Ogden Trust STEM challenge. Measure g (*) using a Raspberry Pi

*TEAM NAME:*_____

1. ☐ Attach the Raspberry Pi to the equipment using the cables. Plug in the Micro USB power cable last. While it's booting….
2. ☐ Think up a team name and write it above. Your Pi should be booted.
3. ☐ Wire up your Battery and Relay as per the Ball Bearing dropper diagram and a screwdriver. Ask a helper if you are stuck.
4. ☐ Time to get the PiFace working. Open up the Python IDLE program on the Desktop. File->Open->Desktop->Gravity->gravity.py
5. ☐ Read through the code to see how it works. Run it and drop some ball bearings. (You can pretend you have made a pressure plate by pressing Switch 0 on the PiFace).
6. ☐ Make a pressure plate switch using aluminium foil, cardboard and sellotape.
7. ☐ Attach the pressure plate to the PiFace using two wires as per the laminated diagram.
8. ☐ You need to enter a height for your ball bearing above your pressure plate. Measure it using the tape measure. Height = _____ metres
9. ☐ Test it by running the program a few times. When you are happy, record some values in this table.

Distance ball bearing falls (m)	Ball Bearing diameter (mm)	Length of time to fall (s)	Acceleration due to Gravity (ms^{-2})

10. ☐ Calculate the mean (average) Acceleration due to Gravity and write your answer below. Ask if you are unsure how to calculate this.

Our team measurement of acceleration due to gravity is _____ ms^{-2}

Think about

How could we make the magnet stronger? What would happen if we changed the height? What would happen if we used a magnetic tennis ball?Is this experiment very accurate? Why? Is there a different way to measure the same thing?

*1: Acceleration due to Gravity.