

Answer on Question #90934, Physics / Mechanics | Relativity

The centres of a 42 N sphere and a 12 N sphere are connected by a light rod 160 mm in length. How far from the middle of the 42 N sphere is the centre of gravity?

Solution:



Let us take the centre of the 42 N sphere as origin. Let x be the distance of the centre of gravity from the middle of the 42 N sphere.

If W_1 (=42 N) and W_2 (=12 N) be the weight of the two spheres, then from the definition of centre of gravity

$$(\Sigma W_i)x = \Sigma W_i x_i$$

$$(W_1 + W_2)x = W_1 \times 0 + 160W_2$$

$$x = \frac{160W_2}{W_1 + W_2}$$

$$x = \frac{160 \times 12}{42 + 12}$$

$x = 35.56 \text{ mm}$

Answer: The centre of gravity is 35.56 mm away from the middle of the 42 N sphere.

Answer provided by <https://www.AssignmentExpert.com>

