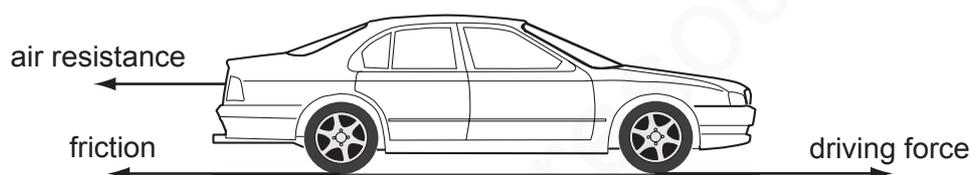


# FORCES

1 In which of these situations is no resultant force needed?

- A a car changing direction
- B a car moving in a straight line at a steady speed
- C a car slowing down
- D a car speeding up

2 Three horizontal forces act on a car that is moving along a straight, level road.



Which combination of forces would result in the car moving at constant speed?

	air resistance	friction	driving force
<b>A</b>	200 N	1000 N	800 N
<b>B</b>	800 N	1000 N	200 N
<input checked="" type="checkbox"/> <b>C</b>	800 N	200 N	1000 N
<b>D</b>	1000 N	200 N	800 N

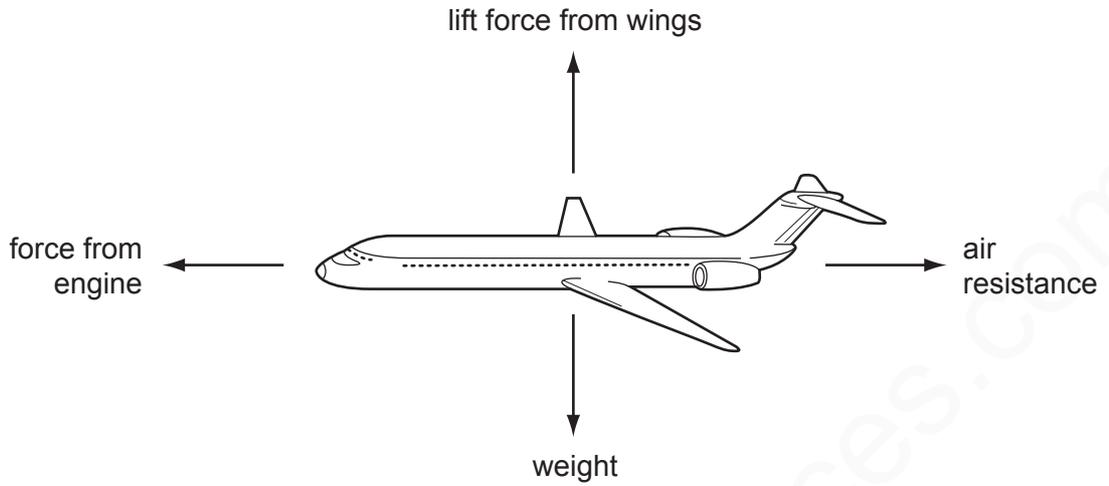
3 Two forces act on an object.

In which situation is it **impossible** for the object to be in equilibrium?

- A The two forces act in the same direction.
- B The two forces act through the same point.
- C The two forces are of the same type.
- D The two forces are the same size.

4 An aeroplane is in equilibrium.

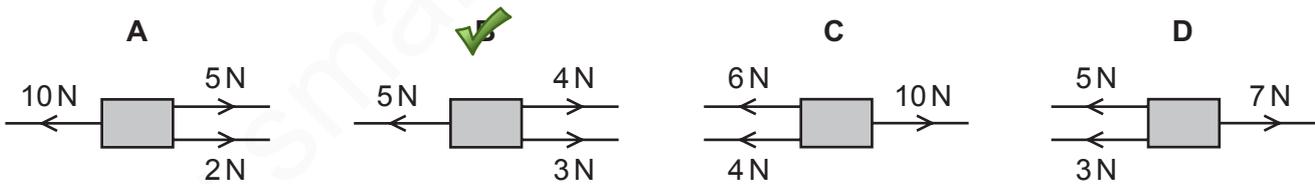
The diagram shows the forces acting on the aeroplane.



Which statement about the forces is correct?

	force from engine	lift force from wings
<input checked="" type="checkbox"/> A	equal to air resistance	equal to weight
<input type="checkbox"/> B	equal to air resistance	greater than weight
<input type="checkbox"/> C	greater than air resistance	equal to weight
<input type="checkbox"/> D	greater than air resistance	greater than weight

5 Which combination of forces produces a resultant force acting towards the right?



6 A ball is thrown upwards.  
What effect does the force of gravity have on the ball?

- A It produces a constant acceleration downwards.
  - B It produces a constant acceleration upwards.
  - C It produces a decreasing acceleration upwards.
  - D It produces an increasing acceleration downwards.
- 

7 Which list contains the name of a force?

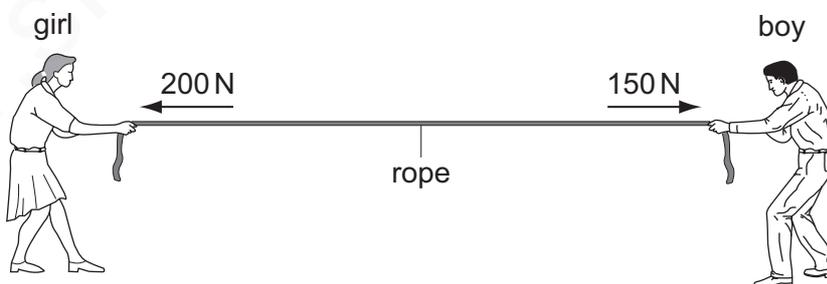
- A acceleration, charge, temperature
  - B density, resistance, speed
  - C distance, frequency, mass
  - D energy, power, weight
- 

8 A force acts on a moving rubber ball.

Which of these changes could **not** happen to the ball because of the force?

- A a change in direction
  - B a change in mass
  - C a change in shape
  - D a change in speed
- 

9 A girl and a boy are pulling in opposite directions on a rope. The forces acting on the rope are shown in the diagram.



Which single force has the same effect as the two forces shown?

- A 50 N acting towards the girl
- B 350 N acting towards the girl
- C 50 N acting towards the boy
- D 350 N acting towards the boy

10 In which situation is **no** resultant force needed?

- A a car changing direction at a steady speed
  - B a car moving in a straight line at a steady speed
  - C a car slowing down
  - D a car speeding up
- 

11 A box is being moved by a fork-lift truck. The total weight of the box is 3000 N.



The force exerted by the fork-lift truck on the box is 3500 N upwards.

What is the resultant force on the box?

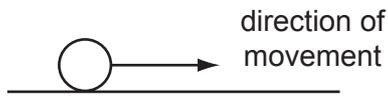
- A 500 N downwards
  - B 500 N upwards
  - C 6500 N downwards
  - D 6500 N upwards
- 

12 Which statement about a moving object is correct?

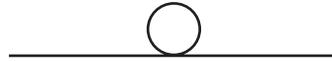
- A When an object is accelerating, the resultant force acting on it must equal zero.
- B When an object is moving at a steady speed, the air resistance acting on it must equal zero.
- C When an object is moving at a steady speed, the resultant force acting on it must equal zero.
- D When an object is moving, there must be a resultant force acting on it.

13 On which ball is a non-zero resultant force acting?

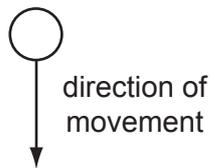
**A**  
a ball moving at constant speed on a smooth surface



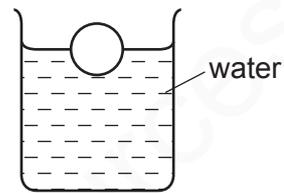
**B**  
a ball at rest on a bench



**C** ✓  
a free-falling ball which has just been released

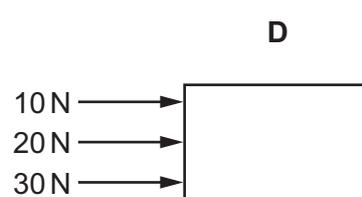
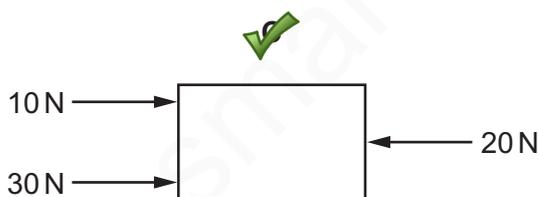
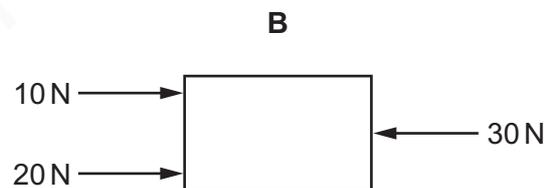
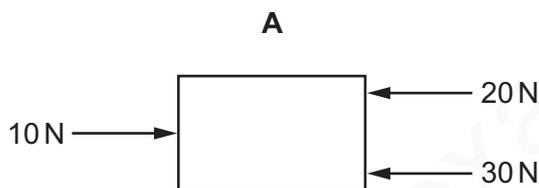


**D**  
a ball floating on water



14 The diagrams show four identical objects. Each object is acted on by only the three forces shown.

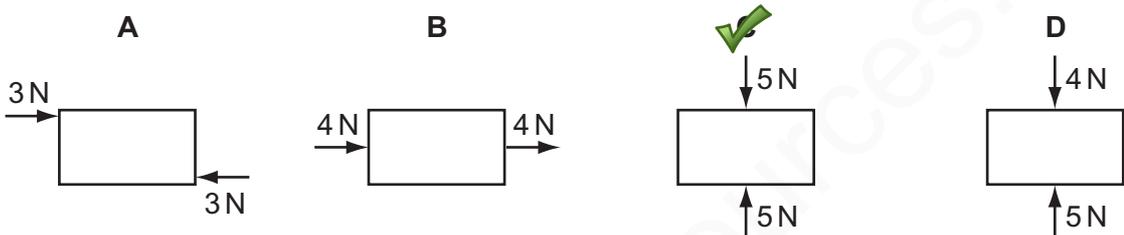
Which object accelerates to the right, with the **smallest** acceleration?



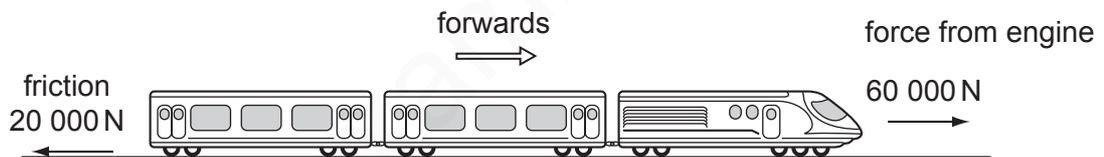
- 15** A student stands with both feet on some scales in order to measure his weight. The reading on the scales is 500 N. He lifts one foot off the scales and keeps it lifted. What is the new reading on the scales?

A 0                      B 250 N                      C 500 N                       D 1000 N

- 16** The diagrams show different objects, each being acted upon by only the two forces shown. Which object is in equilibrium?



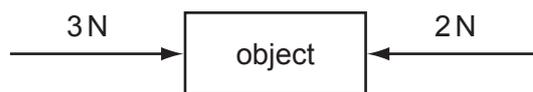
- 17** A train is travelling along a horizontal track at constant speed. Two of the forces acting on the train are shown in the diagram.



A force of air resistance is also acting on the train to give it a resultant force of zero. What is this air resistance force?

- A 40 000 N backwards  
 B 80 000 N backwards  
 C 40 000 N forwards  
 D 80 000 N forwards

- 18** The object in the diagram is acted upon by the two forces shown.



What is the effect of these forces?

- A The object moves to the left with constant speed.  
 B The object moves to the left with constant acceleration.  
 C The object moves to the right with constant speed.  
 D The object moves to the right with constant acceleration.