

THERMAL EQUILIBRIUM WITH PASCO TEMPERATURE SENSORS

Equipment

2 x insulated beakers
Measuring
cylinder/beaker



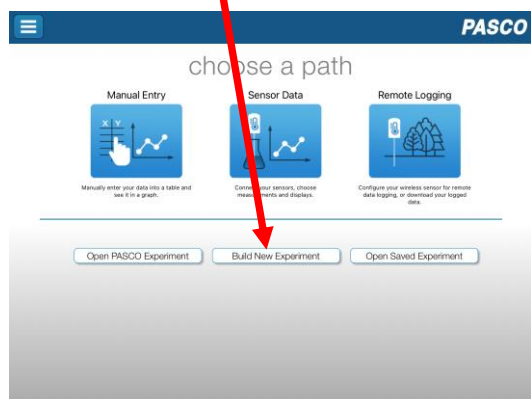
Ipad/computer/
phone/device



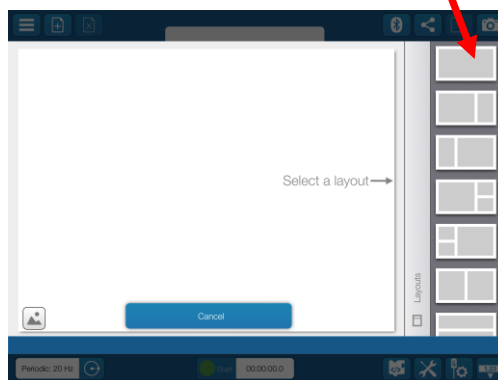
software

Setting up sparkvue

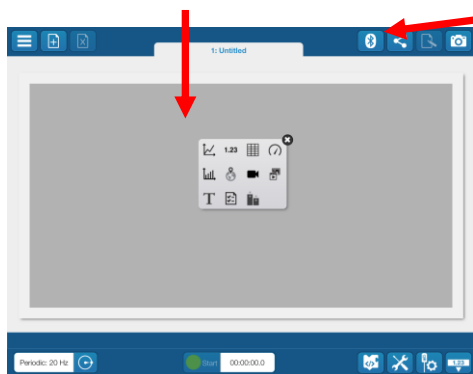
1. Open up Sparkvue
2. Choose **Build New Experiment**



3. Choose layout – top right



4. Select line graph type



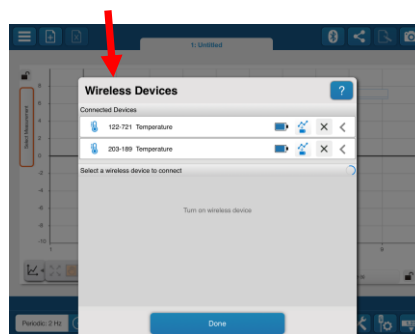
5. Turn on the two temperature sensors

Note, their id numbers

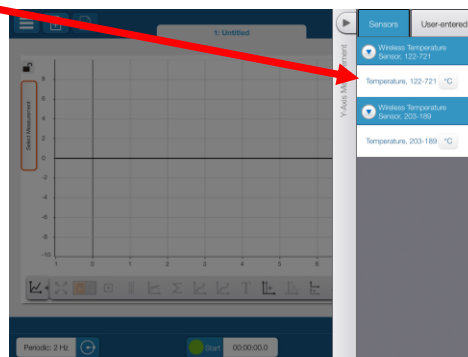
6. Select the blue tooth symbol

7. Click on the two sensors you wish to connect,
check the id numbers match

When successful the screen is as shown below



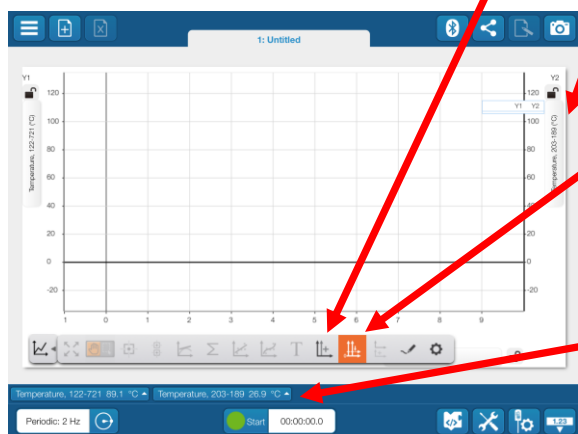
8. Select measurement for left hand axis
and choose one of the temperature sensors,
note the number



8. Add right axis, by selecting



9. Select measurement for right hand axis and choose the other temperature sensor



10. To keep both axes scales the same during measurements click on



The temperatures of both thermometers can be read from the bottom left hand side of screen

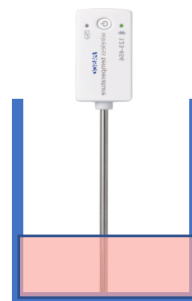
Conducting the experiment

11. Pour room temperature water in one insulated cup .

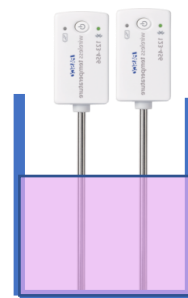
12. Pour hot (boiling) water in the other insulated cup –use the same volumes

13. Wait for the temperature readings of both thermometers to stabilise

14. When stabilised press the **green start button** – bottom of screen – the temperature curves should be horizontal



Pour cold into hot



18. To measure the initial and final temperatures use the select button



Finishing Up

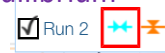
Use **Save As** to save your Spark lab
Take **Screen shots** for reports etc
You can also **save images** using the **camera icon** –top right hand side of screen

15. After a few seconds quickly pour the **blue** water into the hot water beaker, keeping the cold water sensor in the water as much as possible

16. Turn off after the temperature of both sensors is equal.

17. You should see a nice thermal equilibrium curve

19. To measure the other curve, click on the curve colour on the legend. **This data can be used for subsequent thermal equilibrium calculations!**



Disconnect the sensors from your device, click on Bluetooth button again and press on the cross.
Turn off the sensors
Press and hold the power button for a few seconds.