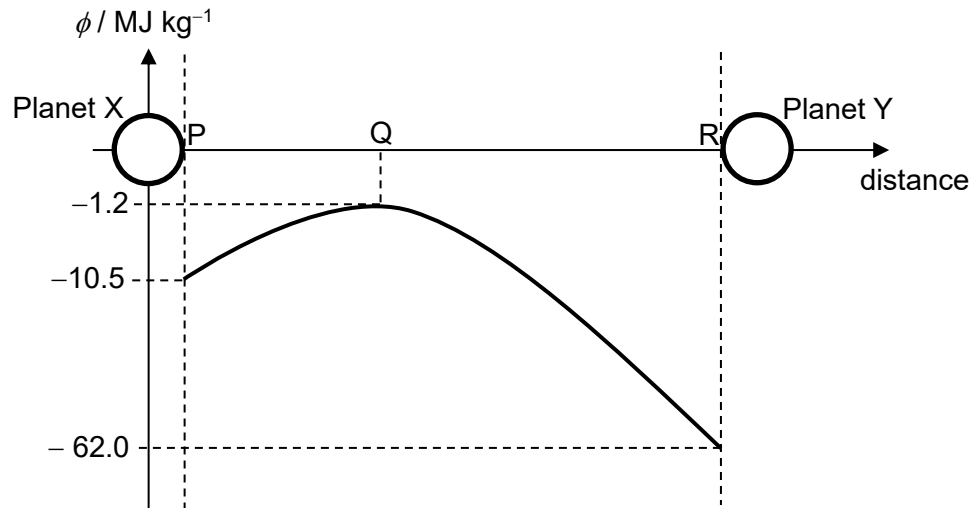


- 12 Points P and R are points on the surfaces of Planets X and Y respectively. The graph shows how the gravitational potential  $\phi$  along the line PR varies with distance from the centre of Planet X. At point Q the gravitational potential is maximum. Both planets are approximately the same size.



An object of mass 5.0 kg is projected from the surface of Planet X towards Planet Y along the line PQR.

Which statement is correct?

- A Planet X is heavier than Planet Y.
- B The object comes to rest at point Q.
- C The minimum kinetic energy that the object must be projected with for it to reach Planet Y is 258 MJ.
- D The minimum kinetic energy that the object has just before it hits the surface of Planet Y is 304 MJ.