

## 2-kg ball

TME = ? J  
PE = 100 J  
KE = 0 J

The only force doing work is gravity. Since it is an internal force, the total mechanical energy is conserved.

TME = ? J  
PE = 50 J  
KE = ? J  
v = ? m/s

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PE = ? J  
KE = ? J  
v = ? m/s

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PE = ? J  
KE = ? J  
v = ? m/s

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PE = ? J  
KE = ? J  
v = ? m/s

PE = Gravitational Potential Energy =  $mgh$

KE = Kinetic Energy =  $\frac{1}{2}mv^2$

TME = Total Mechanical Energy = PE + KE

## 2-kg ball

TME = 100 J  
PE = 100 J  
KE = 0 J

The only force doing work is gravity. Since it is an internal force, the total mechanical energy is conserved. Thus, the 100 J of original mechanical energy is present at each position.

TME = 100 J  
PE = 50 J  
KE = 50 J  
v = 7.07 m/s

TME = 100 J  
PE = 50 J  
KE = 50 J  
v = 7.07 m/s

TME = 100 J  
PE = 0 J  
KE = 100 J  
v = 10 m/s

TME = 100 J  
PE = 0 J  
KE = 100 J  
v = 10 m/s

PE = Gravitational Potential Energy =  $mgh$

KE = Kinetic Energy =  $\frac{1}{2}mv^2$

TME = Total Mechanical Energy = PE + KE