Tuesday Reading Assessment: Unit 0 part II, Electric Potential

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1 Memory Bank

- $PE = qV$ ... Relationship between potential energy, charge, and voltage.
- $PE = mgh$ ... Gravitational potential energy.
- $KE = \frac{1}{2}mv^2$ ... Definition of kinetic energy.

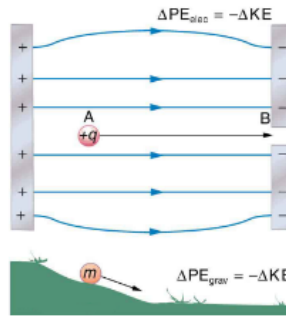## 2 Electric Potential and Potential Energy

Figure 1: The relationship between potential energy and voltage.

1. Consider Fig. 1. Suppose the mass m rolls down a hill from a height of 30 meters. In the absense of *friction*, what will be the final speed of the object?

2. Consider Fig. 1. Suppose the charge is $q = 1\mu$C, and the voltage is 12 V. (a) What is the potential energy before the charge is released? (b) If the charge has a mass of 10^{-6} kg, what will the final speed be after the charge is released?

3. What voltage would be required to *stop* the charge from moving?

- A: 6 V
- B: 10 V
- C: 12 V
- D: -12 V