

Gravitational PE

(potential to fall)

The amount of gravitational PE you have at a certain height is equal to the work it takes to get to that height.

$$\text{Work} = (\text{Force})(\text{distance})$$

The force should be equal to
the weight you're lifting

$$(\text{mass})(10 \text{ N/kg})$$

the distance would
be the height

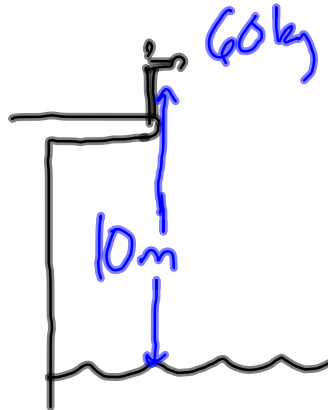
$$(\text{height})$$

$$U_g = mgy$$

The symbol for PE is always "U";
"U_g" is gravitational PE

Example:

- a) How much gravitational PE does the 60 kg diver have atop the 10 meter diving platform?
- b) Ideally, how much Kinetic E will she have just before she hits the water?



Note: choose a ground to measure all heights from. Usually, we pick the lowest spot the object is likely to get to, but it doesn't really matter where you pick, as long as you stick with it during the problem.

a)
$$\begin{aligned} U_g &= mgy \\ &= (60 \text{ kg})(10 \text{ N/kg})(10 \text{ m}) \\ &= 6000 \text{ Nm} \\ &= 6000 \text{ J} \quad (\text{A Newton-meter is a Joule}) \end{aligned}$$

- b) **6000 J** The Kinetic E at the bottom comes from the Grav PE at the top. Ideally, it is 100% converted.