Resolving Forces

Calculate the missing forces in these situations. There is equilibrium in every case. Take g = 9.8 ms-2

1. A suitcase of mass 18 kg is being pulled across rough ground with a force of 20 N. The handles are inclined at 50° to the horizontal. Calculate a) the Normal reaction b) the frictional force.
2. A suitcase of mass 22 kg is being pulled across rough ground. The handles are inclined at 30° to the horizontal. The frictional force is 40 N. Calculate a) the Normal reaction b) the force applied to the suitcase.
3. A dog of mass 30 kg straining against a lead and exerting a forward thrust of 50 N. The frictional force is 10 N. The lead is inclined at 40° to the horizontal. Calculate a) the Normal reaction b) the tension in the lead
4. A car resting on a slope inclined at 10° to the horizontal. The car weighs 1450 kg. Calculate a) the Normal reaction b) the Frictional force