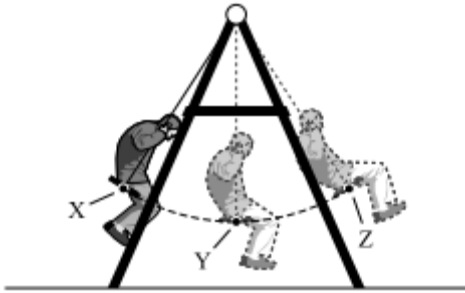


O.R. #13 ENERGY & MOMENTUM

A 70 kg person is swinging on a swing set, as shown in the diagram below. Positions X and Z represent the highest points of the person's motion, and position Y represents the lowest point of the person's motion.



- At which position does the person have maximum kinetic energy? Explain your answer.
- Neglecting friction, describe the energy conversion as the person travels from position X to position Y.
- The person is 1.0 m above the ground at position Y and 1.5 m above the ground at position Z. Neglecting friction, calculate the change in gravitational potential energy as the person swings from position Y to position Z. Show your calculations and include units in your answer.
- Neglecting friction, calculate the speed of the person at position Y. Show your calculations and include units in your answer.