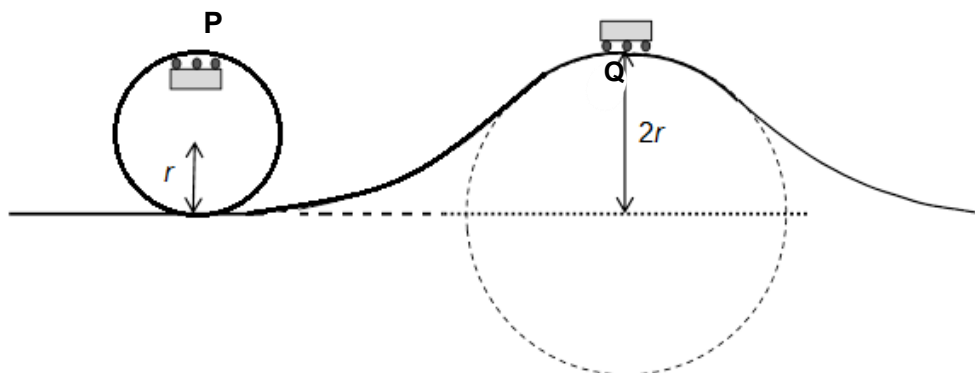10 A cart of mass m goes round a vertical loop of radius r before racing over a hill of radius of curvature $2r$ as shown in the diagram.

If the cart just remains in contact with the track at the top of the loop at point P, what is the force the cart exerts on the track at the top of the hill at point Q? Assume that resistive forces are negligible.

A   0   B $\dfrac{mg}{2}$ C mg D $\dfrac{3mg}{2}$