

Name: _____

Physics 11

Problem Set 2.8
Hooke's Law

1. One end of an elastic cord is glued to a wall. If the elastic band has a spring constant of 9 N/m and you pull on the free end such that it is stretched by 15 cm , what is the magnitude of the elastic force that the band exerts on you?
2. A bungee jumper is hanging from her bungee cord after a jump (her acceleration is zero). If the bungee cord has a stiffness of 42 N/m and the jumper has a mass of 65 kg , how far is the cord being stretched? Start by drawing an FBD for the hanging jumper.
3. In a pinball machine, a metal spring is used to accelerate the ball horizontally from rest. If the spring is pulled back 11 cm and, at the *instant* it is released, accelerates a 100 g ball at 22 m/s^2 , what is the spring's stiffness?
4. A student loads a rock into the slingshot shown below and stretches the elastics 0.5 m . He holds the rock steady for a few seconds. If the slingshot elastics have a spring constant of 50 N/m , what force is the student applying to the rock as he holds it there? Start by drawing an FBD for the rock.



Answers: 1) 1.35 N 2) 15.2 m 3) 20 N/m 4) 50 N