45 A student wants to place a 100 gal. aquarium on a 6 ft. × 1.5 ft. × 2.5 ft. wooden cabinet, as shown below.
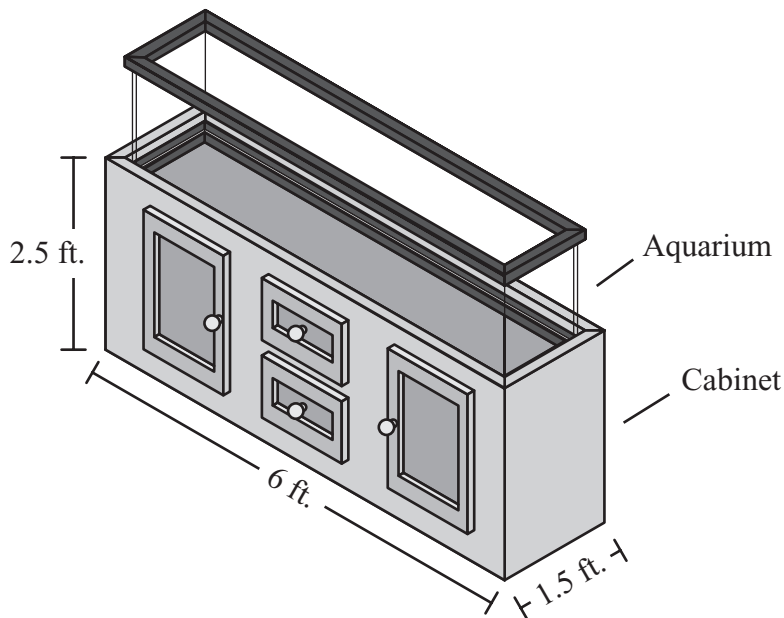

The floor of the student's bedroom is designed to hold 50 lb. per sq. ft. of load. The empty aquarium and cabinet weigh 30 lb. and 80 lb., respectively. One hundred gallons of water weighs 831 lb.

a. Calculate the total load exerted on the floor by the cabinet and the aquarium filled with water. Show your calculations and include units in your answer.

b. Can the floor of the student's bedroom safely support the filled aquarium? Show calculations with units to justify your answer.

c. Identify the type of load on the floor that the aquarium and cabinet represent. Explain your answer.