

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

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

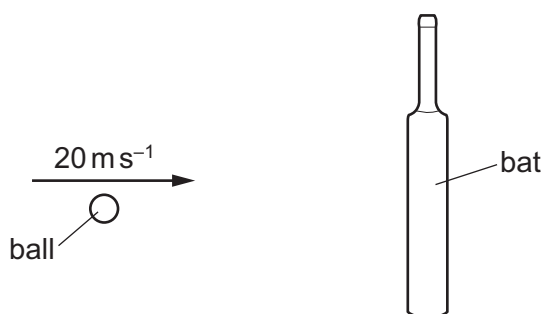
Sphere Y is initially stationary.

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 0.20 Ns B 0.50 Ns C 1.5 Ns D 3.5 Ns