

Calculating Potential Energy

1. Gravitational potential energy can be defined as...
2. The closer an object is to ground level, the _____ gravitational potential energy it will have.
3. The stronger the gravitational field is the _____ it pulls on an object, the _____ it will speed up if it falls. This means that if an object at a certain height on Earth were transported to a planet with stronger gravity like Jupiter and placed at the same height, it must have _____ gravitational potential energy.
4. A boulder with a mass of 2,500kg rests on a ledge 200m above the ground. What is the boulder's gravitational potential energy (GPE)?
5. What is the gravitational potential energy (GPE) of a 5.0kg object located 2.0m above the ground?
6. A weightlifter raises a 180kg barbell to a height of 1.95m. How much gravitational potential energy (GPE) does the barbell have?
7. Calculate the potential energy of a car with a mass of 2,500 kg that is on a hill 100 meters above sea level.
8. Ty lifts his backpack which has a mass of 12.5kg to his shoulders which are 1.2m above the floor. What potential energy does the backpack now possess?
9. Mount Everest, the tallest mountain on Earth, rises to 8,848.86m above sea level at its highest point. If a mountain climber with a mass of 75kg were to climb to the peak of this mountain, how much potential energy would they have?
10. If the same mountain climber were to climb the highest mountain on Mars, Olympus Mons, which is 21,900m tall. What would be their new potential energy? Keep in mind the gravitational field strength of Mars is much weaker than Earth's at 3.7m/s^2 .