

Name _____ Class _____ Date _____

S1 Explain how positive, negative and zero accelerations change the velocity of a moving object.

1 Complete the following sentences using words from the box. You can use each word once, more than once or not at all.

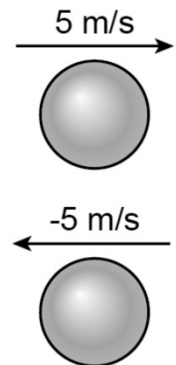
Speed is a _____ quantity and velocity is a _____ quantity.

_____ quantities have both a size and a _____.

The two objects on the right both have the same _____. They have different _____, because one is moving in the opposite direction to the other. This is shown by the _____ sign.

Acceleration is a change in _____, so it is also a _____ quantity.

An acceleration in the same direction as an object is moving will make a moving object _____. An acceleration in the opposite direction to the movement of an object will make the object _____ (_____). An acceleration of _____ will not change the velocity of an object.



decelerate direction magnitude minus scalar slow down
 speed up vector velocities velocity zero

S2 A car travelling at 40 m/s comes to a halt in 8 seconds. What is the car's acceleration and how far does it travel while it is stopping?

2 The box on the right shows the formula for calculating acceleration.

$$a = \frac{v - u}{t}$$

a Use the information in question **S2** to complete the table.

b Calculate the value of $(v - u)$.

c Calculate the acceleration.

Symbol	represents...	value in question	unit
a	acceleration	??	
v			
u			
t		8	s

3 The box on the right shows the formula relating velocities, acceleration and distance. Use your answers to question **2** to fill in the gaps below, and then work out the answer.

$$x = \frac{v^2 - u^2}{2 \times a}$$

$$x = \frac{(0 \text{ m/s} \times 0 \text{ m/s}) - (\text{_____ m/s} \times \text{_____ m/s})}{2 \times \text{_____}}$$

distance = _____ m

At the end of this topic I can...

- recall the formula relating acceleration, velocity and time
- use the formula relating acceleration, velocity and time
- recall the formula relating acceleration, velocity and distance
- use the formula relating acceleration, velocity and distance
- recall the acceleration in free fall
- estimate the magnitudes of some everyday accelerations.