

- a) $-8.9 \times 10^7 \text{ J}$
- b) $-6.3 \times 10^7 \text{ J}$
- c) $-4.2 \times 10^7 \text{ J}$
- d) $-1.3 \times 10^7 \text{ J}$

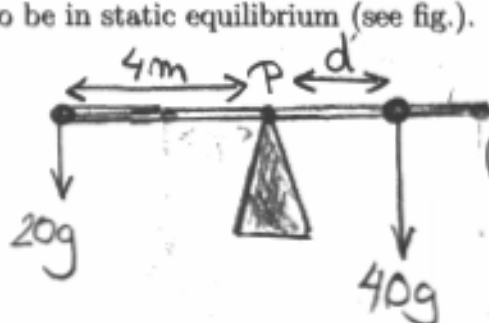
e) None of the above.

$U \rightarrow 0$ as Ek
object moves towards
infinity!

Two kids of masses 20 kg and 40 kg sit at the ends of a 8 m seesaw.

- 6) Find the distance from the center of the seesaw to the place where the 40 kg kid needs to sit for the seesaw to be in static equilibrium (see fig.).

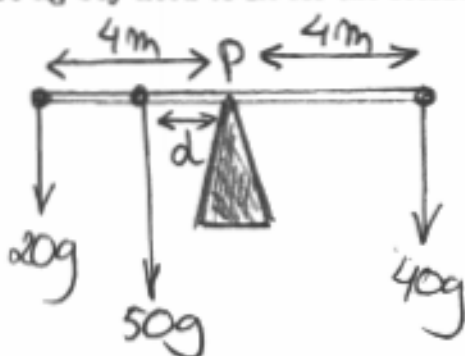
- a) 0.25 m
- b) 0.50 m
- c) 1.0 m
- d) 1.5 m
- e) 2.0 m



Setting $\tau_{net, P} = 0$
 $(20g)(4m) = 40gd$
 $d = 2m$

- 7) Keeping the two kids at the ends of the seesaw, at what distance from the biggest kid does another 50 kg boy need to sit for the seesaw to be in static equilibrium?

- a) 0.80 m
- b) 4.80 m
- c) 5.60 m
- d) 3.78 m
- e) 6.79 m



Setting $\tau_{net, P} = 0$
 $(20g)(4m) + 50gd = 40g(4m)$
 $50d = 80$
 $d = 1.6m$
 Thus $1.6 + 4 = 5.6m$

The **ACCELERATION** of a simple harmonic motion is described by the equation:

$$a(t) = 8 \cos(2t - \pi/2) \text{ (m/s}^2\text{)}.$$

- 8) What is the **AMPLITUDE** of this simple harmonic motion?

- a) 8 m
- b) 2 m
- c) 4 m
- d) $\pi/2$ m
- e) π m

$a_{MAX} = 8 \text{ m/s}^2 = A\omega^2$
 $\rightarrow A = 2m$

$\omega = 2 \text{ rad/s}$

- 9) What is the magnitude of the **maximum ACCELERATION** of this simple harmonic motion?