

BTU1113 PHYSICS : Revision 2

Rigid Objects in Static Equilibrium

1. To loosen the lid on a jar of jam 8.9 cm in diameter, a torque of 8.5 Nm must be applied to the circumference of the lid. If a jar wrench whose handle extends 15 cm from the center of the jar is attached to the lid, what is the minimum force required to open the jar?
2. A set of fossilized triceratops footprints discovered in Texas show that the front and rear feet were 3.2 m apart, as shown in the figure below. The rear footprints were observed to be twice as deep as the front footprints. Assuming that the rear feet pressed down on the ground with twice the force exerted by the front feet, find the horizontal distance from the rear feet to the triceratops's center of mass.

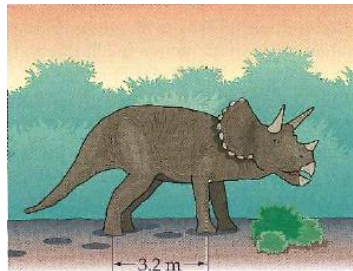


Figure 1 Problem 2