

## Lecture 5

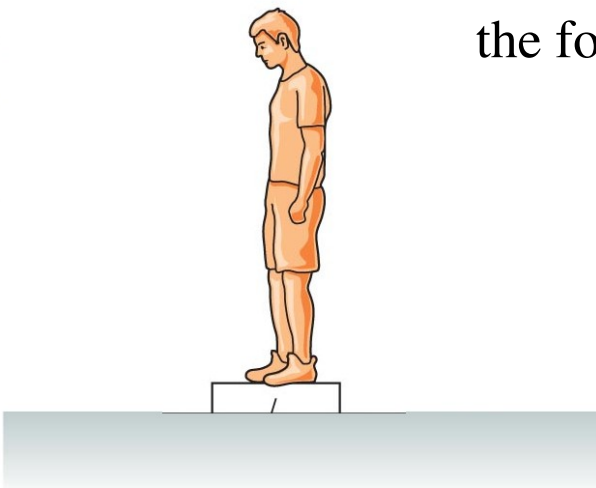
# Newton's third law ILD

*Please take one blue and one white sheet*

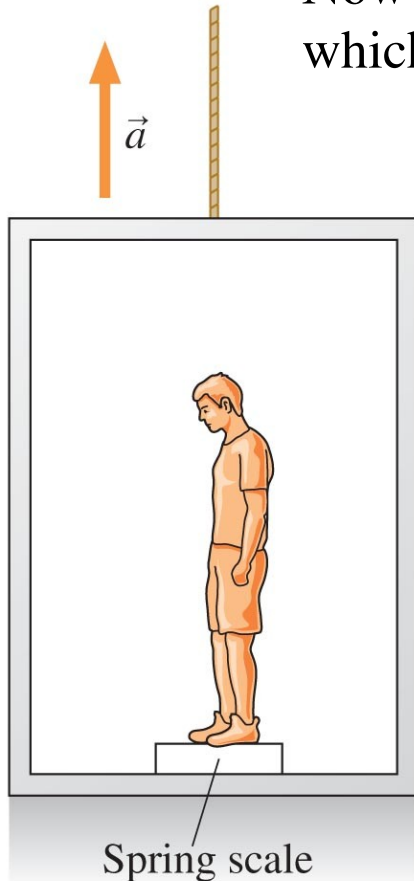
## Apparent weight

Consider a man standing on a spring scale.

The only forces acting on the man are the weight force and the force of the spring.



Now imagine he weighs himself in a lift which is accelerating upwards.



Since he is accelerating, there must be a net force

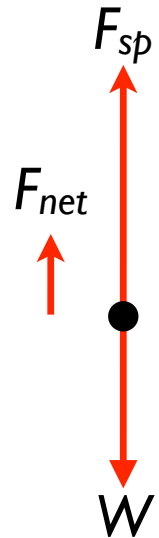
$$F_{\text{net}} = F_{\text{sp}} - W = ma_y$$

or

$$F_{\text{sp}} = W + ma_y$$

i.e. the scale reads heavier.

*Apparent weight* is given by the magnitude of the normal force.



## NEXT LECTURE

Circular motion

Read: KJF §6.1, 6.2