Fluids MCQ QP1

1 The flow of water in a pipe is turbulent.

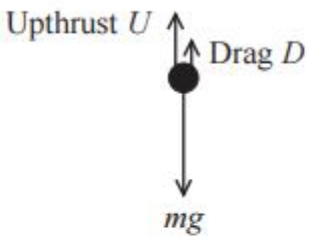
Which statement correctly describes turbulent flow?

- ☒ **A** Speed and direction at a point remain constant.
- ☒ **B** The layers are parallel.
- ☒ **C** The layers do not mix.
- ☒ **D** There are sudden changes in speed and direction.

2 Which of the following is the unit of upthrust?

- ☒ **A** $N\,m^{-2}$
- ☒ **B** $N\,m^{-1}$
- ☒ **C** $N\,m$
- ☒ **D** N

3 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.

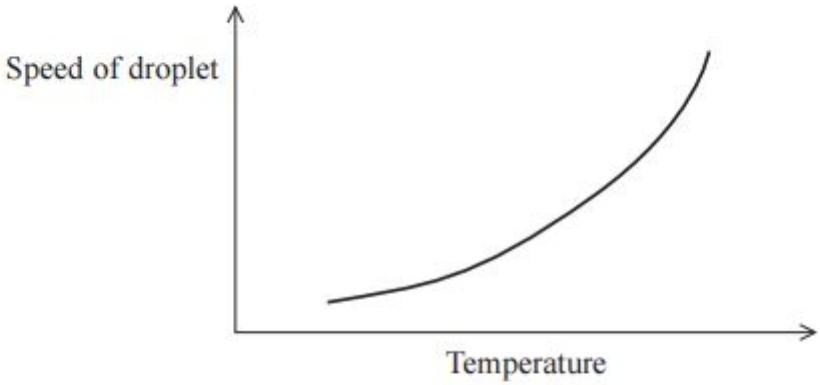


Which of the following equations is correct for the stone?

- ☒ **A** $U + D - mg = 0$
- ☒ **B** $U + D - mg = ma$
- ☒ **C** $mg - U - D = 0$
- ☒ **D** $mg - U - D = ma$

4 A glue dispenser produces small droplets of glue. The glue dispenser contains a small heater.

The graph shows how the speed of a droplet leaving the dispenser varies with the temperature of the glue.



A higher temperature of glue is preferred because

☒ **A** the viscosity will be greater and the glue will flow at a greater speed.

☒ **B** the viscosity will be greater and the glue will flow at a lower speed.

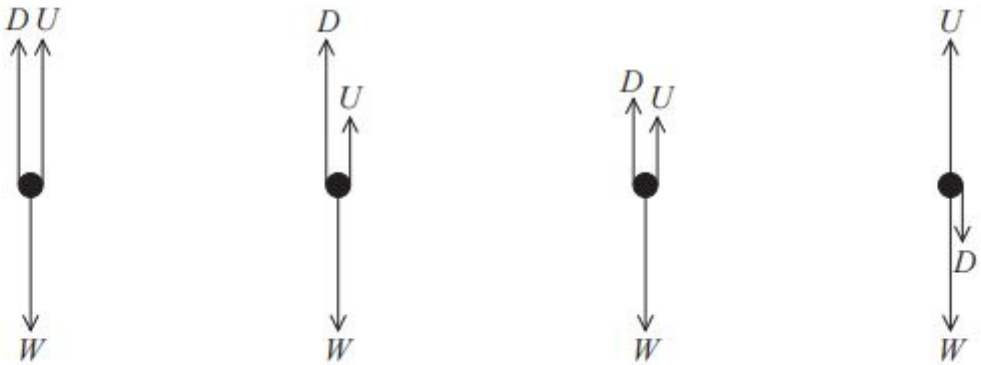
☒ **C** the viscosity will be lower and the glue will flow at a greater speed.

☒ **D** the viscosity will be lower and the glue will flow at a lower speed.

5 A small object is falling at terminal velocity in a large container of oil.

Which diagram correctly represents, in magnitude and direction, the forces acting on the object as it reaches terminal velocity?

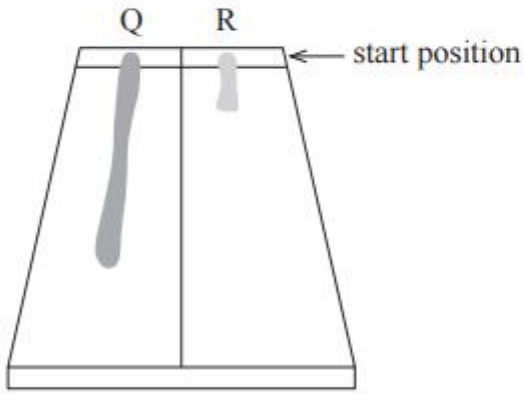
W = weight
U = upthrust
D = drag



☒ **A** ☒ **B** ☒ **C** ☒ **D**

6 Q and R are drops of two different fluids which have been placed on one end of a tile. The tile is then tilted.

The diagram shows how the drops spread down the tile.



Which could be a correct explanation for the different lengths shown?

☒ **A** R has a greater viscosity than Q.

☒ **B** R has a greater density than Q.

☒ **C** R has a greater temperature than Q.

☒ **D** All of the above.