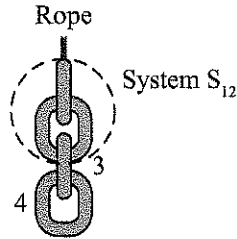


3. Let  $S_{12}$  represent the system consisting of links 1 and 2 of the chain in problem 2 (*i.e.*, treat links 1 and 2 as a single object).



- a. In the space at right, draw and label a free-body diagram for system  $S_{12}$ .
- b. Compare the forces that appear on your free-body diagram for system  $S_{12}$  to those that appear on your diagrams for links 1 and 2 in problem 2.

Free-body diagram for  
system  $S_{12}$

- i. For each of the forces that appear on your diagram for system  $S_{12}$ , list the corresponding force (or forces) on your diagrams for links 1 and 2.
- ii. Are there any forces on your diagrams for links 1 and 2 that you did not list? If so, what characteristic do these forces have in common that none of the others share?

- c. Let  $C$  represent the system consisting of the whole chain. Draw and label a free-body diagram for  $C$ . Make sure that your diagram is consistent with the reasoning you used in part b.

Free-body diagram for  
system  $C$