



Inquiry Approaches

Initial Inquiry

What are some very heavy objects?

Some possible answers include grand pianos, elephants and rocks.

Formulate a hypothesis about what will happen when students try to lift the teacher with the pulley.

Students should formulate their own hypotheses using the proper if-then format. Students should understand that it is alright to formulate an incorrect hypothesis and that the point of the activity is to test whether or not it is correct.

Experimental Procedure Inquiry

Was it easier to lift the teacher using the compound pulley rather than the simple pulley system? Why?

It was easier to lift the teacher using the compound pulley because it has a higher mechanical advantage than the simple pulley system. The compound pulley combines several fixed and moveable pulleys to make lifting easier.

Were your hypotheses right or wrong?

A correct hypothesis should be similar to the following: if you use a compound pulley system, then it will be easier to lift the teacher.

In-Depth Inquiry

What are the main components of a pulley?

A pulley has a grooved wheel and a belt or rope that fits inside the groove.

Explain the advantages of using a pulley over lifting something without a pulley.

A pulley can change the direction of the input force. In this case, students pull down on the rope in order to lift a person up. Pulleys also provide mechanical advantage which allows for less force to be required in order to lift an object. When mechanical advantage is present, the force is acting over a longer distance, so more rope is pulled.

Explain how a pulley can change the direction of the force.

The student pulling on the rope is pulling down but the person sitting on the pulley is moving upwards, therefore the direction of force has changed. A downward force is causing an object to move upward.