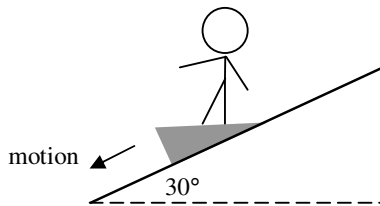


Physics worksheet – Reaction force II

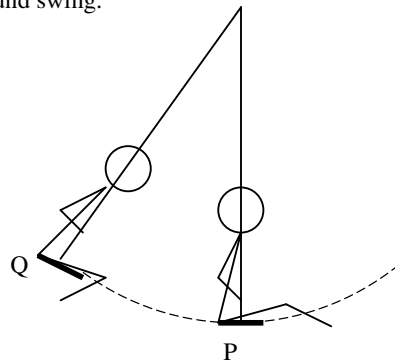
Q1 A 60-kg person is inside an upward moving lift. It slows down at a rate of  $2 \text{ ms}^{-2}$ . Find the reaction force of the lift floor on the person.

Q2 A 60-kg person is inside a downward moving lift. It slows down at a rate of  $2 \text{ ms}^{-2}$ . Find the reaction force of the lift floor on the person.

Q3 A 60-kg person on a horizontal platform slides down a frictionless slope inclined at  $30^\circ$  to the horizontal. Draw an accurate arrow to show the direction of the reaction force of the platform on the person. Calculate the magnitude of the reaction force and the angle it makes with the platform.



Q4 Draw an arrow at each of the locations P and Q to indicate the direction of the reaction force on a child riding on a playground swing.

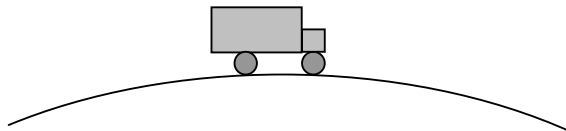


Q5 A 1000-kg car travelling at  $10 \text{ kmh}^{-1}$  hits a barrier head on and comes to a stop in 0.8 s. Determine the average reaction force of the barrier on the car.

Q6 Calculate the reaction force of the seat on a 60-kg rider in the carriage of a roller coaster travelling upright at  $15 \text{ ms}^{-1}$  at the bottom of a 25-m-radius loop.



Q7 Calculate the reaction force of the seat on a 65-kg driver in a truck travelling at  $20 \text{ ms}^{-1}$  at the top of a road crest of 100-m radius of curvature.



Q8 A 1200-kg car travels at  $5 \text{ ms}^{-1}$  at a roundabout of 10-m radius. Calculate the magnitude and direction (angle with the vertical) of the reaction force of the horizontal circular road on the car. Ignore air resistance and rolling resistance.