Name_____ Period _____ Date _____

Machines STEM Sims

Lesson 8: Moving On Up

Moveable pulleys have the string tied to a fixed position, but the pulley is free to move vertically with the load. How does this freedom of movement affect how moveable pulleys work compared to fixed pulleys?

Doing the Science

1. Start the Machines Simulation by clicking on the "Sim" tab.
2. Click the "Pulleys" button at the bottom of the screen.
3. Select the top-right pulley (Single, Moveable) from the four pulley buttons at the bottom of the screen.
4. Use the Newton Converter button at the bottom right-hand corner of the screen if you need help converting the hanging mass from kilograms to newtons for the Force on Mass Due to Gravity column.
5. Click the green "Pull" button on the Force Device in the middle of the screen.
6. Note and record in Table 1 the height the 1.0-kg mass lifts off the ground, the applied force, and the distance the Force Device pulled the string that is displayed on the Force Device.
7. Click the "Reset" button.
8. Click on the 2.0-kg mass to replace the 1.0-kg mass on the pulley. Repeat the experiment with the 2.0-kg mass.
9. Make sure to note and record your data in Table 1.

Table 1. Force and Distance Moved

Mass (kg)	Force on Mass Due to Gravity (N)	Height Mass Lifted (m)	Applied Force (N)	Distance Force Device Moved String (m)
1				
2				

Do You Understand?

1. Describe how the effort force exerted by the Force Device compared to the force on the hanging mass due to gravity.

2. Describe how the distance the Force Device moved the string (input distance) compared to the distance the hanging mass moved (output distance).

3. Describe and discuss how a single, moveable pulley can be useful in accomplishing a task.