Gravitational Potential Energy

- **The energy an object has because of height above the earth.**

$$U_g =$$

- **m = mass**
- **g = 9.8 m/s^2**

- **h = height**

- **A scalar quantity**

Potential Energy - Example

- **You lift a 2.00 kg textbook from the floor to a 2.10 m high shelf.**
  - **What is the book's gravitational potential energy at that height?**

Kinetic Energy – Variable Relationships

- **Determine the effect of the changing variables on variable that remains constant**
  - **What happens to the kinetic energy, if the velocity remains constant while you triple the mass?**

  - **What happens to the kinetic energy, if the mass remains constant while you double the velocity?**

  - **The kinetic energy is 5 J. What would be the new kinetic energy if the mass remains the same, while you quadruple the velocity?**

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Potential Energy – Variable Relationships

- **Determine the effect of the changing variables on variable that remains constant**
  - **What happens to the potential energy, if the mass remains constant while you triple the height?**

  - **What happens to the potential energy, if the height remains constant while you double the mass?**

  - **The potential energy is 7 J. What would be the new potential energy if the mass is doubled, while you quadruple the height?**

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