

NORTHERN ILLINOIS UNIVERSITY

PHYSICS DEPARTMENT

Physics 210 – Mechanics & Heat

Spring 2022

Problem Set #8

Problem Set Due: Thurs., March 31, 2022

Read OpenStax: Chapter 8.1-8.5, 10.4, 10.5, Lecture Notes #8 & #6b

Show explicitly all your work for full credit.

Staple solutions to Problems #1-10 together

1. OpenStax: **Example 8.1** show figure and calculation
2. OpenStax: **Example 8.2** show figure and calculation
3. **OpenStax: Example 8.4** **show figure and calculation – do the algebra asked for**
4. OpenStax: **Example 8.5** show figure and calculation
5. OpenStax: **Example 8.6** show figure and calculation

6. OpenStax: **Example 10.8** show figure and calculation
7. OpenStax: **Example 10.9** show figure and calculation
8. OpenStax: **Example 10.10** show figure and calculation
9. OpenStax: **Example 10.11** show figure and calculation
10. OpenStax: **Example 10.14** show figure and calculation

Problems #11 & 12 are on the next page

Staple solutions to Problems #11 & #12 together

Read the 1st part of Lecture Notes #6b (pages 1-5) for discussion on center of mass.

- 11 Three solid, uniform boxes are aligned as in Figure P8.10. Find the x - and y -coordinates of the center of mass of the three boxes, measured from the bottom left corner of box A.

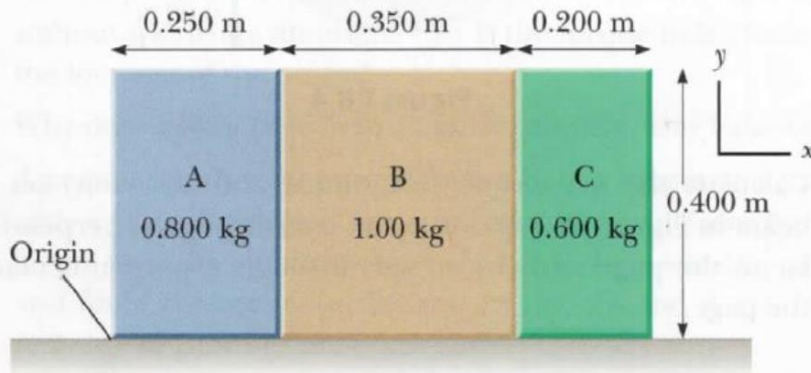
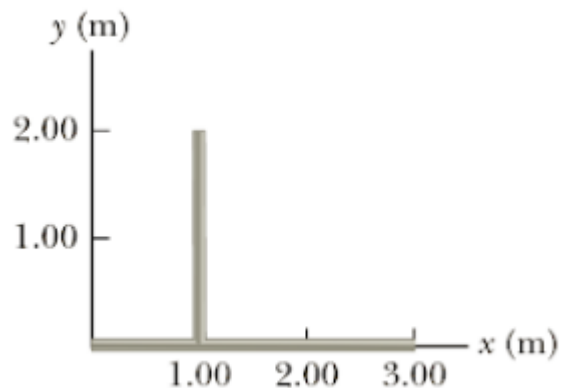


Figure P8.10

12. Find the center of mass of the following objects:

- (a) Two rods of uniform density are joined together as shown to the right. Find the (x, y) coordinate of the center of mass of the system. $(1.30, 0.40)$



- (b) Three rods of uniform density are joined together as shown to the right. Find the (x, y) coordinate of the center of mass of the system. $(1.80, 1.50)$

