

Gravitational Potential Energy

Solve the following problems.

1. (Walker, p. 227, # 7) Find the gravitational potential energy of an 80.0-kg person standing atop Mt. Everest, at an altitude of 8848 m. Use sea level as the location for $y = 0$.

2. Complete the following table:

| <u>Potential Energy</u> | <u>Mass</u> | <u>Gravity</u> | <u>Height</u> |
|-------------------------|-------------|----------------------|---------------|
| | 20 kg | 9.8 m/s ² | 1.0 m |
| | 20 kg | 9.8 m/s ² | 2.0 m |
| 750 J | 50 kg | | 7.5 m |
| 250 J | | 8.2 m/s ² | 4.0 m |
| | 15 kg | 7.2 m/s ² | 3.7 m |
| | 25 kg | 6.4 m/s ² | 4.2 m |
| 500 J | 35 kg | 4.1 m/s ² | |
| 375 J | 25 kg | | 3.2 m |
| 625 J | | 7.2 m/s ² | 4.5 m |
| 450 J | 22 kg | 3.5 m/s ² | |

3. (Giancoli, p. 175, #31) By how much does the gravitational potential energy of a 64 kg pole vaulter change if his center of mass rises about 4.0 m during the jump?

4. (Giancoli, p. 175, #30) A 6.0 kg monkey swings from one branch to another 1.2m higher. What is the change in potential energy?

