopwatch.

Method:

1. Plug in the electric hotplate and switch it on. Allow five minutes or so for the hotplate to heat up.
2. Meanwhile, pour 100 mL of water into 1 beaker and 200 mL of water into the other.
3. Record the initial temperature of the water in both beakers.
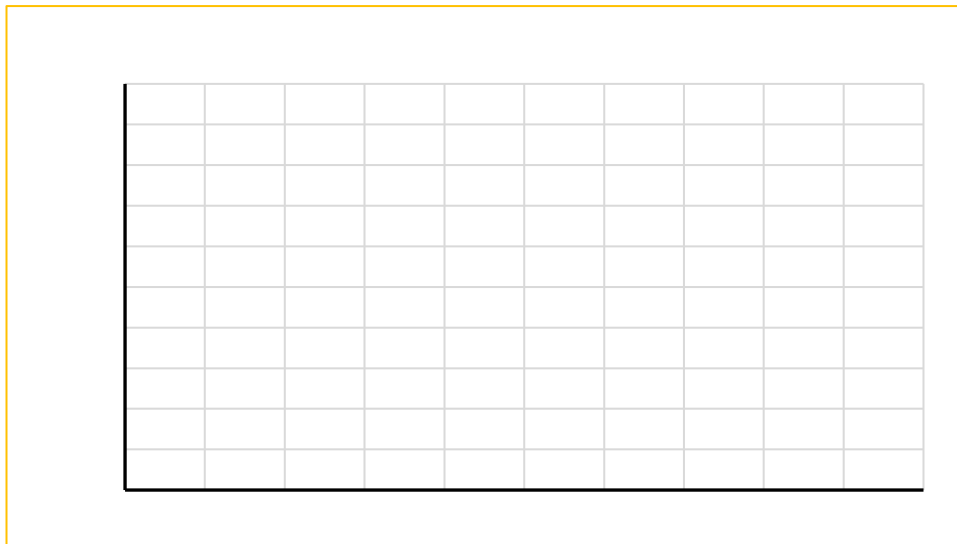
Temperature of water in 100 mL beaker: _____°C

Temperature of water in 200 mL beaker: _____°C

4. Place both beakers of water onto the hotplate as close as possible to the centre and start the timer.
5. Record the temperature of the water in each beaker every minute for 10 minutes.
6. Calculate the overall temperature change of the water in both beakers.

Time (min)	Temperature (°C)	
	100 mL	**200 mL**
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
overall temperature change		

Results:

1. Draw a graph of the results with temperature on the y-axis and time on the x-axis. There will be two lines on the graph. Label the axes and give the graph a heading.

2. Draw a labelled diagram of the experimental setup.

Questions:

1. Comment on the difference in the rate of change of temperature of the water in each beaker and on the overall temperature change that occurred.

   _____
   _____
   _____

2. Two neighbours have swimming pools in their yards. Pool A is 3 m long × 4 m wide × 1.5 m deep. Pool B is 6 m long × 2 m wide × 2 m deep. Which one will require more heat energy to heat it up by 10°C? Why?