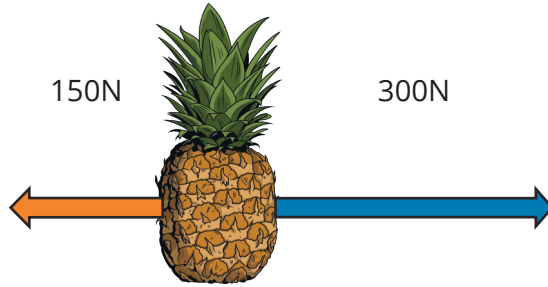


Resistive Forces Practice Questions

1. The diagrams below show the forces acting on a stationary object

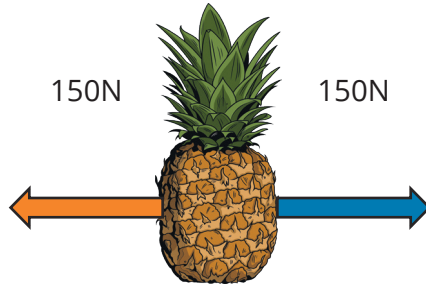
Explain what happens to the movement of each object.

a)



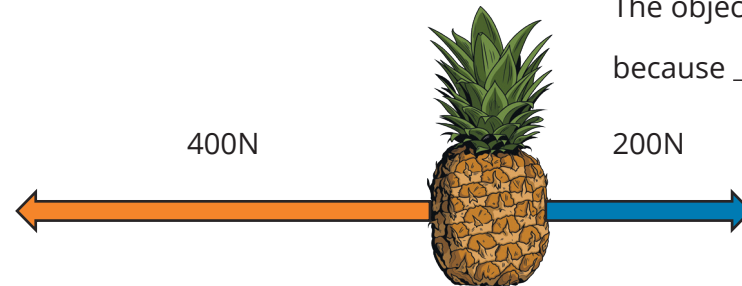
The object will _____
because _____

b)



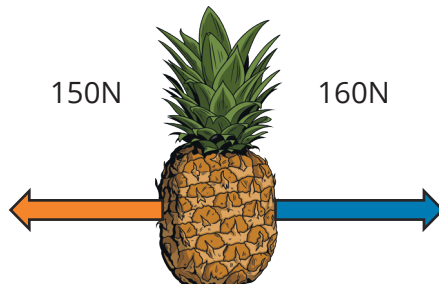
The object will _____
because _____

c)



The object will _____
because _____

d)



The object will _____
because _____

2. A box is pulled along a wooden floor with a force of 300N. An initial resistive force acts in the opposite direction to the box with a magnitude of 135N.

a) What is the name of the equipment used to measure the pulling force?

b) What is the name of the resistive force?

- c) Draw a force diagram to show these two forces acting on the block. Label the arrows with the size of the force.

- d) Draw a force diagram to show these two forces acting on the block. Label the arrows with the size of the force.

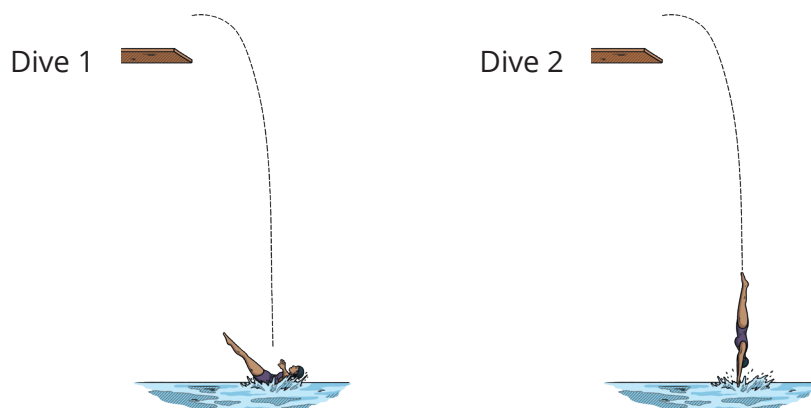
The speed of the box will _____.

The box is then pulled with the same force of 300N but this time on a carpet.

- e) How will the resistive force on carpet be different to the resistive force on the wooden floor?

- f) Explain the change in the resistive force using descriptions of the two surfaces. (3 marks)

3. A girl is practising diving into a swimming pool. The first time she dives, she hits the water on her back. Her second dive goes perfectly and she enters the water vertically with her fingers first. Both dives are shown in the diagram below.



The water resistance on her first dive was 1470N. The water resistance on her second dive was 60N.



Complete the sentence below to explain why the water resistance was reduced on her second dive.

The water resistance on the second dive was much lower because she was more

_____. This means she collided with _____ particles

when entering the pool and it was _____ for water particles to move around the diver.

4. Dennis goes skydiving. He falls for two minutes before the parachute is opened. Just before the parachute is pulled Dennis is travelling at a constant speed. Dennis has a weight of 750N.

a) What is the name of the resistive force acting against Dennis?

b) What is the magnitude of this force?

<750N

☐

exactly 750N

☐

>750N

☐

Dennis pulls the cord to release the parachute. This produces a resistive force of 4000N.

c) Complete the sentences below to explain why there is a big increase in the resistive force.

The parachute is much _____ than Dennis so it collides with

_____ air particle. This produces a large _____ in the _____ direction to his fall.

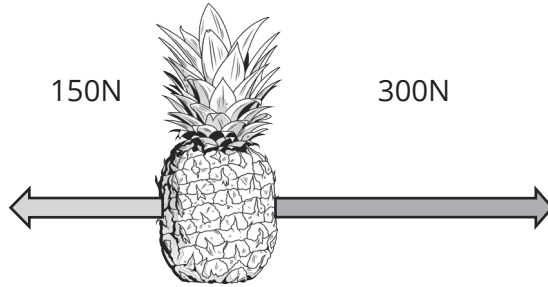
d) How does Dennis's speed change when he opens the parachute?

Resistive Forces Practice Questions Answers

1. The diagrams below show the forces acting on a stationary object

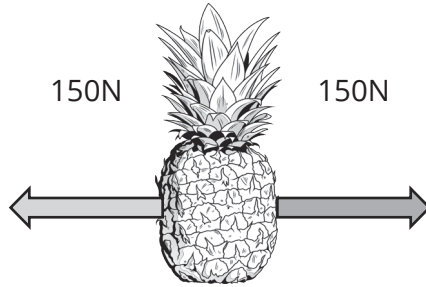
Explain what happens to the movement of each object.

a)



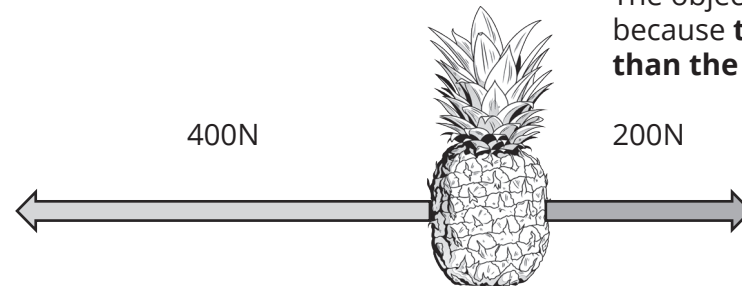
The object will **move to the right** because **the force to the right is greater than the force to the left.**

b)



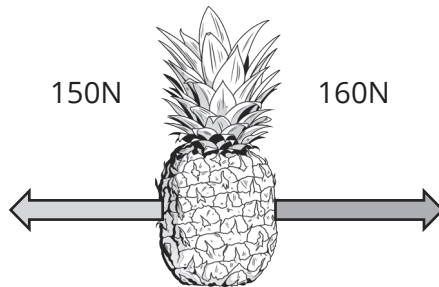
The object will **not move** because **the forces are equal /balanced.**

c)



The object will **move to the left** because **the force to the left is greater than the force to the right.**

d)



The object will **move to the right** because **the force to the right is greater than the force to the left.**

2. A box is pulled along a wooden floor with a force of 300N. An initial resistive force acts in the opposite direction to the box with a magnitude of 135N.

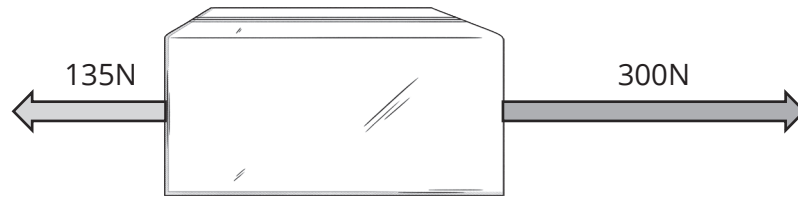
a) What is the name of the equipment used to measure the pulling force?

newton meter

b) What is the name of the resistive force?

friction

- c) Draw a force diagram to show these two forces acting on the block. Label the arrows with the size of the force.



Students may have swapped the directions of the arrows, this is ok since the direction the box is being pulled isn't specified in the question.

- d) What is the effect of the forces on the motion of the box?

The speed of the box **will increase (in the direction of the pulling force/the 300N force).**

The box is then pulled with the same force of 300N but this time on a carpet.

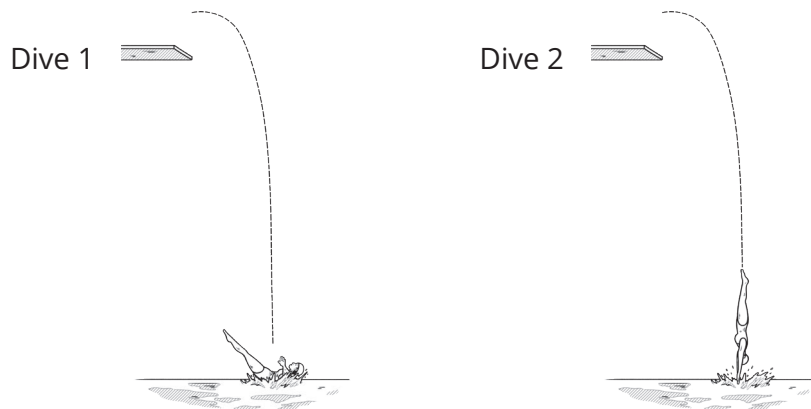
- e) How will the resistive force on carpet be different to the resistive force on the wooden floor?

It will be higher.

- f) Explain the change in the resistive force using descriptions of the two surfaces. (3 marks)

Carpet is rougher than wood (1) so surfaces will grip more (1) meaning a greater force is needed to make the box move on carpet (1).

3. A girl is practising diving into a swimming pool. The first time she dives, she hits the water on her back. Her second dive goes perfectly and she enters the water vertically with her fingers first. Both dives are shown in the diagram below.



The water resistance on her first dive was 1470N. The water resistance on her second dive was 60N.

Complete the sentence below to explain why the water resistance was reduced on her second dive.

The water resistance on the second dive was much lower because she was more **streamlined**.

This means she collided with **fewer** particles when entering the pool and it was **easier** for water particles to move around the diver.

4. Dennis goes skydiving. He falls for two minutes before the parachute is opened. Just before the parachute is pulled Dennis is travelling at a **constant speed**. Dennis has a weight of 750N.
- a) What is the name of the resistive force acting against Dennis?
air resistance.

b) What is the magnitude of this force?

<750N

☐

exactly 750N

☒

>750N

☐

Dennis pulls the cord to release the parachute. This produces a resistive force of 4000N.

c) Complete the sentences below to explain why there is a big increase in the resistive force.

The parachute is much **larger** than Dennis so it collides with **more** air particles. This produces a large **force** in the **opposite** direction to his fall.

d) How does Dennis's speed change when he opens the parachute?

He slows down.