Force and acceleration questions – show your working and check your units!

1. Calculate the force needed to accelerate a car of mass 1500 kg by 5 m/s2
2. Calculate the force needed to accelerate a ball of mass 200 g by 15 m/s2
3. Calculate the acceleration of a train of mass 30 000 kg when driven by a force of 15000 N.
4. Calculate the mass in grams of a toy car if a force of 2 N causes it to accelerate by 10 m/s2.
5. What force is exerted on a ball of mass 100g if it accelerates from rest to 30 m/s in 3 seconds?
6. If a bus accelerates from 10 m/s to 15 m/s in 10 seconds with a force of 3000N what is its mass?
7. The following car has a mass of 400 kg.



**Calculate the frictional force** if the car accelerated at a rate of 2.5 m/s2 when a driving force of 1500N was applied

1. [](http://s1.picsafe.ru/files/12d04802/Train_s_tram_s_eff_02.png)A tram of 800kg takes 6 seconds to stop after travelling at a constant speed of 18m/s. Calculate the deceleration and the force needed to be applied by the brakes to stop the tram.