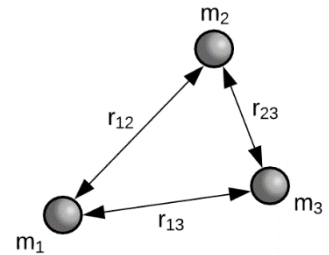


CONCEPT: Gravitational Potential Energy in a System of Masses

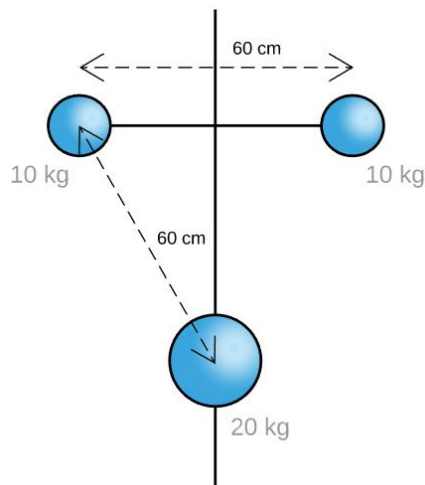
- To find *total* Grav. Potential Energy in a system of masses, simply add energies for _____.

- We can do this because energies are: [**SCALARS** | **VECTORS**]

$\Sigma U_G = \underline{\hspace{2cm}}$ (depends on # of masses)
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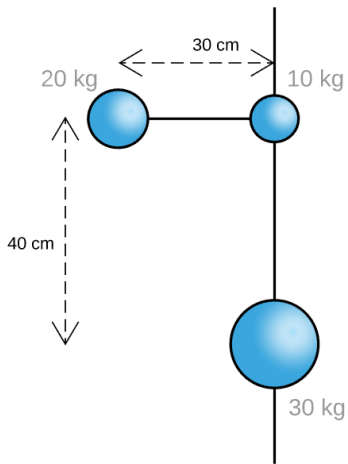


EXAMPLE: Calculate the total gravitational potential energy in the equilateral triangle system of masses below.

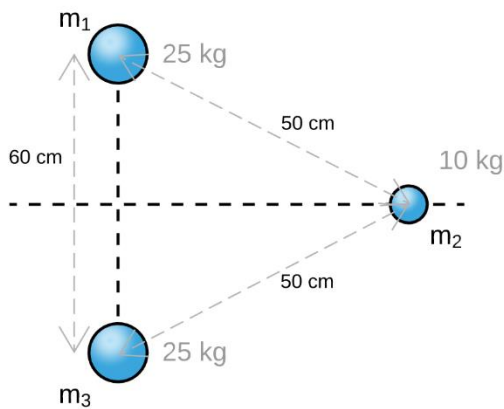


GRAVITATIONAL CONSTANTS
$G = 6.67 \times 10^{-11} \frac{\text{m}^3}{\text{kg} \cdot \text{s}^2}$

PRACTICE: What is the total gravitational potential energy of this system of masses?



EXAMPLE: a) What is the gravitational potential energy of the system? b) The two 25-kg masses are fixed and cannot move. If the 10-kg mass is released from rest, what will be its speed when it is directly between the two 25-kg masses?



EQUATIONS	CONSTANTS
$F_G = \frac{Gm_1m_2}{r^2}$ $r = R + h$	$G = 6.67 \times 10^{-11} \frac{\text{m}^3}{\text{kg} \cdot \text{s}^2}$
$U_G = -\frac{GMm}{r}$ $K_i + U_i + W_{NC} = K_f + U_f$	