Booklet # 58

"This booklet is dedicated to Irene & Sam"

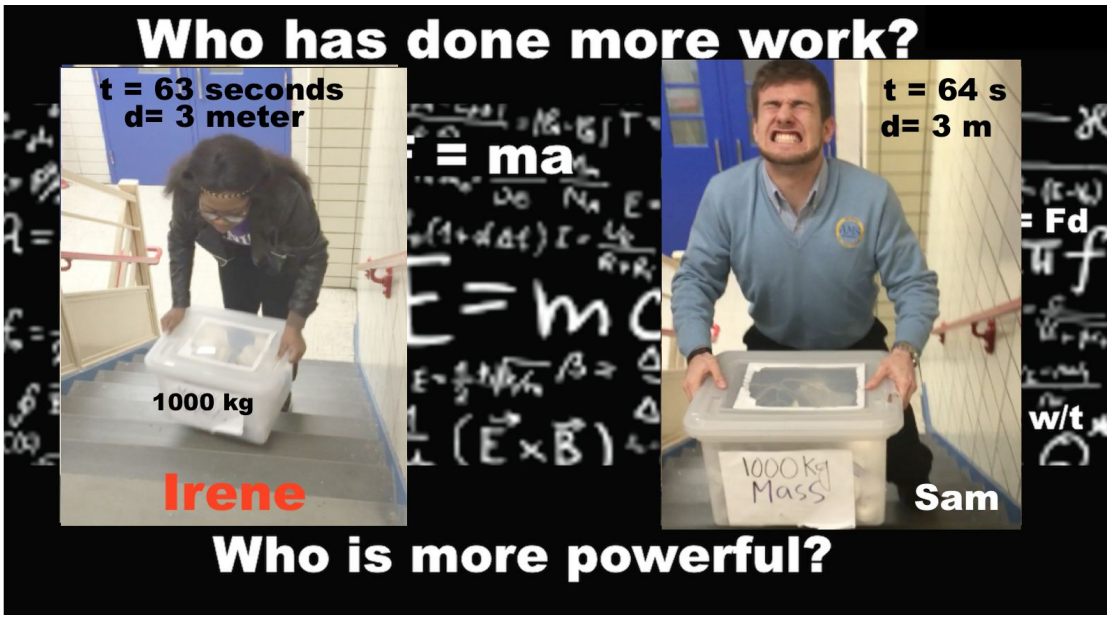
Congratulations to Irene & Sam (winners of Genius Competition) who have been accepted to the two prestigious universities. We are very proud of them.

NAME: (I will collect the Booklet 5 minutes before the end of the period)

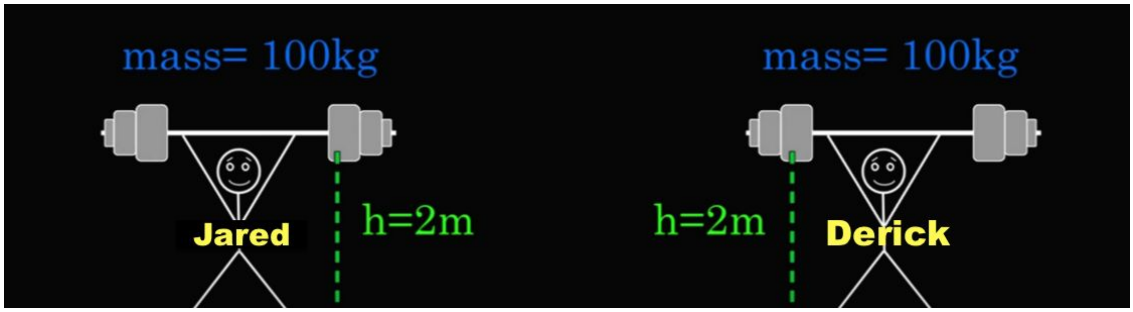
Unit: Work, Energy and Power || **Wednesday**, January 20, 2016

1. **Do Now (10 minutes)**

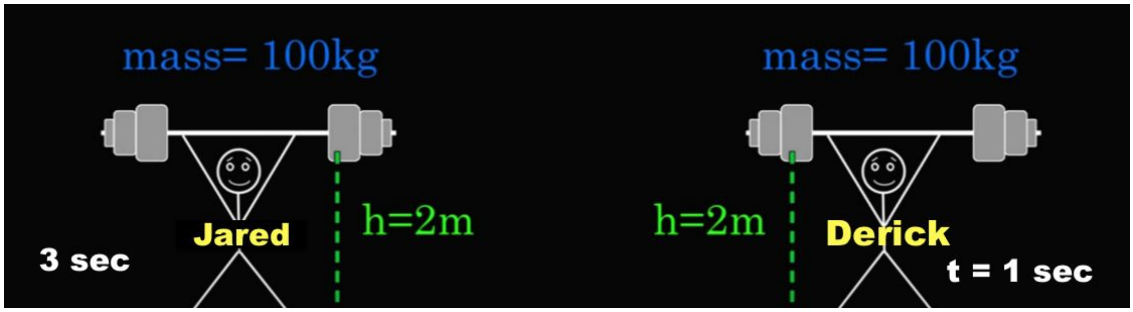
A 200 Hp motor lifts an elevator 17 meter in 10 seconds. Find the mass of the elevator.			
Data	Equation	Math	Answer

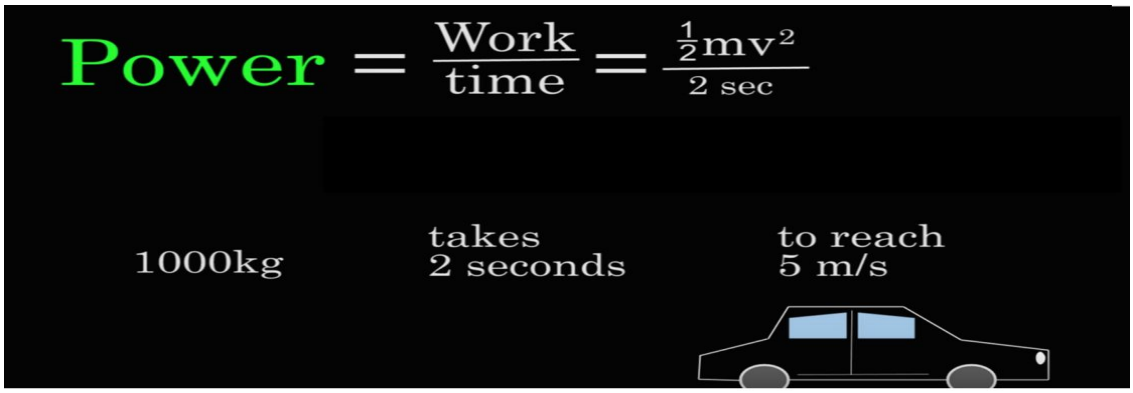
2	Sam took 64 seconds to lift a 1000 kg container from the second floor the 3rd floor, which is 3 meter long. Irene took 63 seconds to do the same job. Who has done more work? Who is more powerful? Explain your answer.			
				

3	What is work? Write the equation for work.

4	Two weightlifters, Jared and Derick, lifted 100 kg for the distance of 2 meters. Who has done more work? Make a hypothesis and calculate their work to support the hypothesis.
	

5	What is Power? Write the equation for Power.

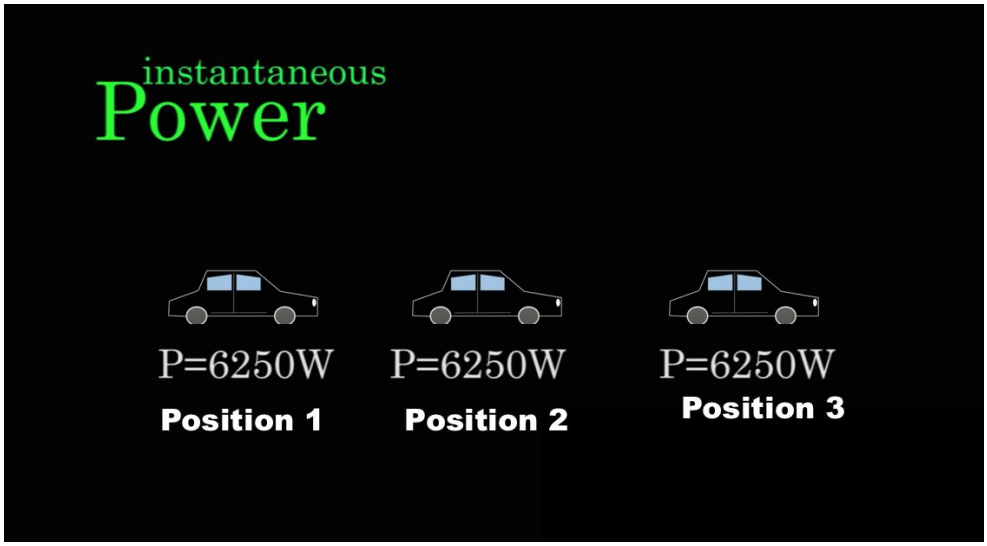
6	Two weightlifters, Jared and Derick, lifted 100 kg for a distance of 2 meters. It took Jared 3 seconds to complete the job while Derick took only 1 second. Who is more powerful? Make a hypothesis and do the math to support the hypothesis.
	

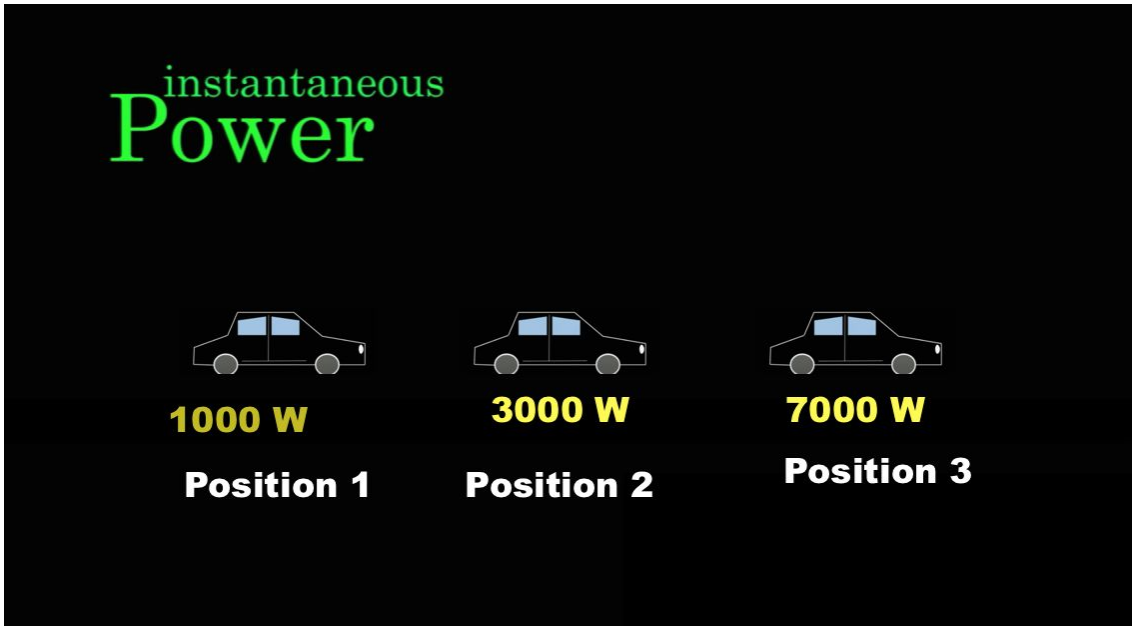
7	A 1000 kg car takes 2 seconds to reach the velocity of 5 m/s from the rest. How powerful is the engine of the car?
	

8	Mr. Bari's car is 200 HP. Is the car above more powerful than Mr. Bari's Car?
	

For Regents Physics Students only (Calculus based):

9	What is the average power? What is instantaneous Power? Write the difference between average power and instantaneous power. Write the equation for instantaneous Power.

10	What is the average power of the following car. What is the instantaneous power of the following car?
	

11	What is the average power of the following car. What is the instantaneous power of the following car? (Be careful)
	

Energy Skate Park: SIMULATION LAB (25 minutes)

12	Takeout laptop and start working on "Energy Skate Park" Simulation
	1. Name (Slow) : 2. Name (Fast): When would you like to make the presentation……..

13	

Energy Skate Park Lab

KE = 1/2 mv^2

PE = mgh

Take some time and play with the skater. Turn on the Bar Graph, Pie Chart, and Speed options.

How does increasing skater's **mass** change the skater's....
Kinetic Energy? _____ Potential Energy? _____ Total Energy? _____

How does the skater's **kinetic energy** change as he moves **down** the ramp? _____

How does the skater's **kinetic energy** change as he moves **up** the ramp? _____

How does the skater's **potential energy** change as he moves **down** the ramp? _____

How does the skater's **potential energy** change as he moves **up** the ramp? _____

How does the skater's **total energy** change as he moves **down** the ramp? _____

How does the skater's **total energy** change as he moves **up** the ramp? _____

Describe the skater's **kinetic** energy at the bottom of the ramp. _____

Describe the skater's **potential** energy at the bottom of the ramp. _____

What happens when the skater is dropped onto the ramp from above the ramp? _____

14. Exit Ticket:

Mr. Bari push a 60 kg shopping cart, which was at rest, with a force of 1000 N for a distance of 2.5 meters. If all this work become cart's KE, how fast does the cart end up going?			
Data	Equation	Math	Answer

------No Homework----