

- 10** Two satellites P and Q orbit the Earth due to the gravitational field of the Earth. P and Q are at distances  $R$  and  $3R$  from the Earth's surface respectively, where  $R$  is the radius of the earth. The speed of P is  $v$ .

What is the speed of Q?

**A**  $\sqrt{\frac{1}{3}} v$

**B**  $\sqrt{\frac{1}{2}} v$

**C**  $\sqrt{2} v$

**D**  $\sqrt{3} v$

- 11** Mars has a diameter that is approximately 0.5 times the diameter of the Earth, and the mass of