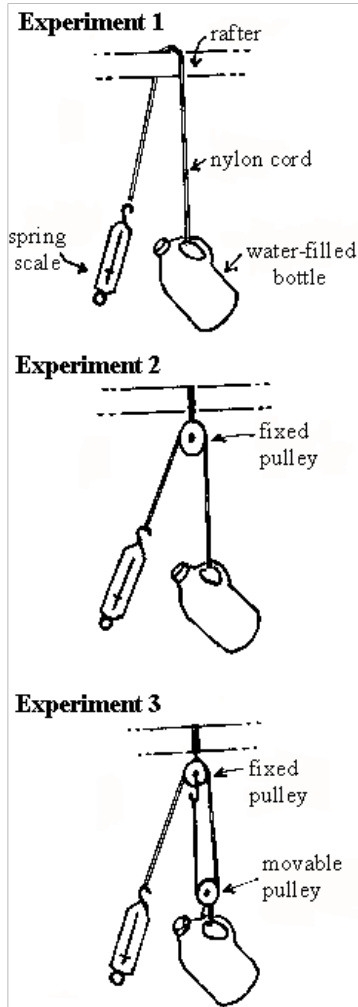


Lifting water bottles



Mrs Harvey's science class carried out three experiments with pulleys. In all of them a rope was tied to the handle of a two-litre bottle filled with water.

A spring scale was used to measure the force needed to pull the bottle one metre off the floor.

The three experiments were:

- A rope only was used to pull the bottle.
- One pulley was used with the rope.
- Two pulleys were used with the rope.

Each experiment was tried three times. Here is the table showing the students' results.

The force is measured in Newtons.

	Trial 1	Trial 2	Trial 3	Average
Expt. 1	4.2 N	4.3 N	4.2 N	4.2 N
Expt. 2	3.8 N	3.7 N	3.7 N	3.7 N
Expt. 3	2.0 N	1.9 N	1.8 N	1.9 N

a) In which experiment was the most force needed to lift the bottle? _____

b) Explain why using one pulley decreased the force needed to lift the bottle.
