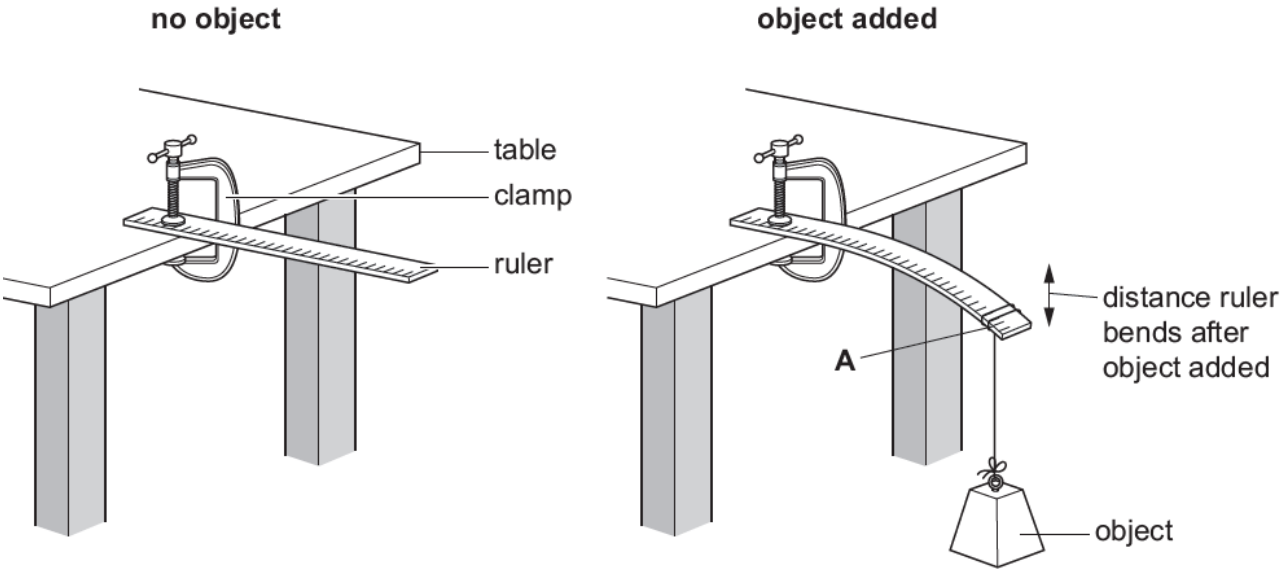
Forces and their effects – Checkpoint Sec 1 Physics

1. No.6

Chen investigates how much a ruler bends when he adds different objects.



He adds the objects at position **A**.

He writes his results in a table.

weight of object in N	distance ruler bends after object added in cm
0	0.0
1	2.1
2	4.0
3	6.1
4	8.2

(a) (i) Describe what happens as the weight of the object increases.

..... [1]

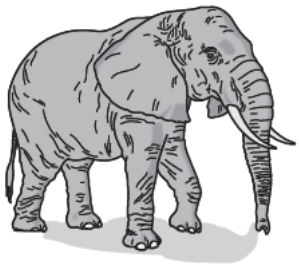
(ii) Explain why this happens.

.....

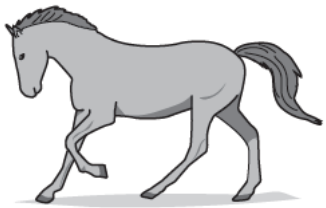
..... [1]

2. No.9

Yuri investigates why the size of the leg of an elephant is different from the size of the leg of a horse



5000 kilograms



500 kilograms

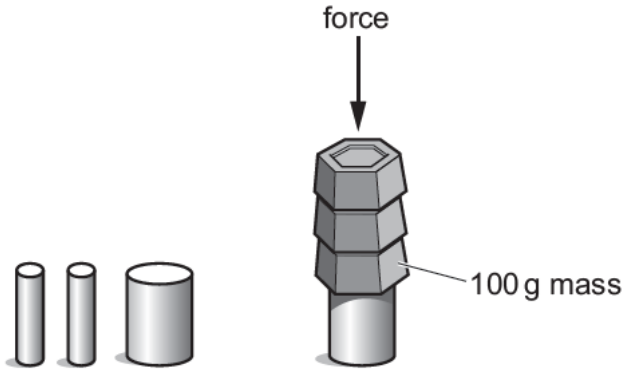
NOT TO SCALE

Yuri makes model legs of both animals.

He uses modelling clay to make different-sized cylinders.

Yuri places one cylinder on a desk.

He places 100 g masses on top of this cylinder until the cylinder starts to squash and change shape.



modelling clay cylinders

Yuri tests **two** different diameters of cylinder.

(a) The cylinders are all cut to the same length.

Explain why this is important.

.....

..... [1]

(b) What equipment does Yuri use to measure the diameter of the cylinders?

.....

[1]

(c) Yuri uses **two** cylinders for each diameter.

Explain why using **two** cylinders is important.

.....

.....

[1]

3. No.9

Class 7 investigate **air resistance**.

- They run from one end of the playground to the other end of the playground.
- They measure the time to complete the run.
- They repeat the run with umbrellas.

(a) Class 7 write down their results.

no umbrella = 10 seconds
with umbrella = 14 seconds
no umbrella = 8 seconds
with umbrella = 9 seconds
no umbrella = 7 seconds
with umbrella = 13 seconds
no umbrella = 11 seconds
with umbrella = 15 seconds

(i) Write their results in the table.

time with no umbrella in seconds	time with umbrella in seconds

[1]

(ii) Calculate the mean (average) times.

mean time with **no** umbrella = ... s

mean time with umbrella = ... s [1]

(b) Write down a conclusion for this investigation about air resistance.

.....

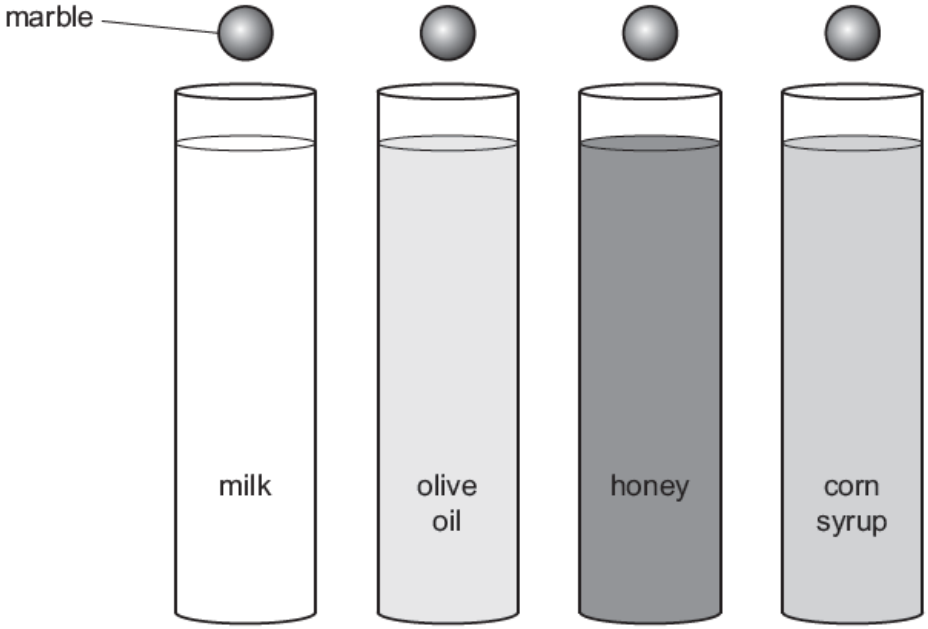
.....

..... [2]

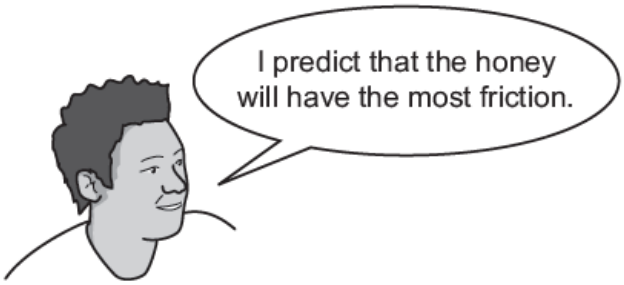
4. No.10

Youssef investigates friction.

He drops marbles into different liquids.



(a) Youssef makes a prediction.



Here are his results.

liquid	time taken for marble to fall in seconds
milk	2.5
olive oil	3.1
honey	3.4
corn syrup	3.5

Is Youssef's prediction correct?

Circle the correct answer.

yes **no**

Explain your answer using the results.

.....

.....

..... [2]

(b) Youssef wants to increase the time it takes for the marble to fall.

Describe how he could increase the time it takes for the marble to fall.

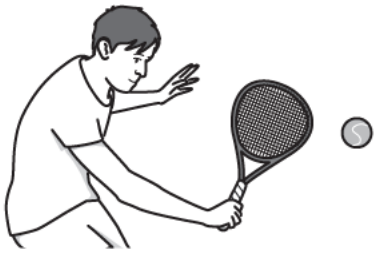
.....

..... [1]

5. No.14

Forces are useful when playing different sports.

(a) Draw an arrow (→) from the **tennis ball** to show the direction of gravity.



[1]

(b) There is a force between the **rugby ball** and the boy's hand.

Write down the name of this force.

..... [1]

(c) When the **golf ball** moves through the air a force slows it down.

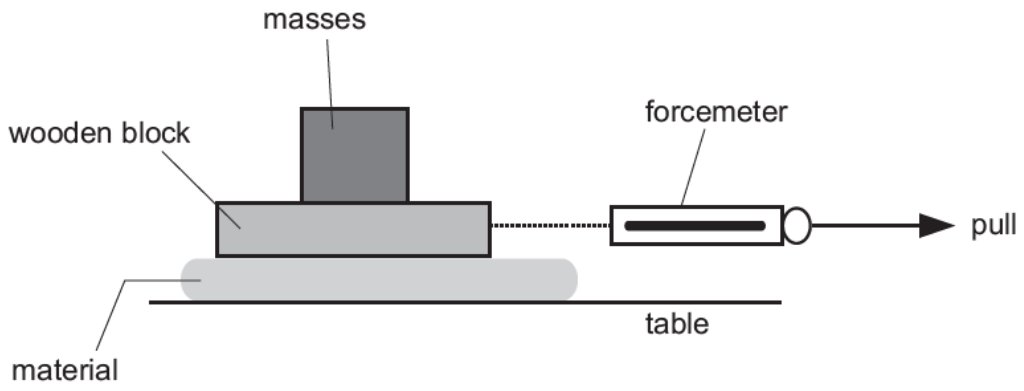
Write down the name of this force.

..... [1]

6. No.11

Priya and Lily investigate friction.

Here is the equipment they use.



They pull the wooden block with a forcemeter.

They repeat the investigation using different materials.

(a) Priya says

"We must be careful because we are using heavy masses."

Lily says

"We must make this investigation safe."

Describe **two** things they can do to reduce the risk of hurting themselves or others.

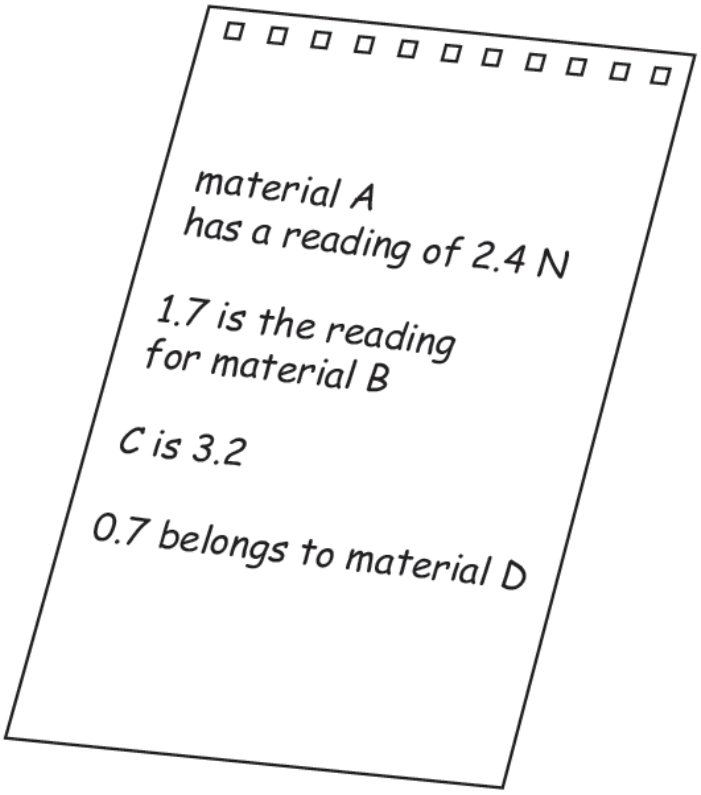
1 .....

.....

2 .....

..... [2]

(b) Here are their results.



Complete Priya and Lily's results table.

.....	**forcemeter reading in N**

[2]

(c) Describe how they can make the results more reliable.

.....

..... [1]