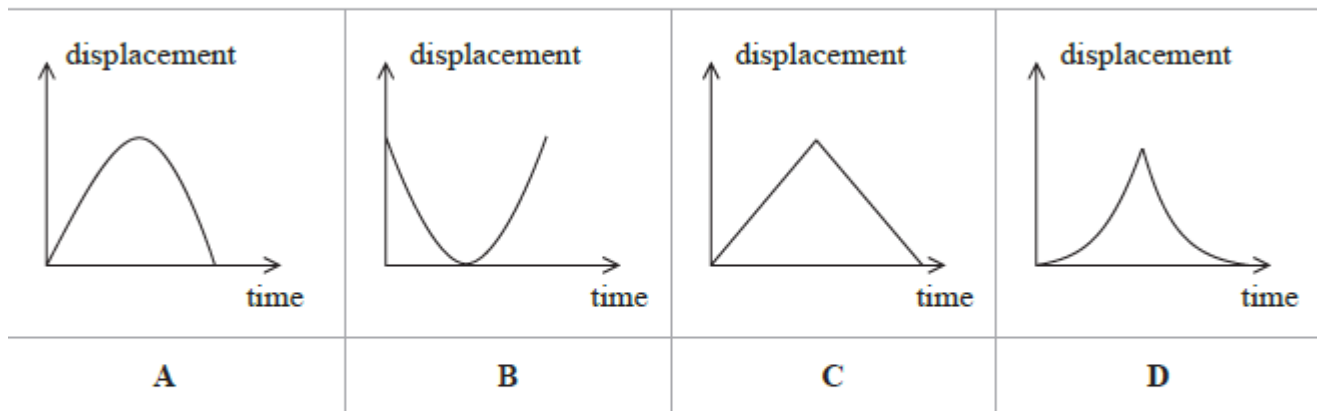# Kinematics Motion Graphs QP1

1

A ball is dropped, bounces once and is then caught.

Which of the following is the correct displacement-time graph for the ball?

displacement ... time	displacement ... time	displacement ... time	displacement ... time
A	B	C	D

☒ A

☒ B

☒ C

☒ D

2

An explorer walks 6 km due north from his camp and then 6 km due west.

What is the magnitude, in km, of the total displacement of the explorer?
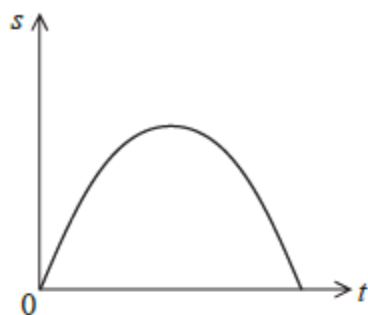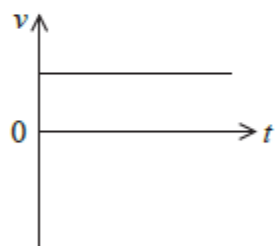
☒ A 12

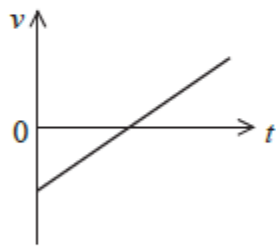☒ B $\sqrt{12}$

☒ C 72

☒ D $\sqrt{72}$
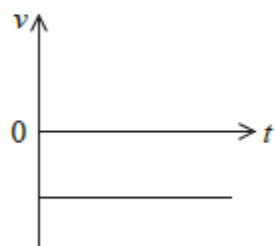
3

The displacement-time graph for an object is shown.

Which of the following is the corresponding velocity-time graph?

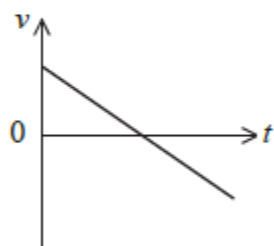| A | B | C | D |

☒ A

☒ B

☒ C

☒ D

4

A car travels at a speed of 20 m s^{-1} due east and then turns around and travels at a speed of 40 m s^{-1} due west.

Taking the direction of due east as positive, select the correct row from the table.

		Change in speed / m s^{-1}	Change in velocity / m s^{-1}
☒	A	20	−60
☒	B	20	60
☒	C	60	−60
☒	D	60	60

5

A ball is thrown from position L and caught at position N.

L and N are the same height above the ground. The trajectory of the ball is shown.
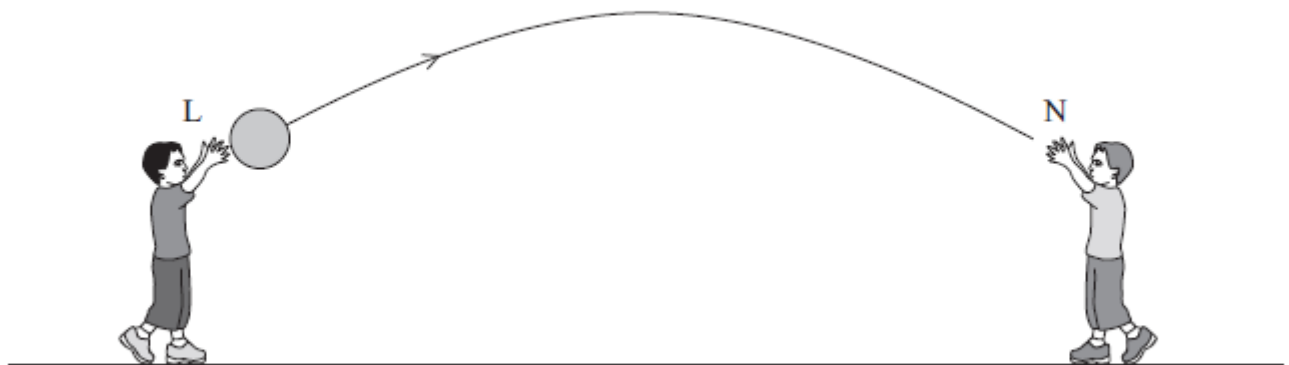
If vectors directed upwards are taken as positive, and air resistance is neglected then the acceleration of the ball at L is $-g$ and its speed is v.

Select the row of the table that correctly gives the acceleration and speed of the ball as it reaches N.

	Acceleration	Speed
☒ A	$-g$	v
☒ B	$-g$	$-v$
☒ C	g	v
☒ D	g	$-v$

6

A box is dropped from a plane flying at a constant velocity and height.

Assuming that air resistance is negligible, as the box falls to the ground its horizontal position will

☒   A remain unchanged.

☒   B lag behind the plane.

☒   C move ahead of the plane.

☒   D remain directly under the plane.