The University of Jordan
Physics Department
Solutions to Suggested Problems
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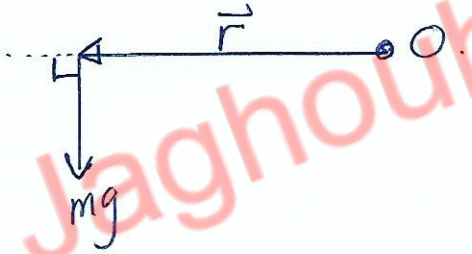
24] maximum torque when $m\vec{g}$ is perpendicular to $\vec{r}$. ($\theta = 90°$)

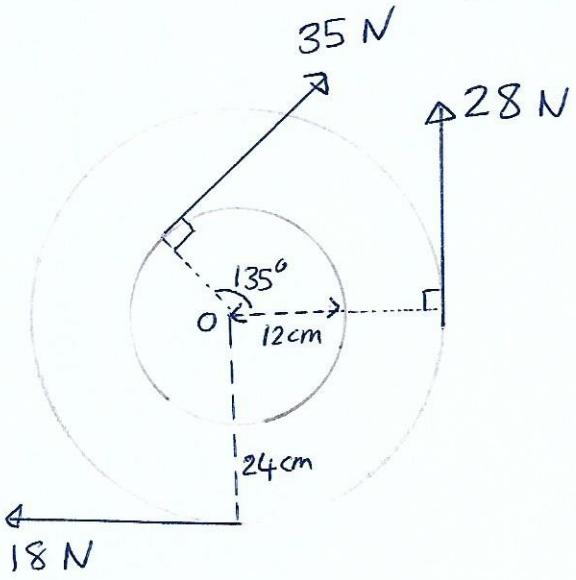


+↺ (O) $\tau_{max} = mgr = 52g(0.17)$

(a) $\tau_{max} \approx 86.6$ N.m

(b) by increasing the force on the pedal. for example she could push harder with a force greater than her weight.

25] First calculate the torque about 'O' due to the three forces.



+↺ ⓞ $\tau = 28(0.24) - 35(0.12) - 18(0.24)$

$= -1.8$ N.m

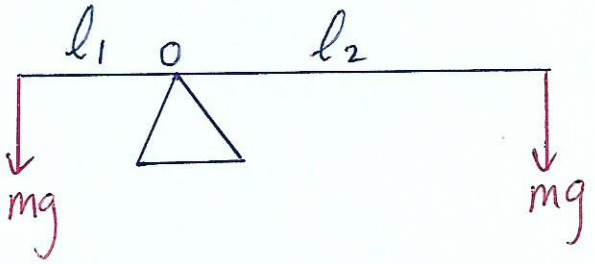
↑ clockwise rotation.

Wheels will rotate in clockwise direction ⇒ frictional torque given in the question is counterclockwise

⇒ $\tau_{net} = \tau + \tau_{friction}$

$= -1.8 + 0.6 = -1.2$ N.m

27]



+↺ ⓞ

$\tau = mgl_1 - mgl_2$

$= mg(l_1 - l_2)$.

Note there is a force acting at 'O' but since it exerts no torque about 'O' I did not include it.