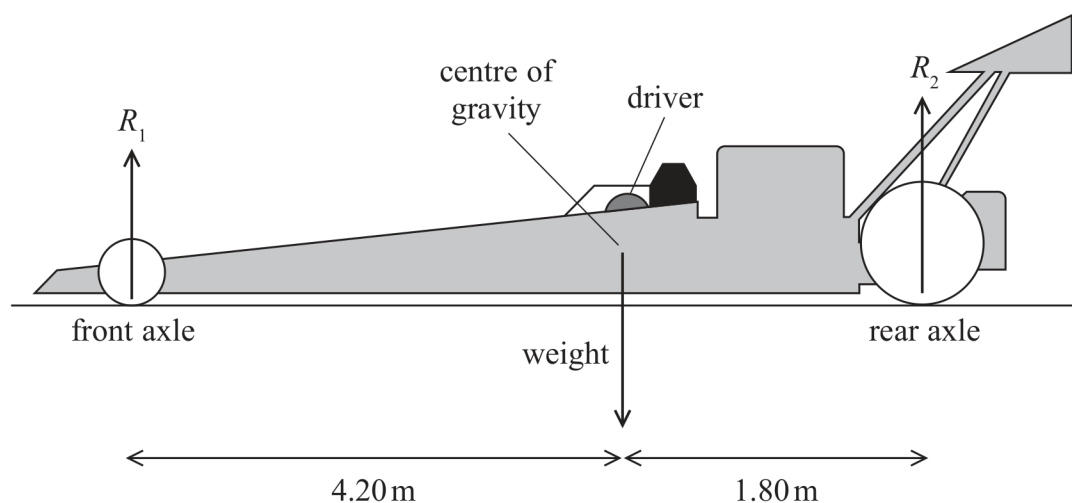


- 16 A dragster is a racing car designed for a very short race along a completely straight track, so must be able to accelerate at a very high rate. The dragster and driver shown below have a combined weight of $1.23 \times 10^4 \text{ N}$. The centre of gravity is 1.80 m in front of the rear axle.



The front axle of the dragster is 6.00 m from the rear axle.

- (a) Calculate the reaction forces R_1 and R_2 , shown on the diagram, when the dragster is stationary and not accelerating.

(3)

$$R_1 = \dots\dots\dots$$

$$R_2 = \dots\dots\dots$$



- (b) When the dragster starts, there is a driving force that gives the dragster an initial forward acceleration of $5.50g$.

Calculate the initial driving force on the dragster.

(2)

Initial driving force =

- (c) The power from the car's engine is constant.

Explain how the force from the engine varies as the car accelerates.

(2)