

- 11** A thin horizontal plate of area 0.036 m^2 is beneath the surface of a liquid of density 930 kg m^{-3} . The force on one side of the plate due to the pressure of the liquid is 290 N .

What is the depth of the plate beneath the surface of the liquid?

- A** 0.88m **B** 1.1m **C** 1.8m **D** 8.7m

- 12** Spheres X and Y form an isolated system. The mass of Y is greater than the mass of X.

Sphere Y is initially stationary.

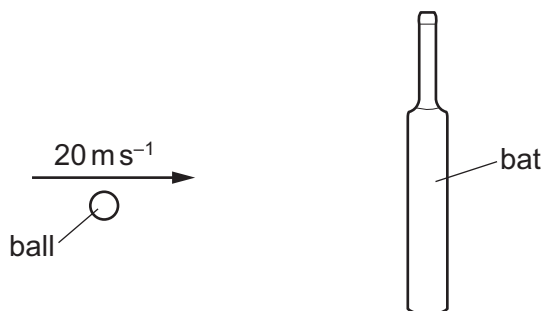
Sphere X collides elastically with sphere Y.

The speed of sphere X before the collision is u .

Which statement **must** be correct?

- A** Sphere X rebounds with a speed that is greater than u , and sphere Y moves off with a speed that is less than u .
- B** Sphere X rebounds with a speed that is less than u , and sphere Y moves off with a speed that is also less than u .
- C** Sphere X rebounds with speed u , and sphere Y remains stationary.
- D** Sphere X remains stationary, and sphere Y moves off with a speed that is less than u .

- 13** A ball of mass 0.10 kg is thrown towards a stationary vertical bat. The ball hits the bat with a horizontal velocity of 20 m s^{-1} .



The ball rebounds and leaves the bat with a horizontal velocity of 15 m s^{-1} .

What is the change in momentum of the ball?

- A** 0.20Ns **B** 0.50Ns **C** 1.5Ns **D** 3.5Ns