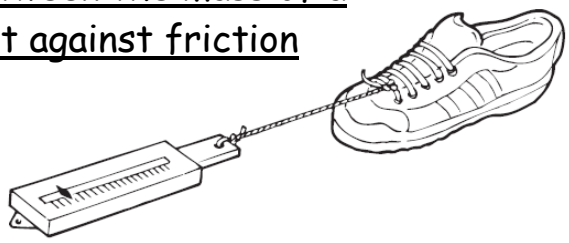
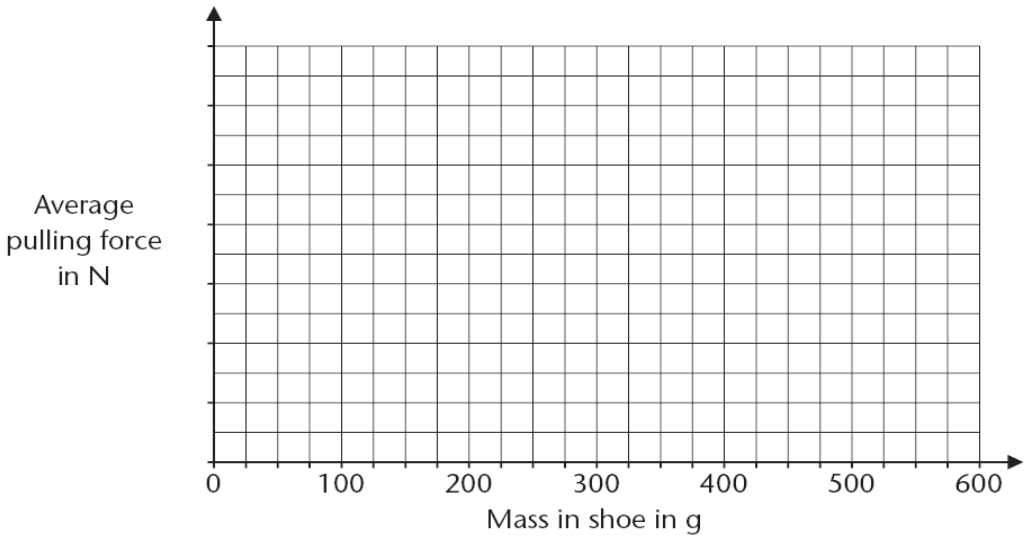
Investigation into the relationship between the mass of a shoe and the force needed to pull it against friction



1) You are just going to change the mass of the shoe. To make it a fair test, the surface, the shoe and the masses need to be kept the same.
2) Tie the force meter to the shoe.
3) Pull the shoe without any masses inside it, so that it moves at a steady speed across the surface.
4) Record the force shown on the force meter in the table, under **Pulling force (1)**. Check again and record the force under **Pulling force (2)**.
5) Calculate an average for each pull:
   - add the pulling forces **(1)** and **(2)** together
   - divide this number by 2
   - record the answer in the fourth column.

Mass in shoe in g	Pulling force (1) in N	Pulling force (2) in N	Average pulling force in N
0			
100			
200			
300			
400			
500			
600			

6) On a piece of graph paper plot the mass of the shoe against the average pulling force use the example graph below to help.



What happens to the size of force needed to pull the shoe as the mass increases? ……

Why do you think this happens? Use the word friction in your answer.

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