

$$v = \sqrt{\frac{2GM}{R}} = \sqrt{\frac{2G \cdot 1000 M_E}{R_E/1000}}$$

$$= 10^3 \sqrt{\frac{2GM_E}{R_E}} = 11.2 \times 10^3 \text{ km/s}$$

- c) $11.2 \times 10^5 \text{ km/s}$
 d) $11.2 \times 10^3 \text{ km/s}$
 e) $11.2 \times 10^8 \text{ km/s}$

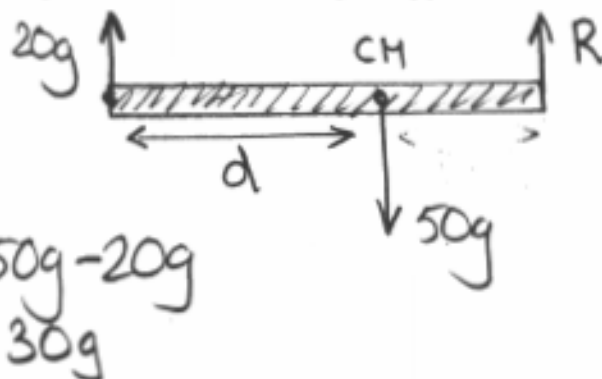
6) The sun has 1 million times the mass of Earth. How does the gravitational pull of the sun on the Earth compare to the gravitational pull of the Earth on the sun?

- a) The gravitational pull of the sun on Earth is a million times bigger than the gravitational pull of the Earth on the sun.
 b) The gravitational pull of Earth on the sun is a million times bigger than the gravitational pull of the sun on the Earth.
 c) They have the same magnitude.
 d) It depends on the Earth's position as it orbits around the sun.
 e) More information is required to tell.

A 10 m, 50 kg **irregular** plank is supported by two scales located on both endpoints. If the reading of the left scale is 20 g (N) (with g, the acceleration of gravity), find:

7) The reading of the right scale.

- a) 10g (N)
 b) 20g (N)
 c) 30g (N)
 d) 40g (N)
 e) 50g (N)



8) The position of the plank's center of mass with respect to the left scale.

- a) 2 m
 b) 3 m
 c) 4 m
 d) 5 m
 e) 6 m

$$(50g)d = (30g)(10 \text{ m})$$

$$d = 30/5 = 6 \text{ m}$$

A 10 m, 50 kg ladder leans against a frictionless wall at an angle of 75° with respect to the horizontal. The coefficient of static friction between the bottom of the ladder and the floor is $\mu_s = 0.4$. If the ladder is **about to slide on the ground**, find: