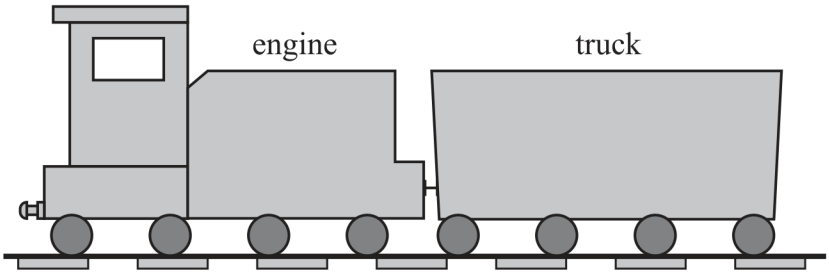
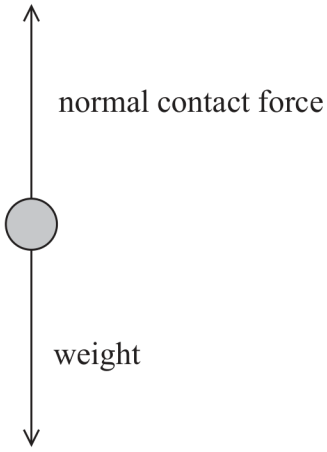
18 A railway engine is pushing a truck along horizontal rails at a constant velocity, as shown.



The engine exerts a forward force of 1.2×10^5 N on the truck. The engine also exerts a net backwards force of 1.5×10^5 N on the rails.

(a) Complete the free-body force diagram to show all the forces acting on the engine.

(4)



(b) A student suggests that the weight and the normal reaction force form a Newton's third law pair of forces.

Explain why the student's suggestion is **not** correct. Your answer should include reference to the features of a Newton's third law pair of forces.

(5)

(Total for Question 18 = 9 marks)