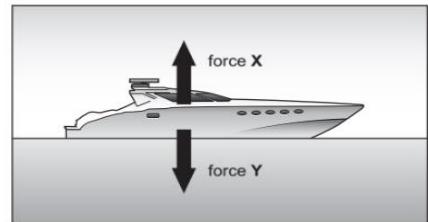


1. A boat is floating on water.

The boat is not moving forward.

The diagram shows two forces acting on the boat.



a. Name force X and force Y. [ /2]

Force X: **Upthrust**      Force Y: **gravity**

b. Force X is equal to force Y.

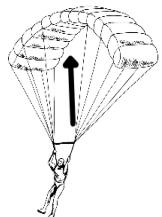
What happens to the boat if force Y is **bigger** than force X? [ /1]

**It will sink.**

2. The diagrams show different types of forces. [ /3]

On each diagram there is an arrow to show the direction of the force.

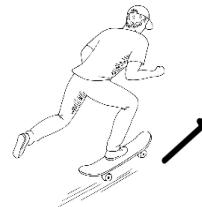
Write the name of the force **shown by the arrow**.



**Air resistance**



**normal force**



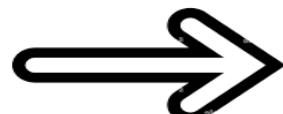
**applied force**

3. A submarine travels underwater. [ /2]

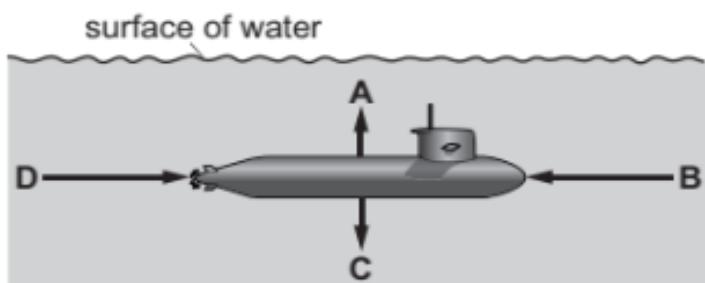
Name the forces acting on the submarine.

Force B is **water resistance**

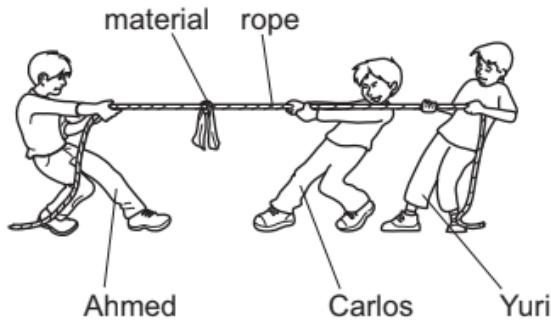
The submarine is moving in this direction.



Force D is **applied force**



4. Ahmed, Carlos and Yuri investigate forces.



A piece of material is tied to the middle of the rope.

Ahmed, Carlos and Yuri all pull the rope with the same force.

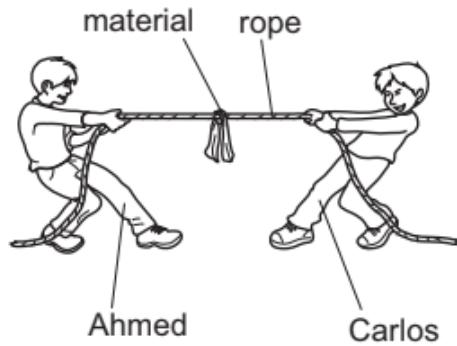
a. In which direction will the material move? [ /1]

Circle the correct answer.



b. The boys repeat the investigation. [ /1]

Only Ahmed and Carlos pull the rope.  
They pull the rope with the same force.  
Which direction will the material move?  
Circle the correct answer.



c. What is the unit for force? [ /1]

newtons

5. Sami wanted to find out which piece of paper would reach the ground first when released from the same height. Sami repeated the experiment two more times. These are his findings. [ 2 ]

paper	time to reach the ground in seconds
folded paper	5
crumpled paper	3

a. What is the independent variable in this experiment.

Tick the correct answer.

	same height
<input checked="" type="checkbox"/>	surface area of the paper
	time to reach the ground

b. Why did he repeat his experiment two more times?

Tick the correct answer.

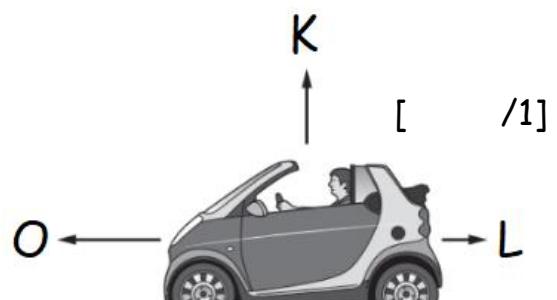
	to make sure it is a fair test
<input checked="" type="checkbox"/>	to make sure his results are reliable

6. Look at the force diagram.

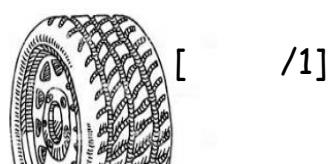
a. Force K and Force N are equal in size.

Explain how the force diagram shows this.

The length of the arrows is the same.



b. Name the force acting between the road and the car wheel.



Friction



7. Write down the names of two forces that slow down moving objects. [ /2]

a. friction      b. water resistance      c. air resistance (any two from the three)

8. Explain [ /2]

What happens to a moving object when unbalanced forces act on it.

Tick two correct boxes.

	continues moving in the same direction
<input type="checkbox"/>	changes its speed
	continues moving at the same speed
<input type="checkbox"/>	changes its direction

9. Sasha designed a parachute. [ /1]

It is moving downwards very fast.

He wants to slow it down.

Explain what he should do in order to slow it down.

Use a bigger parachute, the bigger the surface area, the more air resistance the slower it will descend (come down).