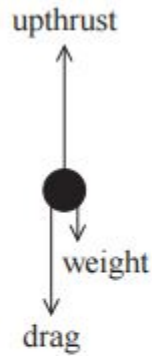


Forces MCQ QP1

- 1 A bubble moves upwards through a fluid at a steady speed. The forces acting on the bubble are as shown.



Which equation correctly describes the forces acting on the bubble?

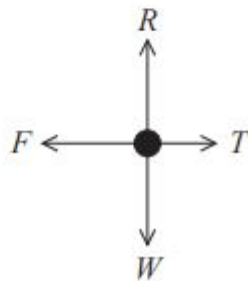
- A $\text{drag} + \text{upthrust} = \text{weight}$
 - B $\text{weight} + \text{upthrust} = \text{drag}$
 - C $\text{drag} + \text{weight} - \text{upthrust} = 0$
 - D $\text{weight} - \text{drag} + \text{upthrust} = 0$
- 2 A person stands on some bathroom scales in a stationary lift. The lift begins to move upwards with a constant acceleration.
- The reading on the scales will
- A increase but then remain constant.
 - B increase at a constant rate.
 - C decrease but then remain constant.
 - D decrease at a constant rate.

- 3 A car pulls a caravan at a slow but increasing velocity along a horizontal road.

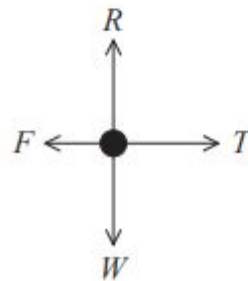


The four forces acting on the car are weight W , reaction force R of the road on the car, tension T in the tow-bar and friction F between the car tyres and the road.

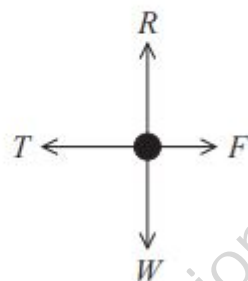
Which of the following could be the free-body force diagram for the car?



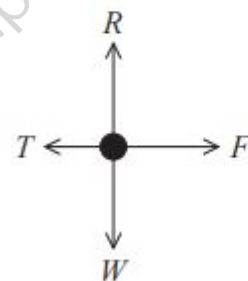
A



B



C

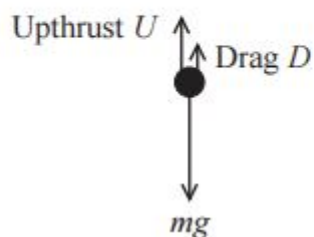


D

- 4 Which of the following is the unit of upthrust?

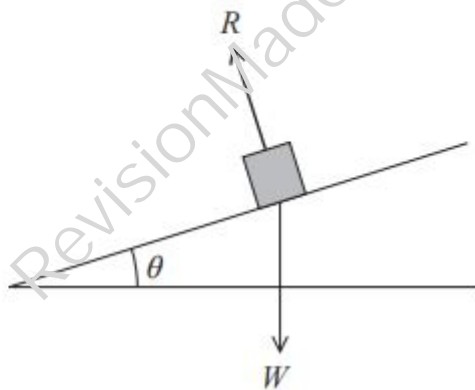
- A N m^{-2}
- B N m^{-1}
- C N m
- D N

- 5 A small stone of mass m is dropped into a pond and accelerates downwards with an acceleration a . The free-body force diagram for the stone is shown.



Which of the following equations is correct for the stone?

- A $U + D - mg = 0$
- B $U + D - mg = ma$
- C $mg - U - D = 0$
- D $mg - U - D = ma$
- 6 An object of weight W is on a slope at an angle θ to the horizontal as shown. The normal contact force is R .

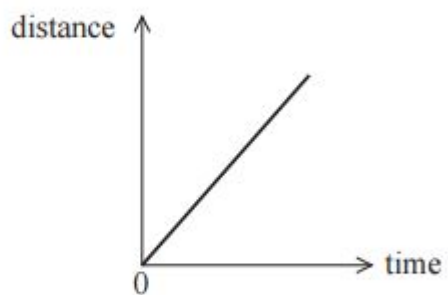


As θ increases, R will

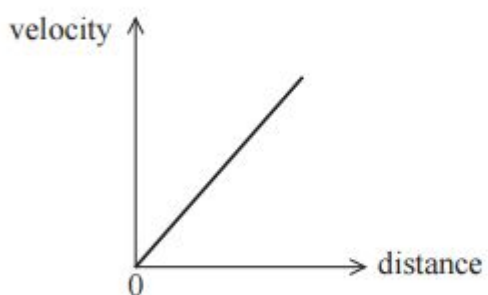
- A decrease because $R = W\cos\theta$.
- B decrease because $R = W\sin\theta$.
- C increase because $R = W\cos\theta$.
- D increase because $R = W\sin\theta$.

7 A constant resultant force acts on an object.

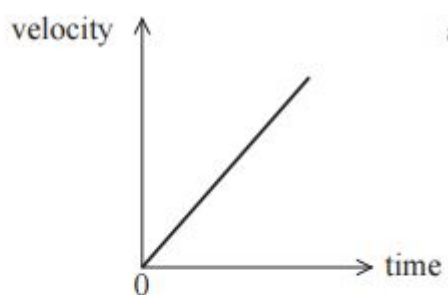
Which of the following graphs is correct for the motion of the object?



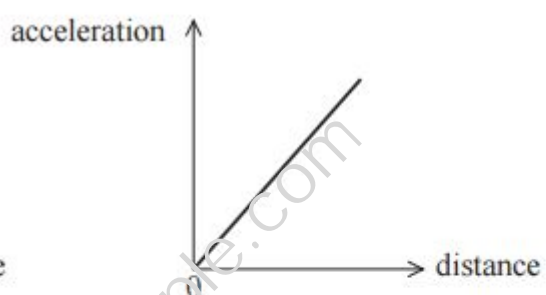
A



B



C



D

- A
- B
- C
- D

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