



Section A

- Give an example of two scalars.
- Give an example of two vectors.
- Which of the following is a vector quantity?
 - Mass
 - Time
 - Speed
 - Kinetic energy
 - Acceleration

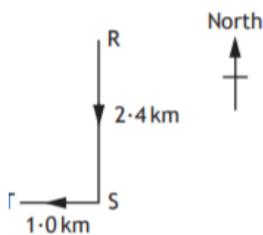
Section B

- What is a scalar?
- What is a vector?

Section C

- Which of the following is a scalar quantity?
 - velocity
 - displacement
 - acceleration
 - force
 - speed

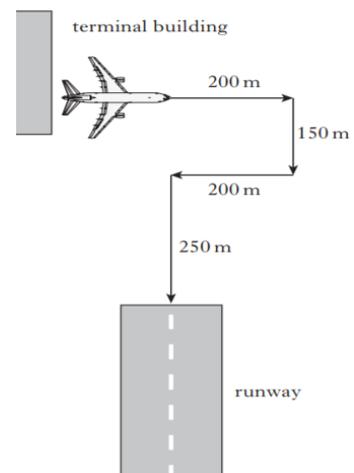
- A vehicle follows a course from R to T as shown.



The total journey takes 1 hour. Which row in the table gives the average speed and the average velocity of the vehicle for the whole journey?

	Average speed	Average velocity
A.	2.6 km h^{-1} (023)	3.4 km h^{-1}
B.	2.6 km h^{-1}	3.4 km h^{-1} (203)
C.	3.4 km h^{-1} (203)	2.6 km h^{-1}
D.	3.4 km h^{-1}	2.6 km h^{-1} (023)
E.	3.4 km h^{-1}	2.6 km h^{-1} (203)

- At an airport an aircraft moves from the terminal building to the end of the runway.



Which row shows the total distance travelled and the size of the displacement of the aircraft?

	Total distance travelled (m)	Size of displacement (m)
A.	400	800
B.	450	200
C.	450	400
D.	800	400
E.	800	800

- During training an athlete sprints 30 m East and then 40 m West. Which row shows the distance travelled and the displacement from the starting point?

	Distance travelled	Displacement
A.	10 m	10 m East
B.	10 m	10 m West
C.	10 m	70 m East
D.	70 m	10 m West
E.	70 m	10 m East

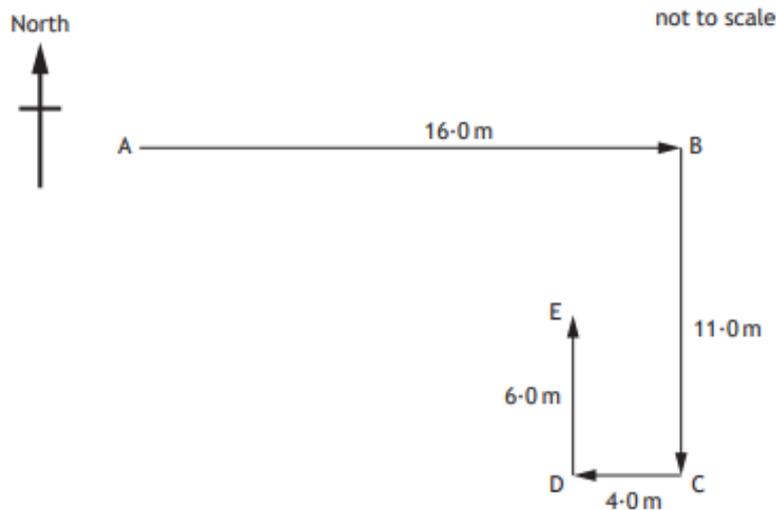


Section D

1. A quadcopter is a drone with four rotating blades.



In a race, the quadcopter is flown along a route from point A to point E.



- a) 2
- i. By scale drawing or otherwise, determine the magnitude of the resultant displacement of the quadcopter from point A to point E. 2
- ii. By scale drawing or otherwise, determine the direction of the resultant displacement of the quadcopter from point A to point E. 2
- b) The quadcopter takes 32.5 s to complete the race. 2
Determine the average velocity of the quadcopter over the whole race.