Name:

1)	Which term is a unit of power?			
	A) watt	B) joule	C) newton	D) hertz
2)	As the time required to do a given quantity of work decreases, the power developed			
	<ul><li>A) increases</li><li>B) decreases</li></ul>		C) remains the same	
3)	Car $A$ and car $B$ are of equal mass and travel up a hill. Car $A$ moves up the hill at a constant speed that is twice the constant speed of car $B$ . Compared to the power developed by car $B$ , the power developed by car $A$ is			
	A) half as much	B) the same	C) four times as much	D) twice as much
4)	What is the minimum power required for a conveyor to raise an 8.0-newton box 4.0 meters vertically in 8.0 seconds?			
	A) 260 watts	B) 64 watts	C) 4.0 watts	D) 32 watts
5)	A 10newton force is needed to move a 3.0-kilogram box at constant speed. How much power is needed to move the box 8.0 meters in 2.0 seconds?			
	A) 20. W	B) 15 W	C) 40. W	D) 12 W
6)	A $6.0 \times 10^2$ -newton man climbing a rope at a speed of 2.0 meters per second develops power at the rate of			
	A) $3.0 \times 10^2$ W	B) $6.0 \times 10^2$ W	C) $1.2 \times 10^{1}$ W	D) $1.2 \times 10^3  \text{W}$
7)	A crane raises a 200-newton weight to a height of 50 meters in 5 seconds. The crane does work at the rate of			
	A) $2 \times 10^1$ watts	B) $2 \times 10^3$ watts	C) $5 \times 10^4$ watts	D) $8 \times 10^{-1}$ watt
8)	The diagram below shows a $1.0 \times 10^3$ -newton crate to be lifted at constant speed from the ground to a loading dock 1.5 meters high in 5.0 seconds.			
	1.5 m			

THIS END UP 1.0 x 10<sup>3</sup> N LOADING DOCK

What power is required to lift the crate?

- A)  $2.0 \times 10^2$  W B)  $3.0 \times 10^2$  W C)  $1.5 \times 10^3$  W D)  $7.5 \times 10^3$  W
- 9) A  $4.0 \times 10^3$ -watt motor applies a force of  $8.0 \times 10^2$  newtons to move a boat at constant speed. How far does the boat move in 16 seconds?

A) 32 m B) 3.2 m C) 80. m D) 5.0 m

- 10) A motor has an output of 1,000 watts. When the motor is working at full capacity, how much time will it require to lift a 50-newton weight 100 meters?
  - A) 100 s B) 10 s C) 50 s D) 5 s
- 11) If an engine rated at  $5.0 \times 10^4$  watts exerts a constant force of  $2.5 \times 10^3$  newtons on a vehicle, the velocity of the vehicle is
  - A) 0.050 m/s B)  $2\sqrt{10}$  m/s C) 20. m/s D)  $1.25 \times 10^8$  m/s
- 12) A student running up a flight of stairs increases her speed at a constant rate. Which graph *best* represents the relationship between work and time for the student's run up the stairs?

