



S3 Science Numeracy homework task – January.

Please attempt all questions. If you get stuck, please see your teacher for help before the deadline date or use the Numeracy guide available on Bathgate Academy's school website.

GRAPHS

1. A group of S3 pupils tested the force required to overcome the grips from a variety of shoes on two different surfaces. The results are shown below;

Shoe type	Force required to move shoe ()	
	On table top	On sandpaper
Training shoe	8	12
Work boots	12	20
Dancing shoes	2	4
Wellington boots	13	19

- What units are used to measure force?
- On the same graph, plot a **bar graph** for the results of this experiment.
- Why would the comparison of the shoe types not form a valid conclusion in this experiment?
- What valid conclusion could the group of pupils come up with from this experiment?

2. The physics teachers were overjoyed when Mr Abbot gave them enough money to buy a small rocket. The rocket has a mass of 50Kg. They decided to set up an experiment to measure the effect of mass of the rocket on the force required to allow the rocket to take off. They did this by adding 10kg masses in sequence to the rocket and measuring the force. The results are shown below;

Additional mass added to rocket (Kg)	Force required for rocket to take off ()
0	550
10	650
20	700
30	850
40	950
50	1050

- What actual force does the rocket have to overcome in order to take off?
- Plot a **line graph** of the results.
- What conclusion did the physics teachers make from the experiment?
- With which additional mass added do you think an error occurred?
- How could the results of this experiment be made more reliable?
- What was the maximum 'rocket mass' used in this experiment?