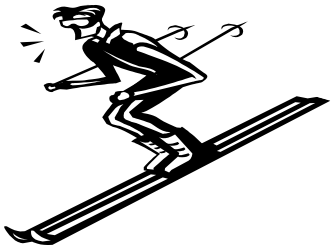
Lesson 4, Engineering Sport – Energy Worksheet – Answers

Remember:	**Kenetic Energy:**	KE = ½ m * v^2 = ½ * m * v * v (units are kg-m^2/s^2)
	Potential Engergy:	PE = m * g * h (units are kg-m^2/s^2)
		and g = 9.81 (or ~10) m/s^2



1. An Olympic skier is in the racing stalls waiting for the beginning of the downhill slalom race. He weighs 75kg, and the ski slope is 1,000 m high.

    a. Does he have potential or kinetic energy before the race?

    Potential

    b. What is his potential energy?

    PE = m*g*h = 75kg*10 m/s^2 *1000m = 750,000kg-m^2/s^2

    c. When he skis down the hill, he reaches a speed of 20 m/s. What is his kinetic energy?

    KE = ½ m*v^2 = ½ * 75kg *$(20m/s)^2$ = 15,000kg-m^2/s^2

2. An Olympic sprinter is going for gold in the 100m dash. She weighs 64kg and runs at 10 m/s.

    a. What type of energy does she have?

    Kinetic

    b. What is her kinetic energy?

    KE = ½ m*v^2 = ½ * 64kg *$(10m/s)^2$ = 3,200kg-m^2/s^2

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