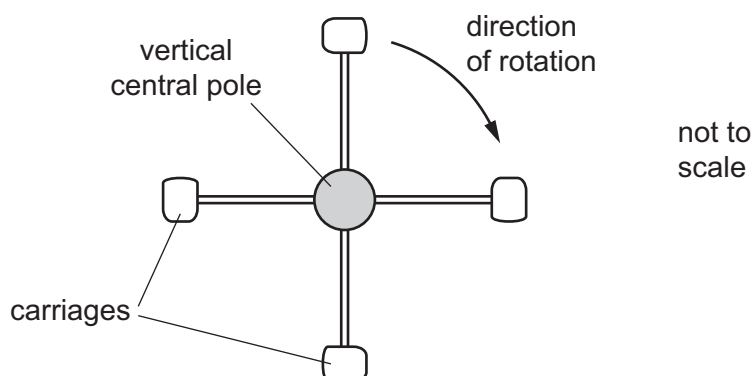


- 11 A ball falls through a liquid at a constant speed. It is acted upon by three forces: an upthrust, a drag-force and its weight.

Which statement is correct?

- A The drag-force increases with increasing depth.
 - B The drag-force is equal to the sum of the upthrust and weight.
 - C The upthrust is constant with increasing depth.
 - D The weight is greater than the sum of the drag-force and the upthrust.
- 12 A fairground ride consists of four carriages connected to a central vertical pole, as shown in the following view from above.



A motor rotates the central pole about its axis. This results in the four carriages each moving along a circular path.

The distance from the middle of each carriage to the centre of the pole is 3.20 m. When they are moving, each carriage experiences an air resistance force of 85.0 N. Assume that there are no other significant resistive forces.

Which torque does the motor need to apply to the pole to keep the system rotating at constant maximum speed?

- A 5.44 Nm B 272 Nm C 544 Nm D 1090 Nm