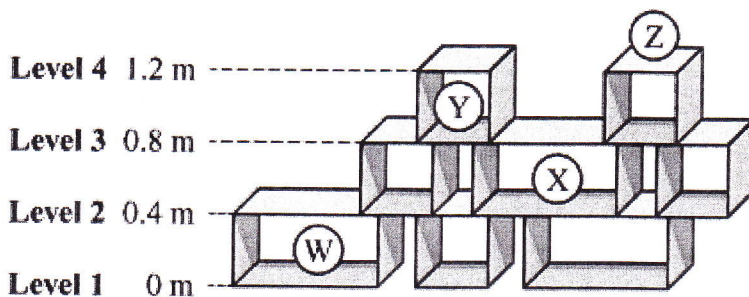


Open Response #9, Energy & Momentum

1. The figure below shows a shelving system with four levels. The height of each level is shown in the diagram, and four locations are labeled W, X, Y, and Z.



A person places an object on the shelves.

- A. At which location on the shelves (W, X, Y, or Z) would the object have the most gravitational potential energy? Explain your answer.

A book with a mass of 0.21 kg is placed at location X. A magazine with a mass of 0.11 kg is placed at location Y.

- B. Does the book or the magazine have more potential energy? Show your calculations and include units in your answer.

A 2.5 kg object is placed at location X where it has 10 J of potential energy. A person bumps the shelf, causing the object to fall to the ground.

- C. Assuming air resistance is negligible, explain how conservation of energy is demonstrated as the object falls to the ground.

- D. Calculate the speed of the 2.5 kg object just before it hits the ground. Show your calculations and include units in your answer.